CHAPTER 21

AIR CONDITIONING

CHAPTER 21
AIR CONDITIONING

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21-CONTENTS		
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405	Sep 05/2017	
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21-27-34		
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203	May 05/2017	
204	May 05/2017	
205	May 05/2017	
206	Sep 05/2015	
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208	Sep 05/2017	
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705	Sep 05/2017	
706	May 05/2017	

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21-28-01		
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403	May 05/2017	
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405	Sep 05/2017	
406	Jan 05/2015	
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431	Sep 05/2017	

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420	May 05/2017	

Subject/Page	Date	COC
21-31-03 Config 2 (cont)		
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Subject/Page	Date	COC
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21-31-03 Config 2		
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702	Jan 05/2015	

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403	May 05/2017	

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402	Sep 05/2017	

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Subject/Page	Date	COC
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606	Jan 05/2018	

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Subject/Page	Date	COC
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402	Sep 05/2017	

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406	Sep 05/2017	
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408	Sep 05/2017	
21-52-05		
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402	Jan 05/2015	
403	May 05/2017	
404	May 05/2017	
405	Jan 05/2015	
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21-52-06		
401	Sep 05/2017	
402	Sep 05/2017	
403	Sep 05/2017	
404	May 05/2017	
405	May 05/2017	
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21-52-06		
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803	May 05/2017	
804	May 05/2017	
21-52-07 Config 2		
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402	Jan 05/2018	
403	Jan 05/2018	
404	May 05/2017	
21-52-07 Config 2 (cont)		
405	May 05/2017	
406	May 05/2017	
407	May 05/2017	
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409	Jan 05/2018	
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21-52-10		
401	Jan 05/2018	
402	Jul 25/2018	
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410	Jul 25/2018	
411	Jul 25/2018	
412	Jul 25/2018	
413	Jul 25/2018	
414	Jul 25/2018	
21-52-11		
401	Jan 05/2015	
402	Sep 05/2017	
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405	Sep 05/2017	
406	Sep 05/2017	
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21-52-12 Config 2		
401	Sep 05/2017	
402	Sep 05/2017	
403	Sep 05/2017	
21-52-12 Config 2 (cont)		
404	May 05/2017	
405	May 05/2017	
406	May 05/2017	
407	May 05/2017	
408	Sep 05/2017	
409	Sep 05/2017	
410	Sep 05/2017	
21-52-20		
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202	Jan 05/2015	
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224	Sep 05/2017	
225	May 05/2017	
226	May 05/2017	
227	May 05/2017	
228	May 05/2017	

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21-52-20 (cont)		
229	Sep 05/2015	
230	Jan 05/2015	
231	Sep 05/2017	
232	Sep 05/2017	
233	Sep 05/2017	
234	Sep 05/2017	
235	May 05/2017	
236	May 05/2017	
237	May 05/2017	
238	May 05/2017	
239	Sep 05/2015	
240	Jan 05/2015	
241	Sep 05/2017	
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245	Sep 05/2017	
246	Sep 05/2017	
21-52-20		
601	May 05/2016	
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603	May 05/2016	
604	May 05/2017	
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611	Jan 05/2015	
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21-52-21		
201	Jan 05/2015	
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203	Jan 05/2015	
204	May 05/2017	

Subject/Page	Date	COC
21-52-21 (cont)		
205	May 05/2017	
206	May 05/2017	
207	May 05/2018	
208	Jan 05/2015	
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210	Jan 05/2015	
211	Sep 05/2017	
212	Jan 05/2015	
213	Jan 05/2015	
214	May 05/2017	
215	May 05/2017	
216	May 05/2017	
217	May 05/2017	
218	May 05/2018	
219	Sep 05/2017	
220	Sep 05/2017	
221	Sep 05/2017	
222	Sep 05/2017	
223	Sep 05/2017	
224	Sep 05/2017	
225	Sep 05/2017	
226	Sep 05/2017	
21-52-22		
401	Jan 05/2015	
402	Sep 05/2017	
403	Sep 05/2017	
404	May 05/2017	
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Subject/Page	Date	COC
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403	Sep 05/2017	
404	May 05/2017	
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406	Jan 05/2018	
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21-52-31		
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412	May 05/2017	
413	May 05/2017	
414	May 05/2017	
415	Jan 05/2018	
416	Jan 05/2018	
21-52-31		
701	Jan 05/2018	
702	Jan 05/2018	
703	May 05/2017	

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Subject/Page	Date	COC
21-52-31 (cont)		
704	May 05/2017	
705	May 05/2017	
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21-52-32		
401	Jan 05/2018	
402	Jan 05/2018	
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405	May 05/2017	
406	Jan 05/2018	
407	Jan 05/2018	
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409	Jan 05/2018	
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21-52-32		
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502	May 05/2015	
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21-52-40		
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405	Sep 05/2017	
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21-52-41		
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407	Jan 05/2015	
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21-52-42		
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403	May 05/2017	
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405	Sep 05/2017	
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21-52-42		
501	May 05/2015	
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21-52-43		
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406	Jan 05/2018	
21-52-44		
401	Jan 05/2015	
402	Sep 05/2017	
403	May 05/2017	
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405	Sep 05/2017	
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21-52-45		
401	Jan 05/2015	
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407	Jan 05/2015	
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21-52-46		
401	Jan 05/2018	
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21-60-01		
401	Sep 05/2017	
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21-61-00		
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21-61-01		
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404	May 05/2015	
405	Sep 05/2017	
406	Sep 05/2017	

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CHAPTER 21
AIR CONDITIONING

Subject/Page	Date	COC
21-61-01		
501	Sep 05/2017	
502	Sep 05/2017	
21-61-02		
201	Sep 05/2017	
202	Sep 05/2017	
203	Sep 05/2017	
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206	Sep 05/2017	
207	Sep 05/2017	
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21-61-02		
401	May 05/2015	
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21-61-03 Config 1		
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21-61-04 Config 1		
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21-61-07		
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21-61-08		
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21-62-00		
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21-62-01		
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702	Jan 05/2018	

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21-62-01 (cont)								
703	Jan 05/2018							
704	Jan 05/2018							
21-62-02								
401	Sep 05/2017							
402	Sep 05/2017							
403	May 05/2017							
404	May 05/2017							
405	Sep 05/2017							
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21-73-01								
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403	May 05/2017							
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406	May 05/2018							
407	May 05/2018							
408	May 05/2018							

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CHAPTER 21
AIR CONDITIONING

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
AIR CONDITIONING - GENERAL - MAINTENANCE PRACTICES	21-00-00		201	ARO ALL
Supply Conditioned Air to the Airplane TASK 21-00-00-800-801			201	ARO ALL
Remove Conditioned Air from the Airplane TASK 21-00-00-800-802			201	ARO ALL
Supply Conditioned Air with a Cooling Pack TASK 21-00-00-800-803			202	ARO ALL
Remove Conditioned Air Supplied by a Cooling Pack TASK 21-00-00-800-804			203	ARO ALL
Supply Conditioned Air with a Ground Air Source TASK 21-00-00-800-805			204	ARO ALL
Remove Conditioned Air Supplied by a Ground Air Source TASK 21-00-00-800-806			205	ARO ALL
AIR CONDITIONING - DDG MAINTENANCE PROCEDURES	21-00-00		901	ARO ALL
MMEL 21-00-1 (DDG) Preparation - ECS Miscellaneous Cards (ECSMC) Inoperative TASK 21-00-00-040-801			904	ARO ALL
MMEL 21-00-1 (DDG) Restoration - ECS Miscellaneous Cards (ECSMC) Inoperative TASK 21-00-00-040-802			905	ARO ALL
MMEL 21-25-1 (DDG) Preparation - Recirculation Fan (Upper, Lower) Inoperative TASK 21-00-00-040-805			907	ARO ALL
MMEL 21-25-1 (DDG) Restoration - Recirculation Fan (Upper, Lower) Inoperative TASK 21-00-00-040-806			909	ARO ALL
MMEL 21-26-1 (DDG) Preparation - Lavatory/Galley Ventilation Fan Inoperative TASK 21-00-00-040-807			912	ARO ALL
MMEL 21-26-1 (DDG) Restoration - Lavatory/Galley Ventilation Fan Inoperative TASK 21-00-00-040-808			913	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-26-2 (DDG) Preparation - Chiller Boost Fan Inoperative TASK 21-00-00-040-809			915	ARO ALL
MMEL 21-26-2 (DDG) Restoration - Chiller Boost Fan Inoperative TASK 21-00-00-040-810			916	ARO ALL
MMEL 21-26-3 (DDG) Preparation - Bulk Cargo Ventilation Fan Inoperative TASK 21-00-00-040-811			917	ARO ALL
MMEL 21-26-3 (DDG) Restoration - Bulk Cargo Ventilation Fan Inoperative TASK 21-00-00-040-812			918	ARO ALL
MMEL 21-26-5 (DDG) Preparation - Forward Cargo Air Conditioning Exhaust Fan Inoperative TASK 21-00-00-040-896			920	ARO ALL
MMEL 21-26-5 (DDG) Restoration - Forward Cargo Air Conditioning Exhaust Fan Inoperative TASK 21-00-00-440-833			921	ARO ALL
MMEL 21-27-1 (DDG) Preparation - Equipment Cooling Air Filter Removal TASK 21-00-00-040-813			922	ARO ALL
MMEL 21-27-1 (DDG) Restoration - Equipment Cooling Air Filter Removal TASK 21-00-00-040-814			923	ARO ALL
MMEL 21-27-2 (DDG) Preparation - Equipment Cooling Supply Fans Inoperative TASK 21-00-00-040-815			923	ARO ALL
MMEL 21-27-2 (DDG) Restoration - Equipment Cooling Supply Fans Inoperative TASK 21-00-00-040-816			925	ARO ALL
MMEL 21-27-3 (DDG) Preparation - Equipment Cooling Override Valve Motors Inoperative TASK 21-00-00-040-817			927	ARO ALL
MMEL 21-27-3 (DDG) Restoration - Equipment Cooling Override Valve Motors Inoperative TASK 21-00-00-040-818			928	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-27-4 (DDG) Preparation - Equipment Cooling Low Flow Sensors Inoperative TASK 21-00-00-040-819			929	ARO ALL
MMEL 21-27-4 (DDG) Restoration - Equipment Cooling Low Flow Sensors Inoperative TASK 21-00-00-040-820			930	ARO ALL
MMEL 21-27-5 (DDG) Preparation - Equipment Cooling Vent Fan Inoperative TASK 21-00-00-040-821			931	ARO ALL
MMEL 21-27-5 (DDG) Restoration - Equipment Cooling Vent Fan Inoperative TASK 21-00-00-040-822			933	ARO ALL
MMEL 21-27-6 (DDG) Preparation - Equipment Cooling Vent Valve Inoperative TASK 21-00-00-040-823			934	ARO ALL
MMEL 21-27-6 (DDG) Restoration - Equipment Cooling Vent Valve Inoperative TASK 21-00-00-040-824			939	ARO ALL
MMEL 21-27-7 (DDG) Preparation - Forward Cargo Heat Valve Inoperative TASK 21-00-00-040-825			940	ARO ALL
MMEL 21-27-7 (DDG) Restoration - Forward Cargo Heat Valve Inoperative TASK 21-00-00-040-826			944	ARO ALL
MMEL 21-27-9 (DDG) Preparation - SATCOM Backup Cooling Fan Inoperative TASK 21-00-00-040-829			945	ARO ALL
MMEL 21-27-9 (DDG) Restoration - SATCOM Backup Cooling Fan Inoperative TASK 21-00-00-040-830			947	ARO ALL
MMEL 21-27-10 (DDG) Preparation - In-Flight Entertainment System (IFES) Equipment Cooling Fan Inoperative TASK 21-00-00-040-880			949	ARO ALL
MMEL 21-27-10 (DDG) Restoration - In-Flight Entertainment System (IFES) Equipment Cooling Fan Inoperative TASK 21-00-00-040-881			950	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-27-11 (DDG) Preparation - In-Flight Entertainment System (IFES) Equipment Cooling Smoke Detector Inoperative TASK 21-00-00-040-882			952	ARO ALL
MMEL 21-27-11 (DDG) Restoration - In-Flight Entertainment System (IFES) Equipment Cooling Smoke Detector Inoperative TASK 21-00-00-040-883			953	ARO ALL
MMEL 21-27-13 (DDG) Preparation - Forward Cargo Air Conditioning Equipment Cooling Divert Valve Inoperative TASK 21-00-00-040-897			955	ARO ALL
MMEL 21-27-13 (DDG) Restoration - Forward Cargo Air Conditioning Equipment Cooling Divert Valve Inoperative TASK 21-00-00-440-834			956	ARO ALL
MMEL 21-27-14 (DDG) Preparation - Forward Cargo Air Conditioning Equipment Cooling Inboard Valve Inoperative TASK 21-00-00-040-898			958	ARO ALL
MMEL 21-27-14 (DDG) Restoration - Forward Cargo Air Conditioning Equipment Cooling Inboard Valve Inoperative TASK 21-00-00-440-835			960	ARO ALL
MMEL 21-28-1 (DDG) Preparation - Forward Cargo Air Conditioning Shutoff Valve Inoperative TASK 21-00-00-040-872			961	ARO ALL
MMEL 21-28-1 (DDG) Restoration - Forward Cargo Air Conditioning Shutoff Valve Inoperative TASK 21-00-00-440-825			962	ARO ALL
MMEL 21-31-1-1A (DDG) Preparation - Auto Cabin Pressure Controls (L and R) - One Control Inoperative TASK 21-00-00-040-831			963	ARO ALL
MMEL 21-31-1-1A (DDG) Restoration - Auto Cabin Pressure Controls (L and R) - One Control Inoperative TASK 21-00-00-440-801			965	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-31-1-1B (DDG) Preparation - Auto Cabin Pressure Controls (L and R) - One Outflow Valve Deactivated/Manual Control Operates on Other Valve TASK 21-00-00-040-942			966	ARO ALL
MMEL 21-31-1-1B (DDG) Restoration - Auto Cabin Pressure Controls (L and R) - One Outflow Valve Deactivated/Manual Control Operates on Other Valve TASK 21-00-00-440-872			967	ARO ALL
MMEL 21-31-1-3 (DDG) Preparation - Auto Cabin Pressure controls (L and R) - Both Controls Inoperative TASK 21-00-00-040-832			967	ARO ALL
MMEL 21-31-1-3 (DDG) Restoration - Auto Cabin Pressure Controls (L and R) - Both Controls Inoperative TASK 21-00-00-440-802			968	ARO ALL
MMEL 21-31-2-1 (DDG) Preparation - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - One Control Inoperative TASK 21-00-00-040-864			969	ARO ALL
MMEL 21-31-2-1 (DDG) Restoration - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - One Control Inoperative TASK 21-00-00-440-823			982	ARO ALL
MMEL 21-31-2-3 (DDG) Preparation - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - Both Controls Inoperative TASK 21-00-00-040-834			983	ARO ALL
MMEL 21-31-2-3 (DDG) Restoration - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - Both Controls Inoperative TASK 21-00-00-440-804			983	ARO ALL
MMEL 21-31-3-2 (DDG) Preparation - Outflow Valves (FWD and AFT) - One Valve Inoperative TASK 21-00-00-040-939			984	ARO ALL
MMEL 21-31-3-2 (DDG) Restoration - Outflow Valves (FWD and AFT) - One Valve Inoperative TASK 21-00-00-440-869			996	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-31-3-4 (DDG) Preparation - Outflow Valves (FWD and AFT) - Both Valves Inoperative TASK 21-00-00-040-836			997	ARO ALL
MMEL 21-31-3-4 (DDG) Restoration - Outflow Valves (FWD and AFT) - Both Valves Inoperative TASK 21-00-00-440-806			997	ARO ALL
MMEL 21-31-5 (DDG) Preparation - Cabin Rate-of-Climb Indication Inoperative TASK 21-00-00-040-837			998	ARO ALL
MMEL 21-31-5 (DDG) Restoration - Cabin Rate-of-Climb Indication Inoperative TASK 21-00-00-440-807			998.1	ARO ALL
MMEL 21-31-6 (DDG) Preparation - Cabin Differential Pressure Indication Inoperative TASK 21-00-00-040-838			998.2	ARO ALL
MMEL 21-31-6 (DDG) Restoration - Cabin Differential Pressure Indication Inoperative TASK 21-00-00-440-808			998.2	ARO ALL
MMEL 21-31-7 (DDG) Preparation - Cabin Altitude Indication Inoperative TASK 21-00-00-040-839			998.3	ARO ALL
MMEL 21-31-7 (DDG) Restoration - Cabin Altitude Indication Inoperative TASK 21-00-00-440-809			998.3	ARO ALL
MMEL 21-32-1A (DDG) Preparation - Positive Pressure Relief Valves - One Valve Inoperative TASK 21-00-00-040-841			998.4	ARO ALL
MMEL 21-32-1A (DDG) Restoration - Positive Pressure Relief Valves - One Valve Inoperative TASK 21-00-00-440-811			998.7	ARO ALL
MMEL 21-32-1B (DDG) Preparation - Positive Pressure Relief Valves - Both Valves Inoperative TASK 21-00-00-040-842			998.8	ARO ALL
MMEL 21-32-1B (DDG) Restoration - Positive Pressure Relief Valves - Both Valves Inoperative TASK 21-00-00-440-812			998.8	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-44-1 (DDG) Preparation - Aft Cargo Heat Valves Inoperative TASK 21-00-00-040-843			998.9	ARO ALL
MMEL 21-44-1 (DDG) Restoration - Aft Cargo Heat Valves Inoperative TASK 21-00-00-040-844			998.14	ARO ALL
MMEL 21-44-3 (DDG) Preparation - Bulk Cargo Heat Valves Inoperative TASK 21-00-00-040-845			998.15	ARO ALL
MMEL 21-44-3 (DDG) Restoration - Bulk Cargo Heat Valves Inoperative TASK 21-00-00-040-846			998.17	ARO ALL
MMEL 21-45-1 (DDG) Preparation - Flight Deck Foot Heaters Inoperative TASK 21-00-00-040-868			998.18	ARO ALL
MMEL 21-45-1 (DDG) Restoration - Flight Deck Foot Heaters Inoperative TASK 21-00-00-040-869			998.19	ARO ALL
MMEL 21-45-2 (DDG) Preparation - Flight Deck Shoulder Heaters Inoperative TASK 21-00-00-040-870			998.21	ARO ALL
MMEL 21-45-2 (DDG) Restoration - Flight Deck Shoulder Heaters Inoperative TASK 21-00-00-040-871			998.22	ARO ALL
MMEL 21-51-1 (DDG) Preparation - Air Conditioning Packs Inoperative TASK 21-00-00-040-847			998.23	ARO ALL
MMEL 21-51-1 (DDG) Restoration - Air Conditioning Packs Inoperative TASK 21-00-00-040-848			998.24	ARO ALL
MMEL 21-51-2 (DDG) Preparation - Pack Flow Control/Shutoff Valves (FCVs) Inoperative TASK 21-00-00-040-849			998.24	ARO ALL
MMEL 21-51-2 (DDG) Restoration - Pack Flow Control/Shutoff Valves (FCV) Inoperative TASK 21-00-00-440-813			998.32	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-52-1 (DDG) Preparation - Air Cycle Machines (ACMs) Inoperative TASK 21-00-00-040-850			998.34	ARO ALL
MMEL 21-52-1 (DDG) Restoration - Air Cycle Machines (ACMs) Inoperative TASK 21-00-00-440-814			998.40	ARO ALL
MMEL 21-52-2 (DDG) Preparation - Economy Cooling Valves Inoperative TASK 21-00-00-040-851			998.42	ARO ALL
MMEL 21-52-2 (DDG) Restoration - Economy Cooling Valves Inoperative TASK 21-00-00-440-815			998.48	ARO ALL
MMEL 21-52-3 (DDG) Preparation - Compressor Discharge Temperature Sensing Systems Inoperative TASK 21-00-00-040-852			998.49	ARO ALL
MMEL 21-52-3 (DDG) Restoration - Compressor Discharge Temperature Sensing Systems Inoperative TASK 21-00-00-440-816			998.50	ARO ALL
MMEL 21-52-4 (DDG) Preparation - Pack Outlet Temperature Sensing Systems Inoperative TASK 21-00-00-040-853			998.51	ARO ALL
MMEL 21-52-4 (DDG) Restoration - Pack Outlet Temperature Sensing Systems Inoperative TASK 21-00-00-440-817			998.51	ARO ALL
MMEL 21-52-5A (DDG) Preparation - Ram Air Inlet Door Systems Inoperative (Pack Remains Operative) TASK 21-00-00-040-854			998.52	ARO ALL
MMEL 21-52-5A (DDG) Restoration - Ram Air Inlet Door Systems Inoperative (Pack Remains Operative) TASK 21-00-00-440-818			998.58	ARO ALL
MMEL 21-52-5B (DDG) Preparation - Ram Air Inlet Door Systems Inoperative (Pack Made Inoperative) TASK 21-00-00-040-885			998.61	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-52-5B (DDG) Restoration - Ram Air Inlet Door Systems Inoperative (Pack Made Inoperative) TASK 21-00-00-440-832			998.70	ARO ALL
MMEL 21-52-6 (DDG) Preparation - Ram Air Exit Door Systems Inoperative TASK 21-00-00-040-855			998.75	ARO ALL
MMEL 21-52-6 (DDG) Restoration - Ram Air Exit Door Systems Inoperative TASK 21-00-00-440-819			998.80	ARO ALL
MMEL 21-52-7 (DDG) Preparation - Condenser Inlet Temperature Sensing Systems Inoperative TASK 21-00-00-040-856			998.83	ARO ALL
MMEL 21-52-7 (DDG) Restoration - Condenser Inlet Temperature Sensing Systems Inoperative TASK 21-00-00-440-820			998.88	ARO ALL
MMEL 21-61-1 (DDG) Preparation - Cabin Temperature Controllers (CTC) Inoperative TASK 21-00-00-040-857			998.89	ARO ALL
MMEL 21-61-1 (DDG) Restoration - Cabin Temperature Controllers (CTC) Inoperative TASK 21-00-00-040-858			998.91	ARO ALL
MMEL 21-61-2 (DDG) Preparation - Flight Deck Zone Temperature Control System Inoperative TASK 21-00-00-040-859			998.92	ARO ALL
MMEL 21-61-2 (DDG) Restoration - Flight Deck Zone Temperature Control System Inoperative TASK 21-00-00-040-860			998.97	ARO ALL
MMEL 21-61-3 (DDG) Preparation - Cabin Zone Temperature Control System Inoperative TASK 21-00-00-040-861			998.98	ARO ALL
MMEL 21-61-3 (DDG) Restoration - Cabin Zone Temperature Control System Inoperative TASK 21-00-00-040-862			998.103	ARO ALL
MMEL 21-61-05 (DDG) Preparation - Forward Cargo Air Conditioning Duct Temperature Sensing System Inoperative TASK 21-00-00-040-934			998.105	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-61-05 (DDG) Restoration - Forward Cargo Air Conditioning Duct Temperature Sensing System Inoperative TASK 21-00-00-440-864			998.106	ARO ALL
MMEL 21-61-7 (DDG) Preparation - Forward Cargo Air Conditioning Trim Air Valve Inoperative TASK 21-00-00-040-899			998.106	ARO ALL
MMEL 21-61-7 (DDG) Restoration - Forward Cargo Air Conditioning Trim Air Valve Inoperative TASK 21-00-00-440-836			998.108	ARO ALL
MMEL 21-61-8 (DDG) Preparation - Forward Cargo Air Conditioning Flight Deck Control Inoperative TASK 21-00-00-040-900			998.109	ARO ALL
MMEL 21-61-8 (DDG) Restoration - Forward Cargo Air Conditioning Flight Deck Control Inoperative TASK 21-00-00-440-837			998.111	ARO ALL
MMEL 21-62-2 (DDG) Preparation - Trim Air Pressure Regulating/Shutoff Valves (PRSOVs) Inoperative TASK 21-00-00-040-863			998.112	ARO ALL
MMEL 21-62-2 (DDG) Restoration - Trim air Pressure Regulating/Shutoff Valves (PRSOVs) Inoperative TASK 21-00-00-440-821			998.117	ARO ALL
AIR CONDITIONING SYSTEM OIL CONTAMINATION REMOVAL - MAINTENANCE PRACTICES	21-00-01		201	ARO ALL
Oil Contamination Removal from Air Conditioning and Pneumatic Systems TASK 21-00-01-100-801			201	ARO ALL
ECS MISCELLANEOUS CARD (ECSMC) - MAINTENANCE PRACTICES	21-00-10		201	ARO ALL
ECS Miscellaneous Card (ECSMC) Software Configuration Check TASK 21-00-10-400-803			201	ARO ALL
ECS Miscellaneous Cards (ECSMC) Software Installation TASK 21-00-10-400-802			202	ARO ALL

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ECS MISCELLANEOUS CARDS (ECSMC) - REMOVAL/INSTALLATION	21-00-10		401	ARO ALL
ECS Miscellaneous Card (ECSMC) Removal TASK 21-00-10-000-801			401	ARO ALL
ECS Miscellaneous Card (ECSMC) Installation TASK 21-00-10-400-801			403	ARO ALL
AIR SUPPLY FLOW CONTROL ORIFICE - REMOVAL/INSTALLATION	21-20-01		401	ARO ALL
Flow Control Orifice Removal TASK 21-20-01-000-801			401	ARO ALL
Flow Control Orifice Installation TASK 21-20-01-400-801			405	ARO ALL
AIR SUPPLY FLOW CONTROL ORIFICE - INSPECTION/CHECK	21-20-01		601	ARO ALL
Air Supply Flow Control Orifice - Inspection/Check TASK 21-20-01-200-801			601	ARO ALL
AIR CONDITIONING SYSTEM DUCTS - REPAIRS	21-20-02		801	ARO ALL
Taped Joint Repair - Fiberglass/Kevlar Duct TASK 21-20-02-330-801			802	ARO ALL
External Patch - Fiberglass/Kevlar Duct TASK 21-20-02-330-802			808	ARO ALL
Structural Repair - Fiberglass/Kevlar Duct TASK 21-20-02-330-803			810	ARO ALL
Taped Joint Repair - Polyurethane Foam Duct TASK 21-20-02-330-804			813	ARO ALL
Duct End Repair - Polyurethane Foam Duct TASK 21-20-02-330-805			818	ARO ALL
External Patch - Polyurethane Foam Duct TASK 21-20-02-330-806			820	ARO ALL
Structural Repair - Polyurethane Foam Duct TASK 21-20-02-330-807			823	ARO ALL
Inner Lining Repair - Polyurethane Foam Duct TASK 21-20-02-330-808			826	ARO ALL

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Duct Section Replacement - Polyurethane Foam Duct TASK 21-20-02-330-809			828	ARO ALL
Tape Replacement - Foam Wrapped Insulated Duct TASK 21-20-02-330-810			830	ARO ALL
Insulation Repair - Foam Wrapped Insulated Duct TASK 21-20-02-330-811			835	ARO ALL
Insulation Replacement - Foam Wrapped Insulated Duct TASK 21-20-02-330-812			837	ARO ALL
Tape Replacement - Fiberglass Insulated Duct TASK 21-20-02-330-813			839	ARO ALL
Insulation and Covering Repair - Fiberglass Insulated Duct TASK 21-20-02-330-814			842	ARO ALL
Insulation and Covering Replacement - Fiberglass Insulated Duct TASK 21-20-02-330-815			843	ARO ALL
External Patch - Reinforced Thermoplastic Laminate Duct TASK 21-20-02-330-816			843	ARO ALL
Structural Repair - Reinforced Thermoplastic Laminate Duct TASK 21-20-02-330-817			847	ARO ALL
Duct End Repair - Reinforced Thermoplastic Laminate Duct TASK 21-20-02-330-818			849	ARO ALL
MAIN AIR DISTRIBUTION DUCT ICE SCREEN - REMOVAL/INSTALLATION	21-20-03	2	401	ARO ALL
Mix Bay Ice Screen Removal TASK 21-20-03-000-807-002		2	401	ARO ALL
Mix Bay Ice Screen Installation TASK 21-20-03-400-806-002		2	406	ARO ALL
Mix Manifold Ice Screen Removal TASK 21-20-03-000-808-002		2	407	ARO ALL

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Mix Manifold Ice Screen Installation TASK 21-20-03-400-807-002		2	410	ARO ALL
MAIN AIR DISTRIBUTION DUCT ICE SCREEN - CLEANING/PAINTING	21-20-03		701	ARO ALL
Main Air Distribution Duct Ice Screen Cleaning TASK 21-20-03-000-801			701	ARO ALL
MIX MANIFOLD - REMOVAL/INSTALLATION	21-20-04		401	ARO ALL
Mix Manifold Removal TASK 21-20-04-000-801			401	ARO ALL
Mix Manifold Installation TASK 21-20-04-400-801			412	ARO ALL
GROUND CONDITIONED AIR CONNECTOR AND CHECK VALVE DUCT ASSEMBLY - REMOVAL/INSTALLATION	21-21-01		401	ARO ALL
Ground Conditioned Air Connector Removal TASK 21-21-01-000-801			401	ARO ALL
Ground Conditioned Air Connector Installation TASK 21-21-01-400-801			406	ARO ALL
Check Valve Duct Assembly Removal TASK 21-21-01-000-802			407	ARO ALL
Check Valve Duct Assembly Installation TASK 21-21-01-400-802			408	ARO ALL
OVERHEAD DISTRIBUTION DUCT - REMOVAL/INSTALLATION	21-21-02		401	ARO ALL
Overhead Distribution Duct Removal TASK 21-21-02-000-801			401	ARO ALL
Overhead Distribution Duct Installation TASK 21-21-02-400-801			405	ARO ALL
FLIGHT DECK AIR DISTRIBUTION MUFFLERS - REMOVAL/INSTALLATION	21-22-01		401	ARO ALL
Flight Deck Air Distribution Muffler Removal TASK 21-22-01-000-801			401	ARO ALL
Flight Deck Air Distribution Muffler Installation TASK 21-22-01-400-801			404	ARO ALL

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FLIGHT DECK GASPER AIR OUTLET - REMOVAL/INSTALLATION	21-22-02		401	ARO ALL
Flight Deck Gasper Air Outlet Removal TASK 21-22-02-000-801			401	ARO ALL
Flight Deck Gasper Air Outlet Installation TASK 21-22-02-400-801			403	ARO ALL
PASSENGER CABIN EQUIPMENT GASPER AIR OUTLETS - REMOVAL/INSTALLATION	21-23-01		401	ARO ALL
Passenger Cabin Equipment Gasper Air Outlets Removal TASK 21-23-01-000-801			401	ARO ALL
Passenger Cabin Equipment Gasper Air Outlets Installation TASK 21-23-01-400-801			403	ARO ALL
RETURN AIR GRILLS (DECOMPRESSION VENTS) - MAINTENANCE PRACTICES	21-23-05	1	201	ARO ALL
Return Air Grill Removal TASK 21-23-05-000-802		1	201	ARO ALL
Return Air Grill Baffle Removal TASK 21-23-05-000-803		1	204	ARO ALL
Return Air Grill and Baffle Cleaning TASK 21-23-05-400-802		1	206	ARO ALL
Return Air Grill Baffle Installation TASK 21-23-05-400-803		1	207	ARO ALL
Return Air Grill Installation TASK 21-23-05-400-804		1	207	ARO ALL
Return Air Grill Baffle Inspection TASK 21-23-05-200-802		1	208	ARO ALL
RECIRCULATION SYSTEM - ADJUSTMENT/TEST	21-25-00		501	ARO ALL
Recirculation Fans - Operational Test TASK 21-25-00-710-801			501	ARO ALL
Recirculation Fans Switches - Operational Test TASK 21-25-00-740-801			502	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
UPPER RECIRCULATION FANS - MAINTENANCE PRACTICES	21-25-01		201	ARO ALL
Upper Recirculation Fans - Deactivation TASK 21-25-01-040-801			201	ARO ALL
Upper Recirculation Fans - Activation TASK 21-25-01-440-801			209	ARO ALL
UPPER RECIRCULATION FANS - REMOVAL/INSTALLATION	21-25-01		401	ARO ALL
Forward Upper Recirculation Fan Removal TASK 21-25-01-000-801			401	ARO ALL
Forward Upper Recirculation Fan Installation TASK 21-25-01-400-801			406	ARO ALL
Forward Upper Recirculation Fan Vibration Monitor Removal TASK 21-25-01-000-804			408	ARO 001-016 POST SB 777-21-0189
Forward Upper Recirculation Fan Vibration Monitor Installation TASK 21-25-01-400-804			411	ARO 001-016 POST SB 777-21-0189
Aft Upper Recirculation Fan Removal TASK 21-25-01-000-802			413	ARO ALL
Aft Upper Recirculation Fan Installation TASK 21-25-01-400-802			417	ARO ALL
Aft Upper Recirculation Fan Vibration Monitor Removal TASK 21-25-01-000-803			419	ARO 001-016 POST SB 777-21-0189
Aft Upper Recirculation Fan Vibration Monitor Installation TASK 21-25-01-400-803			422	ARO 001-016 POST SB 777-21-0189
UPPER RECIRCULATION AIR FILTERS - REMOVAL/INSTALLATION	21-25-02		401	ARO ALL
Upper Recirculation Air Filters Removal TASK 21-25-02-000-801			401	ARO ALL
Upper Recirculation Air Filters Installation TASK 21-25-02-400-801			409	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
LOWER RECIRCULATION FANS - MAINTENANCE PRACTICES	21-25-07		201	ARO ALL
Lower Recirculation Fans - Deactivation TASK 21-25-07-040-801			201	ARO ALL
Lower Recirculation Fans - Activation TASK 21-25-07-440-801			207	ARO ALL
LOWER RECIRCULATION FANS - REMOVAL/INSTALLATION	21-25-07		401	ARO ALL
Lower Recirculation Fan Removal TASK 21-25-07-000-801			401	ARO ALL
Lower Recirculation Fan Installation TASK 21-25-07-400-801			407	ARO ALL
Lower Recirculation Fan Vibration Monitor Removal TASK 21-25-07-000-802			409	ARO 001-016 POST SB 777-21-0189
Lower Recirculation Fan Vibration Monitor Installation TASK 21-25-07-400-803			413	ARO 001-016 POST SB 777-21-0189
LOWER RECIRCULATION FANS - INSPECTION/CHECK	21-25-07		601	ARO ALL
Lower Recirculation Fan Check Valve Inspection TASK 21-25-07-200-801			601	ARO ALL
LOWER RECIRCULATION AIR FILTERS - REMOVAL/INSTALLATION	21-25-08		401	ARO ALL
Lower Recirculation Air Filters Removal TASK 21-25-08-000-801			401	ARO ALL
Lower Recirculation Air Filters Installation TASK 21-25-08-400-801			406	ARO ALL
VENTILATION SYSTEM - ADJUSTMENT/TEST	21-26-00		501	ARO ALL
Lavatory/Galley Ventilation Fan - System Test TASK 21-26-00-740-801			501	ARO ALL
Bulk Cargo Ventilation Fan - Operational Test TASK 21-26-00-740-802			502	ARO ALL
Chiller Exhaust System - System Test TASK 21-26-00-740-805			503	ARO ALL; AIRPLANES WITH THE CHILLER EXHAUST INSTALLED

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Forward Cargo Air Conditioning Exhaust Fan - System Test TASK 21-26-00-740-804			504	ARO ALL
LAVATORY/GALLEY VENTILATION FANS - REMOVAL/INSTALLATION	21-26-01		401	ARO ALL
Lavatory/Galley Ventilation Fan Removal TASK 21-26-01-000-801			401	ARO ALL
Lavatory/Galley Ventilation Fan Installation TASK 21-26-01-400-801			405	ARO ALL
LAVATORY/GALLEY VENTILATION INLET DUCT AND SCREEN - REMOVAL/INSTALLATION	21-26-02		401	ARO ALL
Lavatory/Galley Ventilation Inlet Duct and Screen Removal TASK 21-26-02-000-801			401	ARO ALL
Lavatory/Galley Ventilation Inlet Duct and Screen Installation TASK 21-26-02-400-801			405	ARO ALL
LAVATORY/GALLEY VENTILATION INLET DUCT AND SCREEN - CLEANING/PAINTING	21-26-02		701	ARO ALL
Lavatory/Galley Ventilation Inlet Duct and Screen Cleaning TASK 21-26-02-000-802			701	ARO ALL
GALLEY VENTILATION FILTER - REMOVAL/INSTALLATION	21-26-03		401	ARO ALL
Galley Ventilation Filter Removal TASK 21-26-03-000-801			401	ARO ALL
Galley Ventilation Filter Installation TASK 21-26-03-400-801			404	ARO ALL
BULK CARGO VENTILATION FAN - MAINTENANCE PRACTICES	21-26-06		201	ARO ALL
Bulk Cargo Ventilation Fan - Deactivation TASK 21-26-06-040-801			201	ARO ALL
Bulk Cargo Ventilation Fan - Activation TASK 21-26-06-440-801			206	ARO ALL

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BULK CARGO VENTILATION FAN - REMOVAL/INSTALLATION	21-26-06		401	ARO ALL
Bulk Cargo Ventilation Fan Removal TASK 21-26-06-000-801			401	ARO ALL
Bulk Cargo Ventilation Fan Installation TASK 21-26-06-400-801			405	ARO ALL
CHILLER BOOST FAN - MAINTENANCE PRACTICES	21-26-11		201	ARO ALL
Chiller Boost Fan - Deactivation TASK 21-26-11-040-801			201	ARO ALL
Chiller Boost Fan - Activation TASK 21-26-11-440-801			205	ARO ALL
CHILLER BOOST FAN - REMOVAL/INSTALLATION	21-26-11		401	ARO ALL
Chiller Boost Fan Removal TASK 21-26-11-000-801			401	ARO ALL
Chiller Boost Fan Installation TASK 21-26-11-400-801			406	ARO ALL
Chiller Boost Fan Vibration Monitor Removal TASK 21-26-11-000-802			408	ARO 001-016 POST SB 777-21-0189
Chiller Boost Fan Vibration Monitor Installation TASK 21-26-11-400-802			411	ARO 001-016 POST SB 777-21-0189
CHILLER BOOST FAN - ADJUSTMENT/TEST	21-26-11		501	ARO ALL
Chiller Exhaust System - Operational Test TASK 21-26-11-740-801			501	ARO ALL
FORWARD CARGO AIR CONDITIONING EXHAUST FAN - MAINTENANCE PRACTICES	21-26-12		201	ARO ALL
Forward Cargo Air Conditioning Exhaust Fan - Deactivation TASK 21-26-12-040-801			201	ARO ALL
Forward Cargo Air Conditioning Exhaust Fan - Activation TASK 21-26-12-440-801			204	ARO ALL

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FORWARD CARGO AIR CONDITIONING EXHAUST FAN - REMOVAL/INSTALLATION	21-26-12		401	ARO ALL
Forward Cargo Air Conditioning (FCAC) Exhaust Fan Removal TASK 21-26-12-000-801			401	ARO ALL
Forward Cargo Air Conditioning (FCAC) Exhaust Fan Installation TASK 21-26-12-400-801			405	ARO ALL
EQUIPMENT COOLING SYSTEM - ADJUSTMENT/TEST	21-27-00		501	ARO ALL
Equipment Cooling System - System Test TASK 21-27-00-700-801			501	ARO ALL
Equipment Cooling Switch - Operational Test TASK 21-27-00-700-802			502	ARO ALL
IFE Equipment Cooling System - System Test TASK 21-27-00-700-803			503	ARO ALL
EQUIPMENT COOLING SYSTEM - INSPECTION/CHECK	21-27-00		601	ARO ALL
EQUIPMENT COOLING OVERRIDE DUCT INSPECTION TASK 21-27-00-210-801			601	ARO ALL
EQUIPMENT COOLING CONTROLLERS - MAINTENANCE PRACTICES	21-27-01		201	ARO ALL
Equipment Cooling Controllers - Deactivation TASK 21-27-01-040-801			201	ARO ALL
Equipment Cooling Controllers - Activation TASK 21-27-01-440-801			205	ARO ALL
EQUIPMENT COOLING CONTROLLERS - REMOVAL/INSTALLATION	21-27-01		401	ARO ALL
Equipment Cooling Controllers Removal TASK 21-27-01-000-801			401	ARO ALL
Equipment Cooling Controllers Installation TASK 21-27-01-400-801			405	ARO ALL

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EQUIPMENT COOLING AIR FILTER - REMOVAL/INSTALLATION	21-27-02		401	ARO ALL
Equipment Cooling Air Filter Removal TASK 21-27-02-000-801			401	ARO ALL
Equipment Cooling Air Filter Installation TASK 21-27-02-400-801			405	ARO ALL
EQUIPMENT COOLING AIR FILTER - CLEANING/PAINTING	21-27-02		701	ARO ALL
Equipment Cooling Air Filter Cleaning TASK 21-27-02-100-801			701	ARO ALL
EQUIPMENT COOLING SUPPLY FAN - MAINTENANCE PRACTICES	21-27-03		201	ARO ALL
Equipment Cooling Supply Fan - Deactivation TASK 21-27-03-040-801			201	ARO ALL
Equipment Cooling Supply Fan - Activation TASK 21-27-03-440-801			204	ARO ALL
EQUIPMENT COOLING SUPPLY FAN - REMOVAL/INSTALLATION	21-27-03		401	ARO ALL
Equipment Cooling Supply Fan Removal TASK 21-27-03-000-801			401	ARO ALL
Equipment Cooling Supply Fan Installation TASK 21-27-03-400-801			405	ARO ALL
EQUIPMENT COOLING OVERRIDE VALVE - REMOVAL/INSTALLATION	21-27-04		401	ARO ALL
Equipment Cooling Override Valve Removal TASK 21-27-04-000-801			401	ARO ALL
Equipment Cooling Override Valve Installation TASK 21-27-04-400-801			405	ARO ALL
EQUIPMENT COOLING DUCT - REMOVAL/INSTALLATION	21-27-05		401	ARO ALL
Equipment Cooling Duct Removal TASK 21-27-05-000-801			401	ARO ALL
Equipment Cooling Duct Installation TASK 21-27-05-400-801			408	ARO ALL

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CONVERTER SUPPLEMENTAL COOLING CHECK VALVE (VSCF) - REMOVAL/INSTALLATION	21-27-06		401	ARO ALL
Converter Supplemental Cooling Check Valve (VSCF) Removal TASK 21-27-06-000-801			401	ARO ALL
Converter Supplemental Cooling Check Valve (VSCF) Installation TASK 21-27-06-400-801			403	ARO ALL
EQUIPMENT COOLING LOW FLOW SENSORS - REMOVAL/INSTALLATION	21-27-07		401	ARO ALL
Equipment Cooling Low Flow Sensors Removal TASK 21-27-07-000-801			401	ARO ALL
Equipment Cooling Low Flow Sensors Installation TASK 21-27-07-400-801			407	ARO ALL
EQUIPMENT COOLING DUCT PRESSURE SENSORS - MAINTENANCE PRACTICES	21-27-08		201	ARO ALL
Equipment Cooling Duct Pressure Sensors Check TASK 21-27-08-740-801			201	ARO ALL
EQUIPMENT COOLING DUCT PRESSURE SENSORS - REMOVAL/INSTALLATION	21-27-08		401	ARO ALL
Equipment Cooling Duct Pressure Sensors Removal TASK 21-27-08-000-801			401	ARO ALL
Equipment Cooling Duct Pressure Sensors Installation TASK 21-27-08-400-801			406	ARO ALL
EQUIPMENT COOLING VENT FAN - MAINTENANCE PRACTICES	21-27-20		201	ARO ALL
Equipment Cooling Vent Fan - Deactivation TASK 21-27-20-040-801			201	ARO ALL
Equipment Cooling Vent Fan - Activation TASK 21-27-20-440-801			204	ARO ALL
EQUIPMENT COOLING VENT FAN - REMOVAL/INSTALLATION	21-27-20		401	ARO ALL
Equipment Cooling Vent Fan Removal TASK 21-27-20-000-801			401	ARO ALL

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Equipment Cooling Vent Fan Installation TASK 21-27-20-400-801			407	ARO ALL
EQUIPMENT COOLING VENT VALVE - REMOVAL/INSTALLATION	21-27-21		401	ARO ALL
Equipment Cooling Vent Valve Removal TASK 21-27-21-000-801			401	ARO ALL
Equipmemt Cooling Vent Valve Installation TASK 21-27-21-400-801			405	ARO ALL
FORWARD CARGO HEAT VALVE - REMOVAL/INSTALLATION	21-27-22	2	401	ARO ALL
Forward Cargo Heat Valve Removal TASK 21-27-22-000-802-002		2	401	ARO ALL
Forward Cargo Heat Valve Installation TASK 21-27-22-400-802-002		2	405	ARO ALL
EQUIPMENT COOLING INBOARD VALVE - REMOVAL/INSTALLATION	21-27-23		401	ARO ALL
Equipment Cooling Inboard Valve Removal TASK 21-27-23-000-801			401	ARO ALL
Equipment Cooling Inboard Valve Installation TASK 21-27-23-400-801			405	ARO ALL
EQUIPMENT COOLING DIVERT VALVE - REMOVAL/INSTALLATION	21-27-25		401	ARO ALL
Equipment Cooling Divert Valve Removal TASK 21-27-25-000-801			401	ARO ALL
Equipmemt Cooling Divert Valve Installation TASK 21-27-25-400-801			405	ARO ALL
IFE COOLING CHECK VALVE - REMOVAL/INSTALLATION	21-27-28		401	ARO ALL
In-Flight Entertainment (IFE) Cooling Check Valve Removal TASK 21-27-28-000-801			401	ARO ALL
In-Flight Entertainment (IFE) Cooling Check Valve Installation TASK 21-27-28-400-801			405	ARO ALL

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SATCOM BACKUP COOLING FAN - MAINTENANCE PRACTICES	21-27-30		201	ARO ALL
SATCOM Backup Cooling Fan - Deactivation TASK 21-27-30-040-801			201	ARO ALL
SATCOM Backup Cooling Fan - Activation TASK 21-27-30-440-801			206	ARO ALL
SATCOM BACKUP COOLING FAN - REMOVAL/INSTALLATION	21-27-30		401	ARO ALL
SATCOM Backup Cooling Fan Removal - Electronic Equipment Rack, E11 TASK 21-27-30-000-801			401	ARO ALL
SATCOM Backup Cooling Fan Installation - Electronic Equipment Rack, E11 TASK 21-27-30-400-801			404	ARO ALL
SATCOM Backup Cooling Fan Removal - Electronic Equipment Rack, E13 TASK 21-27-30-000-802			405	ARO ALL
SATCOM Backup Cooling Fan Installation - Electronic Equipment Rack, E13 TASK 21-27-30-400-802			408	ARO ALL
SATCOM BACKUP COOLING FAN - INSPECTION/CHECK	21-27-30		601	ARO ALL
SATCOM Backup Cooling Fan Check - Electronic Equipment Rack, E11 TASK 21-27-30-200-801			601	ARO ALL
SATCOM Backup Cooling Fan Check - Electronic Equipment Rack, E13 TASK 21-27-30-200-802			604	ARO ALL
SATCOM BACKUP COOLING CHECK VALVE - REMOVAL/INSTALLATION	21-27-31		401	ARO ALL
SATCOM Backup Cooling Check Valve Removal - Electronic Equipment Rack, E11 TASK 21-27-31-000-801			401	ARO ALL
SATCOM Backup Cooling Check Valve Installation - Electronic Equipment Rack, E11 TASK 21-27-31-400-801			404	ARO ALL

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SATCOM Backup Cooling Check Valve Removal - Electronic Equipment Rack, E13 TASK 21-27-31-000-802			404	ARO ALL
SATCOM Backup Cooling Check Valve Installation - Electronic Equipment Rack, E13 TASK 21-27-31-400-802			408	ARO ALL
IFE AIR SUPPLY FLOW CONTROL ORIFICE - MAINTENANCE PRACTICES	21-27-34		201	ARO ALL
Flow Control Orifice Removal TASK 21-27-34-000-801			201	ARO ALL
Flow Control Orifice Installation TASK 21-27-34-400-801			206	ARO ALL
Flow Control Orifice Cleaning TASK 21-27-34-100-801			207	ARO ALL
IFE AIR SUPPLY FLOW CONTROL ORIFICE - INSPECTION/CHECK	21-27-34		601	ARO ALL
Flow Control Orifice - Inspection/Check TASK 21-27-34-700-801			601	ARO ALL
IFE COOLING FAN - MAINTENANCE PRACTICES	21-27-35		201	ARO ALL
IFE Cooling Fan - Deactivation TASK 21-27-35-040-801			201	ARO ALL
IFE Cooling Fan - Activation TASK 21-27-35-440-801			205	ARO ALL
IFE COOLING FAN - REMOVAL/INSTALLATION	21-27-35		401	ARO ALL
In-Flight Entertainment (IFE) Cooling Fan Removal TASK 21-27-35-000-801			401	ARO ALL
In-Flight Entertainment (IFE) Cooling Fan Installation TASK 21-27-35-400-801			405	ARO ALL
In-Flight Entertainment (IFE) Cooling Fan Vibration Monitor Removal TASK 21-27-35-000-804			407	ARO 001-016 POST SB 777-21-0189
In-Flight Entertainment (IFE) Cooling Fan Vibration Monitor Installation TASK 21-27-35-400-805			410	ARO 001-016 POST SB 777-21-0189

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IFE COOLING AIR FILTER - REMOVAL/INSTALLATION	21-27-36		401	ARO ALL
Purser Work Station/Video Control Center IFE Cooling Air Filter Removal TASK 21-27-36-000-802			401	ARO ALL
Purser Work Station/Video Control Center IFE Cooling Air Filter Installation TASK 21-27-36-400-802			403	ARO ALL
IFE COOLING SMOKE DETECTOR - MAINTENANCE PRACTICES	21-27-53		201	ARO ALL
IFE Cooling Smoke Detector - Deactivation TASK 21-27-53-040-801			201	ARO ALL
IFE Cooling Smoke Detector - Activation TASK 21-27-53-440-801			204	ARO ALL
IFE COOLING SMOKE DETECTOR - REMOVAL/INSTALLATION	21-27-53		401	ARO ALL
In-Flight Entertainment (IFE) Cooling Smoke Detector Removal TASK 21-27-53-000-801			401	ARO ALL
In-Flight Entertainment (IFE) Cooling Smoke Detector Installation TASK 21-27-53-400-801			405	ARO ALL
IFE COOLING SMOKE DETECTOR/ TUBES - CLEANING	21-27-53		701	ARO ALL
In-Flight Entertainment (IFE) Cooling Smoke Detector Cleaning TASK 21-27-53-100-801			701	ARO ALL
In-Flight Entertainment (IFE) Cooling Smoke Detection Tubes Cleaning TASK 21-27-53-100-803			704	ARO ALL
CARGO COMPARTMENT CONDITIONED AIR DISTRIBUTION SYSTEM - ADJUSTMENT/TEST	21-28-00		501	ARO ALL
Forward Cargo Air Conditioning Shutoff Valve - System Test TASK 21-28-00-740-801			501	ARO ALL

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FORWARD CARGO AIR CONDITIONING (FCAC) SHUTOFF VALVE - MAINTENANCE PRACTICES	21-28-01		201	ARO ALL
Forward Cargo Air Conditioning (FCAC) Shutoff Valve - Deactivation TASK 21-28-01-040-801			201	ARO ALL
Forward Cargo Air Conditioning (FCAC) Shutoff Valve - Activation TASK 21-28-01-440-801			206	ARO ALL
FORWARD CARGO AIR CONDITIONING (FCAC) SHUTOFF VALVE - REMOVAL/INSTALLATION	21-28-01		401	ARO ALL
Forward Cargo Air Conditioning (FCAC) Shutoff Valve Removal TASK 21-28-01-000-801			401	ARO ALL
Forward Cargo Air Conditioning (FCAC) Shutoff Valve Installation TASK 21-28-01-400-801			405	ARO ALL
CREW REST AREA AIR DISTRIBUTION SYSTEM GASPER AIR OUTLETS (MAIN DECK FLIGHT CREW REST) - REMOVAL/INSTALLATION	21-29-00	2	401	ARO ALL
Crew Rest Area Gasper Air Outlet - Removal TASK 21-29-00-000-802		2	401	ARO ALL
Crew Rest Area Gasper Air Outlet - Installation TASK 21-29-00-400-802		2	405	ARO ALL
CABIN PRESSURE CONTROL SYSTEM - MAINTENANCE PRACTICES	21-31-00	1	201	ARO ALL
Cabin Pressure Outflow Valve - Deactivation TASK 21-31-00-040-804-001		1	201	ARO ALL
Cabin Pressure Outflow Valve - Activation TASK 21-31-00-440-804-001		1	207	ARO ALL
Preparation For Unpressurized Flight TASK 21-31-00-040-802-001		1	208	ARO ALL
Restoration For Pressurized Flight TASK 21-31-00-440-802-001		1	216	ARO ALL

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CABIN PRESSURE CONTROL SYSTEM - ADJUSTMENT/TEST	21-31-00	1	501	ARO ALL
Operational Check of the Manual Mode Control TASK 21-31-00-700-807-001		1	501	ARO ALL
Operational Check of the Landing Altitude Manual Select Switch TASK 21-31-00-700-805-001		1	503	ARO ALL
Cabin Pressure Control System - System Test TASK 21-31-00-700-806-001		1	504	ARO ALL
OUTFLOW VALVE ASSEMBLY - MAINTENANCE PRACTICES	21-31-03	1	201	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Outflow Valve Assembly Cleaning and Inspection TASK 21-31-03-100-803-001		1	201	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY - MAINTENANCE PRACTICES	21-31-03	2	201	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning and Inspection TASK 21-31-03-100-808-002		2	201	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
OUTFLOW VALVE ASSEMBLY - REMOVAL/INSTALLATION	21-31-03	1	401	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Outflow Valve Assembly Removal TASK 21-31-03-000-806-001		1	402	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Outflow Valve Assembly Installation TASK 21-31-03-400-806-001		1	411	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Valve Control Unit (VCU) Removal TASK 21-31-03-000-807-001		1	415	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Valve Control Unit (VCU) Installation TASK 21-31-03-400-810-001		1	417	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
DC Motor Removal TASK 21-31-03-000-821-001		1	421	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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DC Motor Installation TASK 21-31-03-000-809-001		1	422	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Gearbox Assembly Removal TASK 21-31-03-000-810-001		1	425	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Gearbox Assembly Installation TASK 21-31-03-400-808-001		1	427	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Actuator Assembly Removal TASK 21-31-03-000-822-001		1	431	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Actuator Assembly Installation TASK 21-31-03-400-818-001		1	433	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Outflow Valve Frame Assembly Removal TASK 21-31-03-000-823-001		1	436	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Outflow Valve Frame Assembly Installation TASK 21-31-03-400-819-001		1	444	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY - REMOVAL/INSTALLATION	21-31-03	2	401	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Cabin Pressure Outflow Valve (CPOV) Assembly Removal TASK 21-31-03-000-812-002		2	402	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Cabin Pressure Outflow Valve (CPOV) Assembly Installation TASK 21-31-03-400-811-002		2	409	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Valve Controller Assembly (VCA) Removal TASK 21-31-03-000-813-002		2	411	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Valve Controller Assembly (VCA) Installation TASK 21-31-03-400-812-002		2	416	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Electronic Control Unit (ECU) Removal TASK 21-31-03-000-817-002		2	417	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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Electronic Control Unit (ECU) Installation TASK 21-31-03-400-816-002		2	423	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
DC Auto Motor Removal TASK 21-31-03-000-815-002		2	424	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
DC Auto Motor Installation TASK 21-31-03-400-814-002		2	431	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Rotary Actuator Assembly Removal TASK 21-31-03-000-816-002		2	433	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Rotary Actuator Assembly Installation TASK 21-31-03-400-817-002		2	436	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Cabin Pressure Outflow Valve (CPOV) Frame Assembly Removal TASK 21-31-03-000-824-002		2	436	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Cabin Pressure Outflow Valve (CPOV) Frame Assembly Installation TASK 21-31-03-400-820-002		2	442	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Cabin Pressure Outflow Valve (CPOV) Assembly Installation Test TASK 21-31-03-720-801-002		2	443	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
OUTFLOW VALVE ASSEMBLY - ADJUSTMENT/TEST	21-31-03	1	501	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Outflow Valve Door Adjustment TASK 21-31-03-760-802-001		1	501	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY - ADJUSTMENT/TEST	21-31-03	2	501	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Outflow Valve Door Adjustment TASK 21-31-03-760-803-002		2	501	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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OUTFLOW VALVE ASSEMBLY - INSPECTION/CHECK	21-31-03	1	601	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Outflow Valve Assembly Inspection TASK 21-31-03-200-802-001		1	601	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY - INSPECTION/CHECK	21-31-03	2	601	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Cabin Pressure Outflow Valve (CPOV) Assembly Inspection TASK 21-31-03-200-803-002		2	601	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
OUTFLOW VALVE ASSEMBLY - CLEANING/PAINTING	21-31-03	1	701	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Outflow Valve Assembly Cleaning TASK 21-31-03-100-804-001		1	701	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY - CLEANING/PAINTING	21-31-03	2	701	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning TASK 21-31-03-100-809-002		2	701	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160
OUTFLOW VALVE ASSEMBLY - REPAIRS	21-31-03	1	801	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
Aft Door Assembly Sound Suppression Tape Repair TASK 21-31-03-300-801		1	801	ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420
REMOTE CABIN PRESSURE SENSOR - REMOVAL/INSTALLATION	21-31-07		401	ARO ALL
Remote Cabin Pressure Sensor Removal TASK 21-31-07-000-801			401	ARO ALL
Remote Cabin Pressure Sensor Installation TASK 21-31-07-400-801			404	ARO ALL

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POSITIVE PRESSURE RELIEF VALVE - MAINTENANCE PRACTICES	21-32-01		201	ARO ALL
Positive Pressure Relief Valve Removal TASK 21-32-01-000-801			201	ARO ALL
Positive Pressure Relief Valve Installation TASK 21-32-01-400-801			207	ARO ALL
Positive Pressure Relief Valve - Static System Leak Check TASK 21-32-01-790-801			209	ARO ALL
Positive Pressure Relief Valve Indicator Flag Reset TASK 21-32-01-900-801			213	ARO ALL
POSITIVE PRESSURE RELIEF VALVE - ADJUSTMENT/TEST	21-32-01		501	ARO ALL
Positive Pressure Relief Valve - System Test TASK 21-32-01-700-801			501	ARO ALL
POSITIVE PRESSURE RELIEF VALVE FILTERS - REMOVAL/INSTALLATION	21-32-02		401	ARO ALL
Positive Pressure Relief Valve Filter Removal TASK 21-32-02-000-801			401	ARO ALL
Positive Pressure Relief Valve Filter Installation TASK 21-32-02-400-801			403	ARO ALL
NEGATIVE PRESSURE RELIEF VENT DOOR - MAINTENANCE PRACTICES	21-32-03		201	ARO ALL
Negative Pressure Relief Vent Door Removal TASK 21-32-03-000-801			201	ARO ALL
Negative Pressure Relief Vent Door Installation TASK 21-32-03-400-801			205	ARO ALL
Negative Pressure Relief Vent Adjustment/Test TASK 21-32-03-700-801			206	ARO ALL
POSITIVE PRESSURE RELIEF VALVE REMOTE SENSE PORT - REMOVAL/INSTALLATION	21-32-11		401	ARO ALL
Positive Pressure Relief Valve Remote Sense Port - Removal TASK 21-32-11-000-801			401	ARO ALL

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Positive Pressure Relief Valve Remote Sense Port - Installation TASK 21-32-11-400-801			404	ARO ALL
CREW REST AREA HEATING SYSTEM - ADJUSTMENT/TEST	21-41-00	1	501	ARO ALL
Flight Crew Rest Heater - Operational Test TASK 21-41-00-710-802-001		1	501	ARO ALL
FLIGHT CREW REST HEATER - MAINTENANCE PRACTICES	21-41-03		201	ARO ALL
Flight Crew Rest (FCR) Heater - Deactivation TASK 21-41-03-040-801			201	ARO ALL
Flight Crew Rest (FCR) Heater - Activation TASK 21-41-03-440-801			205	ARO ALL
FLIGHT CREW REST HEATER - REMOVAL/INSTALLATION	21-41-03		401	ARO ALL
Flight Crew Rest (FCR) Heater Removal TASK 21-41-03-000-801			401	ARO ALL
Flight Crew Rest (FCR) Heater Installation TASK 21-41-03-400-801			404	ARO ALL
FLIGHT CREW REST HEATER CONTROL - REMOVAL/INSTALLATION	21-41-04		401	ARO ALL
Flight Crew Rest (FCR) Heater Control Removal TASK 21-41-04-000-801			401	ARO ALL
Flight Crew Rest (FCR) Heater Control Installation TASK 21-41-04-400-801			404	ARO ALL
FORWARD CARGO HEATING SYSTEM - MAINTENANCE PRACTICES	21-43-00		201	ARO ALL
Forward Cargo Heating System - Deactivation TASK 21-43-00-040-801			201	ARO ALL
Forward Cargo Heating System - Activation TASK 21-43-00-440-801			205	ARO ALL

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FORWARD CARGO HEATING SYSTEM - ADJUSTMENT/TEST	21-43-00		501	ARO ALL
Forward Cargo Compartment Heating System - System Test TASK 21-43-00-740-801			501	ARO ALL
FORWARD CARGO HEATER - REMOVAL/INSTALLATION	21-43-01		401	ARO ALL
Forward Cargo Heater Removal TASK 21-43-01-000-801			401	ARO ALL
Forward Cargo Heater Installation TASK 21-43-01-400-801			405	ARO ALL
FORWARD CARGO TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-43-02		401	ARO ALL
Forward Cargo Temperature Sensor Removal TASK 21-43-02-000-801			401	ARO ALL
Forward Cargo Temperature Sensor Installation TASK 21-43-02-400-801			405	ARO ALL
AFT AND BULK CARGO COMPARTMENT HEATING SYSTEM - MAINTENANCE PRACTICES	21-44-00		201	ARO ALL
Aft and Bulk Cargo Compartment Heating System - Deactivation TASK 21-44-00-040-801			201	ARO ALL
Aft and Bulk Cargo Compartment Heating System - Activation TASK 21-44-00-440-801			205	ARO ALL
AFT AND BULK CARGO COMPARTMENT HEATING SYSTEM - ADJUSTMENT/TEST	21-44-00		501	ARO ALL
Aft and Bulk Cargo Compartment Heating System - System Test TASK 21-44-00-740-801			501	ARO ALL
Aft and Bulk Cargo Compartment Heat Temperature Selector - Operational Test TASK 21-44-00-710-801			502	ARO ALL
Bulk Cargo Compartment Overheat Switch - Functional Test TASK 21-44-00-710-802			503	ARO ALL

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Aft Cargo Compartment Overheat Switch - Functional Test TASK 21-44-00-710-803			511	ARO ALL
AFT CARGO HEAT SHUTOFF VALVE AND TEMPERATURE CONTROL VALVE - REMOVAL/INSTALLATION	21-44-01		401	ARO ALL
Aft Cargo Heat Shutoff Valve and Temperature Control Valve Removal TASK 21-44-01-000-801			401	ARO ALL
Aft Cargo Heat Shutoff Valve and Temperature Control Valve Installation TASK 21-44-01-000-802			405	ARO ALL
BULK CARGO HEAT SHUTOFF VALVE AND TEMPERATURE CONTROL VALVE - REMOVAL/INSTALLATION	21-44-03		401	ARO ALL
Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Removal TASK 21-44-03-000-801			401	ARO ALL
Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Installation TASK 21-44-03-000-802			406	ARO ALL
AFT CARGO COMPARTMENT TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-44-05		401	ARO ALL
Aft Cargo Compartment Temperature Sensor Removal TASK 21-44-05-000-801			401	ARO ALL
Aft Cargo Compartment Temperature Sensor Installation TASK 21-44-05-400-801			405	ARO ALL
BULK CARGO COMPARTMENT TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-44-06		401	ARO ALL
Bulk Cargo Compartment Temperature Sensor Removal TASK 21-44-06-000-801			401	ARO ALL
Bulk Cargo Compartment Temperature Sensor Installation TASK 21-44-06-400-801			405	ARO ALL

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AFT CARGO HEAT TEMPERATURE SELECTOR - REMOVAL/INSTALLATION	21-44-07		401	ARO ALL
Aft Cargo Heat Temperature Selector Removal TASK 21-44-07-000-801			401	ARO ALL
Aft Cargo Heat Temperature Selector Installation TASK 21-44-07-400-801			404	ARO ALL
BULK CARGO HEAT TEMPERATURE SELECTOR - REMOVAL/INSTALLATION	21-44-08		401	ARO ALL
Bulk Cargo Heat Temperature Selector Removal TASK 21-44-08-000-801			401	ARO ALL
Bulk Cargo Heat Temperature Selector Installation TASK 21-44-08-400-801			404	ARO ALL
CARGO TEMP SELECT MODULE - REMOVAL/INSTALLATION	21-44-09		401	ARO ALL
Cargo Temp Select Module Removal TASK 21-44-09-000-801			401	ARO ALL
Cargo Temp Select Module Installation TASK 21-44-09-400-801			403	ARO ALL
CARGO COMPARTMENT OVERHEAT SWITCH - REMOVAL/INSTALLATION	21-44-10		401	ARO ALL
Aft Cargo Compartment Overheat Switch Removal TASK 21-44-10-000-801			401	ARO ALL
Bulk Cargo Compartment Overheat Switch Removal TASK 21-44-10-000-802			403	ARO ALL
Aft Cargo Compartment Overheat Switch Installation TASK 21-44-10-400-801			405	ARO ALL
Bulk Cargo Compartment Overheat Switch Installation TASK 21-44-10-400-802			405	ARO ALL
CARGO HEAT DUCT - REPAIRS	21-44-11		801	ARO ALL
Repair the Duct Section TASK 21-44-11-200-801			801	ARO ALL

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AFT CARGO HEAT SHROUD - REMOVAL/INSTALLATION	21-44-12		401	ARO ALL
Aft Cargo Heat Shroud Removal TASK 21-44-12-000-801			401	ARO ALL
Aft Cargo Heat Shroud Installation TASK 21-44-12-400-801			404	ARO ALL
SUPPLEMENTAL HEATING SYSTEM - ADJUSTMENT/TEST	21-45-00		501	ARO ALL
Galley Heaters Operational Test TASK 21-45-00-740-801			501	ARO ALL
Captain's and First Officer's Foot Heaters Operational Test TASK 21-45-00-740-802			502	ARO ALL
Captain's and First Officer's Shoulder Heaters Operational Test TASK 21-45-00-740-803			504	ARO ALL
Door Area Heaters System Test TASK 21-45-00-740-804			505	ARO ALL
CAPTAIN'S AND FIRST OFFICER'S FOOT HEATERS - MAINTENANCE PRACTICES	21-45-01		201	ARO ALL
Captain's and First Officer's Foot Heaters - Deactivation TASK 21-45-01-040-801			201	ARO ALL
Captain's and First Officer's Foot Heaters - Activation TASK 21-45-01-440-801			208	ARO ALL
CAPTAIN'S AND FIRST OFFICER'S FOOT HEATERS - REMOVAL/INSTALLATION	21-45-01		401	ARO ALL
Captain's and First Officer's Foot Heater Removal TASK 21-45-01-000-801			401	ARO ALL
Captain's and First Officer's Foot Heater Installation TASK 21-45-01-400-801			404	ARO ALL

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CAPTAIN'S AND FIRST OFFICER'S SHOULDER HEATERS - MAINTENANCE PRACTICES	21-45-02		201	ARO ALL
Captain's and First Officer's Shoulder Heaters - Deactivation TASK 21-45-02-040-801			201	ARO ALL
Captain's and First Officer's Shoulder Heaters - Activation TASK 21-45-02-440-801			209	ARO ALL
CAPTAIN'S AND FIRST OFFICER'S SHOULDER HEATERS - REMOVAL/INSTALLATION	21-45-02		401	ARO ALL
Captain's and First Officer's Shoulder Heater Removal TASK 21-45-02-000-801			401	ARO ALL
Captain's and First Officer's Shoulder Heater Installation TASK 21-45-02-400-801			405	ARO ALL
DOOR AREA HEATERS - MAINTENANCE PRACTICES	21-45-03		201	ARO ALL
Door Area Heaters - Deactivation TASK 21-45-03-040-801			201	ARO ALL
Door Area Heaters - Activation TASK 21-45-03-440-801			206	ARO ALL
DOOR AREA HEATERS - REMOVAL/INSTALLATION	21-45-03		401	ARO ALL
Door Area Heater Removal TASK 21-45-03-000-801			401	ARO ALL
Door Area Heater Installation TASK 21-45-03-400-801			409	ARO ALL
GALLEY HEATERS - MAINTENANCE PRACTICES	21-45-04		201	ARO ALL
Galley Heaters - Deactivation TASK 21-45-04-040-801			201	ARO ALL
Galley Heaters - Activation TASK 21-45-04-440-801			208	ARO ALL
GALLEY HEATERS - REMOVAL/INSTALLATION	21-45-04		401	ARO ALL
Forward Galley Heater Removal TASK 21-45-04-000-801			401	ARO ALL

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Forward Galley Heater Installation TASK 21-45-04-400-801			406	ARO ALL
Aft Galley Heater Removal TASK 21-45-04-000-802			409	ARO ALL
Aft Galley Heater Installation TASK 21-45-04-400-802			412	ARO ALL
Mid Galley Heater Removal TASK 21-45-04-000-803			415	ARO ALL
Mid Galley Heater Installation TASK 21-45-04-400-803			419	ARO ALL
PACK FLOW CONTROL - ADJUSTMENT/TEST	21-51-00		501	ARO ALL
Pack Flow Control Pneumatic Actuated Components - Operational Test TASK 21-51-00-740-801			501	ARO ALL
Pack Flow Control Temperature Sensors - Operational Test TASK 21-51-00-740-802			503	ARO ALL
Pack Switches - Operational Test TASK 21-51-00-740-803			504	ARO ALL
Pack Low Flow - Operational Test TASK 21-51-00-740-804			506	ARO ALL
UPPER FLOW CONTROL AND SHUTOFF VALVE (FCSOV) AND FILTER - REMOVAL/INSTALLATION	21-51-01		401	ARO ALL
Upper Flow Control and Shutoff Valve (FCSOV) Removal TASK 21-51-01-000-801			401	ARO ALL
Upper Flow Control and Shutoff Valve (FCSOV) Installation TASK 21-51-01-400-801			408	ARO ALL
Upper Flow Control and Shutoff Valve (FCSOV) Filter Removal TASK 21-51-01-000-803			415	ARO ALL
Upper Flow Control and Shutoff Valve (FCSOV) Filter Installation TASK 21-51-01-400-802			419	ARO ALL

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UPPER FLOW CONTROL AND SHUTOFF VALVE (FCSOV) AND FILTER - CLEANING/PAINTING	21-51-01		701	ARO ALL
Upper Flow Control and Shutoff Valve (FCSOV) Filter Cleaning TASK 21-51-01-000-802			701	ARO ALL
LOWER FLOW CONTROL AND SHUTOFF VALVE (FCSOV) AND FILTER - REMOVAL/INSTALLATION	21-51-02		401	ARO ALL
Lower Flow Control and Shutoff Valve (FCSOV) Removal TASK 21-51-02-000-801			401	ARO ALL
Lower Flow Control and Shutoff Valve (FCSOV) Installation TASK 21-51-02-400-801			408	ARO ALL
Lower Flow Control and Shutoff Valve (FCSOV) Filter Removal TASK 21-51-02-000-802			415	ARO ALL
Lower Flow Control and Shutoff Valve (FCSOV) Filter Installation TASK 21-51-02-400-802			419	ARO ALL
LOWER FLOW CONTROL AND SHUTOFF VALVE (FCSOV) AND FILTER - CLEANING/PAINTING	21-51-02		701	ARO ALL
Lower Flow Control and Shutoff Valve (FCSOV) Filter Cleaning TASK 21-51-02-000-803			701	ARO ALL
FLOW SENSORS - REMOVAL/INSTALLATION	21-51-03		401	ARO ALL
Flow Sensor Removal TASK 21-51-03-000-801			401	ARO ALL
Flow Sensor Installation TASK 21-51-03-400-801			406	ARO ALL
Pressure Sensor Removal TASK 21-51-03-000-802			410	ARO ALL
Pressure Sensor Installation TASK 21-51-03-400-803			415	ARO ALL

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FLOW SENSORS - ADJUSTMENT/TEST	21-51-03		501	ARO ALL
Flow Sensors - Operational Test TASK 21-51-03-400-802			501	ARO ALL
ASCPC Differential Pressure Sensors - Functional Test TASK 21-51-03-720-801			503	ARO ALL
PRIMARY HEAT EXCHANGER INLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-51-04		401	ARO ALL
Primary Heat Exchanger Inlet Temperature Sensor Removal TASK 21-51-04-000-801			401	ARO ALL
Primary Heat Exchanger Inlet Temperature Sensor Installation TASK 21-51-04-400-801			405	ARO ALL
PACK COOLING AND MIX MANIFOLD TEMPERATURE CONTROL - MAINTENANCE PRACTICES	21-52-00		201	ARO ALL
Pack Cooling and Mix Manifold Temperature Control - Deactivation TASK 21-52-00-040-801			201	ARO ALL
Pack Cooling and Mix Manifold Temperature Control - Activation TASK 21-52-00-440-801			204	ARO ALL
PACK COOLING AND MIX MANIFOLD TEMPERATURE CONTROL - ADJUSTMENT/TEST	21-52-00		501	ARO ALL
Pack Cooling Electric Actuator Driven Components - Operational Test TASK 21-52-00-740-801			501	ARO ALL
Pack Cooling and Mix Manifold Temperature Control Pneumatic Actuated Components - Operational Test TASK 21-52-00-740-802			502	ARO ALL
Pack Cooling and Mix Manifold Temperature Sensors - Operational Test TASK 21-52-00-740-803			504	ARO ALL

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Pack Switches - Operational Test TASK 21-52-00-740-804			505	ARO ALL
AIR CONDITIONING PACK WATER DRAINAGE - INSPECTION/CHECK	21-52-00		601	ARO ALL
Air Conditioning Packs Water Drainage - Inspection TASK 21-52-00-740-805			601	ARO ALL
DUAL HEAT EXCHANGER - REMOVAL/INSTALLATION	21-52-01		401	ARO ALL
Dual Heat Exchanger Removal TASK 21-52-01-000-801			401	ARO ALL
Dual Heat Exchanger Installation TASK 21-52-01-400-801			413	ARO ALL
DUAL HEAT EXCHANGER - INSPECTION/CHECK	21-52-01		601	ARO ALL
Primary Heat Exchanger Inspection TASK 21-52-01-000-803			601	ARO ALL
AIR CYCLE MACHINE (ACM) - REMOVAL/INSTALLATION	21-52-02		401	ARO ALL
Air Cycle Machine (ACM) Removal TASK 21-52-02-000-801			401	ARO ALL
Air Cycle Machine (ACM) Installation TASK 21-52-02-400-801			412	ARO ALL
CONDENSER/REHEATER - REMOVAL/INSTALLATION	21-52-03		401	ARO ALL
Condenser/Reheater Removal TASK 21-52-03-000-801			401	ARO ALL
Condenser/Reheater Installation TASK 21-52-03-400-801			417	ARO ALL
CONDENSER/REHEATER - ADJUSTMENT/TEST	21-52-03		501	ARO ALL
Condenser/Reheater Flow Restriction Test TASK 21-52-03-000-802			501	ARO ALL
WATER COLLECTOR - REMOVAL/INSTALLATION	21-52-04		401	ARO ALL
Water Collector Removal TASK 21-52-04-000-801			401	ARO ALL

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Water Collector Installation TASK 21-52-04-400-801			406	ARO ALL
WATER SPRAY NOZZLE - REMOVAL/INSTALLATION	21-52-05		401	ARO ALL
Water Spray Nozzle Removal TASK 21-52-05-000-801			401	ARO ALL
Water Spray Nozzle Installation TASK 21-52-05-400-801			405	ARO ALL
FAN INLET AND DIFFUSER HOUSING (FIDH) - REMOVAL/INSTALLATION	21-52-06		401	ARO ALL
Fan Inlet and Diffuser Housing (FIDH) Removal TASK 21-52-06-000-801			401	ARO ALL
Fan Inlet and Diffuser Housing (FIDH) Installation TASK 21-52-06-400-801			408	ARO ALL
FAN INLET AND DIFFUSER HOUSING (FIDH) - REPAIRS	21-52-06		801	ARO ALL
Fan Inlet and Diffuser Housing (FIDH) Seal Repair TASK 21-52-06-300-801			801	ARO ALL
COOLING PACK OUTLET DUCT/MUFFLER ASSEMBLY - REMOVAL/INSTALLATION	21-52-07	2	401	ARO ALL
Outlet Duct/Muffler Assembly Removal TASK 21-52-07-000-804-002		2	401	ARO ALL
Outlet Duct/Muffler Assembly Installation TASK 21-52-07-400-803-002		2	408	ARO ALL
FAN BYPASS CHECK VALVE - REMOVAL/INSTALLATION	21-52-10		401	ARO ALL
Fan Bypass Check Valve Removal TASK 21-52-10-000-801			401	ARO ALL
Fan Bypass Check Valve Installation TASK 21-52-10-400-801			411	ARO ALL
ECONOMY COOLING BYPASS CHECK VALVE - REMOVAL/INSTALLATION	21-52-11		401	ARO ALL
Economy Cooling Bypass Check Valve Removal TASK 21-52-11-000-801			401	ARO ALL

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Economy Cooling Bypass Check Valve Installation TASK 21-52-11-400-801			405	ARO ALL
CONDITIONED AIR CHECK VALVE - REMOVAL/INSTALLATION	21-52-12	2	401	ARO ALL
Conditioned Air Check Valve Removal TASK 21-52-12-000-802-002		2	401	ARO ALL
Conditioned Air Check Valve Installation TASK 21-52-12-400-802-002		2	408	ARO ALL
RAM AIR INLET DOOR AND ACTUATOR - MAINTENANCE PRACTICES	21-52-20		201	ARO ALL
Ram Air Inlet Door Removal TASK 21-52-20-000-803			201	ARO ALL
Ram Air Inlet Door Installation TASK 21-52-20-400-803			209	ARO ALL
Ram Air Inlet Actuator Removal TASK 21-52-20-000-804			212	ARO ALL
Ram Air Inlet Actuator Installation TASK 21-52-20-400-804			217	ARO ALL
Ram Air Inlet Bellcrank Removal TASK 21-52-20-000-806			221	ARO ALL
Ram Air Inlet Bellcrank Installation TASK 21-52-20-400-805			229	ARO ALL
Ram Air Inlet Torque Tube Removal TASK 21-52-20-000-807			232	ARO ALL
Ram Air Inlet Torque Tube Installation TASK 21-52-20-400-806			239	ARO ALL
Ram Air Inlet Door and Actuator Adjustment TASK 21-52-20-800-801			242	ARO ALL
RAM AIR INLET SYSTEM - INSPECTION/CHECK	21-52-20		601	ARO ALL
Ram Air Inlet Door Visual Inspection TASK 21-52-20-200-801			601	ARO ALL
Ram Air Inlet Door Detailed Inspection TASK 21-52-20-200-802			610	ARO ALL

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RAM AIR EXHAUST HOUSING ASSEMBLY AND ACTUATOR - MAINTENANCE PRACTICES	21-52-21		201	ARO ALL
Ram Air Exhaust Housing Assembly Removal TASK 21-52-21-000-805			201	ARO ALL
Ram Air Exhaust Housing Assembly Installation TASK 21-52-21-400-805			207	ARO ALL
Ram Air Exhaust Actuator Removal TASK 21-52-21-000-806			210	ARO ALL
Ram Air Exhaust Actuator Installation TASK 21-52-21-400-806			218	ARO ALL
Ram Air Exhaust Louvers and Actuator Adjustment TASK 21-52-21-800-801			222	ARO ALL
RAM AIR INLET DUCT - REMOVAL/INSTALLATION	21-52-22		401	ARO ALL
Ram Air Inlet Duct Removal TASK 21-52-22-000-801			401	ARO ALL
Ram Air Inlet Duct Installation TASK 21-52-22-400-801			408	ARO ALL
LOW LIMIT VALVE - REMOVAL/INSTALLATION	21-52-30		401	ARO ALL
Low Limit Valve Removal TASK 21-52-30-000-801			401	ARO ALL
Low Limit Valve Installation TASK 21-52-30-400-801			406	ARO ALL
LOW LIMIT VALVE - ADJUSTMENT/TEST	21-52-30		501	ARO ALL
Low Limit Valve - Operational Test TASK 21-52-30-740-801			501	ARO ALL
ECONOMY COOLING VALVE AND FILTER - REMOVAL/INSTALLATION	21-52-31		401	ARO ALL
Economy Cooling Valve Removal TASK 21-52-31-000-801			401	ARO ALL
Economy Cooling Valve Installation TASK 21-52-31-400-801			407	ARO ALL
Economy Cooling Valve (ECV) Filter Removal TASK 21-52-31-000-803			410	ARO ALL

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Economy Cooling Valve (ECV) Filter Installation TASK 21-52-31-400-802			415	ARO ALL
ECONOMY COOLING VALVE AND FILTER - CLEANING/PAINTING	21-52-31		701	ARO ALL
Economy Cooling Valve (ECV) Filter Cleaning TASK 21-52-31-000-802			701	ARO ALL
SECOND STAGE TURBINE BYPASS VALVE - REMOVAL/INSTALLATION	21-52-32		401	ARO ALL
Second Stage Turbine Bypass Valve Removal TASK 21-52-32-000-801			401	ARO ALL
Second Stage Turbine Bypass Valve Installation TASK 21-52-32-400-801			406	ARO ALL
TURBINE BYPASS VALVE - ADJUSTMENT/TEST	21-52-32		501	ARO ALL
Turbine Bypass Valve - Operational Test TASK 21-52-32-740-801			501	ARO ALL
PRIMARY HEAT EXCHANGER OUTLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-52-40		401	ARO ALL
Primary Heat Exchanger Outlet Temperature Sensor Removal TASK 21-52-40-000-801			401	ARO ALL
Primary Heat Exchanger Outlet Temperature Sensor Installation TASK 21-52-40-400-801			405	ARO ALL
COMPRESSOR DISCHARGE TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-52-41		401	ARO ALL
Compressor Discharge Temperature Sensor Removal TASK 21-52-41-000-801			401	ARO ALL
Compressor Discharge Temperature Sensor Installation TASK 21-52-41-400-801			405	ARO ALL

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SECONDARY HEAT EXCHANGER OUTLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-52-42		401	ARO ALL
Secondary Heat Exchanger Outlet Temperature Sensor Removal TASK 21-52-42-000-801			401	ARO ALL
Secondary Heat Exchanger Outlet Temperature Sensor Installation TASK 21-52-42-400-801			405	ARO ALL
SECONDARY HEAT EXCHANGER OUTLET TEMPERATURE SENSOR - ADJUSTMENT/TEST	21-52-42		501	ARO ALL
Secondary Heat Exchanger Outlet Temperature Sensor - Operational Test TASK 21-52-42-740-801			501	ARO ALL
CONDENSER INLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-52-43		401	ARO ALL
Condenser Inlet Temperature Sensor Removal TASK 21-52-43-000-801			401	ARO ALL
Condenser Inlet Temperature Sensor Installation TASK 21-52-43-400-801			405	ARO ALL
TURBINE INLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-52-44		401	ARO ALL
Turbine Inlet Temperature Sensor Removal TASK 21-52-44-000-801			401	ARO ALL
Turbine Inlet Temperature Sensor Installation TASK 21-52-44-400-801			405	ARO ALL
PACK DISCHARGE TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-52-45		401	ARO ALL
Pack Discharge Temperature Sensor Removal TASK 21-52-45-000-801			401	ARO ALL
Pack Discharge Temperature Sensor Installation TASK 21-52-45-400-801			405	ARO ALL

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MIX MANIFOLD DISCHARGE TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-52-46		401	ARO ALL
Mix Manifold Discharge Temperature Sensor Removal TASK 21-52-46-000-801			401	ARO ALL
Mix Manifold Discharge Temperature Sensor Installation TASK 21-52-46-400-801			405	ARO ALL
AIR CONDITIONING MODULE - REMOVAL/INSTALLATION	21-60-01		401	ARO ALL
Air Conditioning Module Removal TASK 21-60-01-000-801			401	ARO ALL
Air Conditioning Module Installation TASK 21-60-01-400-801			403	ARO ALL
ZONE TEMPERATURE CONTROL AND INDICATION - ADJUSTMENT/TEST	21-61-00		501	ARO ALL
Zone Trim Air Modulating Valves - Operational Test TASK 21-61-00-740-801			501	ARO ALL
Cabin Temperature Controller (CTC) - Operational Test TASK 21-61-00-740-802			502	ARO ALL
Cabin System Control Panel (CSCP) - Operational Test TASK 21-61-00-740-803			503	ARO ALL
(Zone Air, Zone Duct) Temperature Sensors - Operational Test TASK 21-61-00-740-804			504	ARO ALL
Zone Temperature Selectors - Operational Test TASK 21-61-00-740-805			505	ARO ALL
CABIN TEMPERATURE CONTROLLER (CTC) - MAINTENANCE PRACTICES	21-61-01		201	ARO ALL
Cabin Temperature Controller (CTC) Software Configuration Check TASK 21-61-01-400-802			201	ARO ALL

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Cabin Temperature Controller (CTC) Software Installation TASK 21-61-01-400-803			202	ARO ALL
CABIN TEMPERATURE CONTROLLER (CTC) - REMOVAL/INSTALLATION	21-61-01		401	ARO ALL
Cabin Temperature Controller (CTC) Removal TASK 21-61-01-000-801			401	ARO ALL
Cabin Temperature Controller (CTC) Installation TASK 21-61-01-400-801			404	ARO ALL
CABIN TEMPERATURE CONTROLLER (CTC) - ADJUSTMENT/TEST	21-61-01		501	ARO ALL
Cabin Temperature Controller (CTC) - Operational Test TASK 21-61-01-740-801			501	ARO ALL
ZONE TRIM AIR MODULATING VALVES - MAINTENACE PRACTICES	21-61-02		201	ARO ALL
Zone Trim Air Modulating Valves - Deactivation TASK 21-61-02-040-801			201	ARO ALL
Zone Trim Air Modulating Valves - Activation TASK 21-61-02-440-801			206	ARO ALL
ZONE TRIM AIR MODULATING VALVES - REMOVAL/INSTALLATION	21-61-02		401	ARO ALL
Zone Trim Air Modulating Valves Removal TASK 21-61-02-000-801			401	ARO ALL
Zone Trim Air Modulating Valves Installation TASK 21-61-02-400-801			408	ARO ALL
ZONE DUCT TEMPERATURE SENSORS - REMOVAL/INSTALLATION	21-61-03	1	401	ARO ALL
Zone Duct Temperature Sensor Removal TASK 21-61-03-000-801		1	401	ARO ALL
Zone Duct Temperature Sensor Installation TASK 21-61-03-400-801		1	408	ARO ALL
ZONE AIR TEMPERATURE SENSORS - REMOVAL/INSTALLATION	21-61-04	1	401	ARO ALL
Zone Air Temperature Sensor Removal TASK 21-61-04-000-801		1	401	ARO ALL

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Zone Air Temperature Sensor Installation TASK 21-61-04-400-801		1	407	ARO ALL
ZONE AIR TEMPERATURE SENSOR - CLEANING/PAINTING	21-61-04	1	701	ARO ALL
Zone Air Temperature Sensor - Cleaning TASK 21-61-04-000-802		1	701	ARO ALL
ZONE TEMPERATURE SELECTORS - REMOVAL/INSTALLATION	21-61-05		401	ARO ALL
Zone Temperature Selector Removal TASK 21-61-05-000-801			401	ARO ALL
Zone Temperature Selector Installation TASK 21-61-05-400-801			404	ARO ALL
FORWARD CARGO TEMPERATURE SELECTOR - REMOVAL/INSTALLATION	21-61-07		401	ARO ALL
Forward Cargo Temperature Selector Removal TASK 21-61-07-000-801			401	ARO ALL
Forward Cargo Temperature Selector Installation TASK 21-61-07-400-801			404	ARO ALL
FORWARD CARGO COMPARTMENT TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-61-08		401	ARO ALL
Forward Cargo Compartment Temperature Sensor Removal TASK 21-61-08-000-801			401	ARO ALL
Forward Cargo Compartment Temperature Sensor Installation TASK 21-61-08-400-801			406	ARO ALL
FORWARD CARGO AIR CONDITIONING (FCAC) ZONE DUCT TEMPERATURE SENSORS - REMOVAL/INSTALLATION	21-61-09		401	ARO ALL
Forward Cargo Air Conditioning (FCAC) Duct Temperature Sensor Removal TASK 21-61-09-000-801			401	ARO ALL
Forward Cargo Air Conditioning (FCAC) Duct Temperature Sensor Installation TASK 21-61-09-400-801			405	ARO ALL

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TRIM AIR PRESSURE REGULATION AND SHUTOFF CONTROL - ADJUSTMENT/TEST	21-62-00		501	ARO ALL
Trim Air Pressure Regulation and Shutoff Control - System Test TASK 21-62-00-740-801			501	ARO ALL
Trim Air Switches - Operational Test TASK 21-62-00-740-802			502	ARO ALL
TRIM AIR PRESSURE REGULATING AND SHUTOFF VALVE (PRSOV) AND FILTER - REMOVAL/INSTALLATION	21-62-01		401	ARO ALL
Trim Air Pressure Regulating and Shutoff Valve Removal TASK 21-62-01-000-801			401	ARO ALL
Trim Air Pressure Regulating and Shutoff Valve Installation TASK 21-62-01-400-801			406	ARO ALL
Trim Air Pressure Regulating and Shutoff Valve (PRSOV) Filter Removal TASK 21-62-01-000-802			410	ARO ALL
Trim Air Pressure Regulating and Shutoff Valve (PRSOV) Filter Installation TASK 21-62-01-400-802			414	ARO ALL
TRIM AIR PRESSURE REGULATING AND SHUTOFF VALVE (PRSOV) AND FILTER - CLEANING/PAINTING	21-62-01		701	ARO ALL
Trim Air Pressure Regulating and Shut Off Valve (PRSOV) Filter Cleaning TASK 21-62-01-000-803			701	ARO ALL
TRIM AIR PRESSURE SENSORS - REMOVAL/INSTALLATION	21-62-02		401	ARO ALL
Trim Air Pressure Sensor Removal TASK 21-62-02-000-801			401	ARO ALL
Trim Air Pressure Sensor Installation TASK 21-62-02-400-801			405	ARO ALL
OZONE CONVERTER - REMOVAL/INSTALLATION	21-73-01		401	ARO ALL
Ozone Converter Removal TASK 21-73-01-000-801			401	ARO ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Ozone Converter Installation TASK 21-73-01-400-801			407	ARO ALL

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1. General

A. This procedure has these tasks:

(1) Supply Conditioned Air to the Airplane

(2) Remove Conditioned Air from the Airplane

(3) Supply Conditioned Air with a Cooling Pack

(4) Remove Conditioned Air Supplied by a Cooling Pack

(5) Supply Conditioned Air with a Ground Air Source

(6) Remove Conditioned Air Supplied by a Ground Air Source

B. When it is not specified by the maintenance task, use a ground air source to supply conditioned air to the airplane per (SL 777-21-024).

TASK 21-00-00-800-801

2. Supply Conditioned Air to the Airplane

A. References

Reference	Title
SL 777-21-024	Service Letter

B. General

SUBTASK 21-00-00-860-353

(1) When it is not specified by the maintenance task, use a ground air source to supply conditioned air to the airplane per (SL 777-21-024). To supply conditioned air, do this task: Supply Conditioned Air with a Ground Air Source, TASK 21-00-00-800-805.

C. Procedure

SUBTASK 21-00-00-860-001

(1) Do one of these tasks to supply conditioned air to the airplane:

(a) Do this task: . Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

(b) Do this task: . Supply Conditioned Air with a Ground Air Source, TASK 21-00-00-800-805.

——— END OF TASK ———

TASK 21-00-00-800-802

3. Remove Conditioned Air from the Airplane

A. Procedure

SUBTASK 21-00-00-860-002

(1) Do one of these tasks to remove conditioned air from the airplane:

(a) Do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

(b) Do this task: Remove Conditioned Air Supplied by a Ground Air Source, TASK 21-00-00-800-806.

——— END OF TASK ———

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TASK 21-00-00-800-803

4. Supply Conditioned Air with a Cooling Pack

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
SL 777-21-024	Service Letter

B. Location Zones

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

C. General

SUBTASK 21-00-00-860-354

(1) When it is not specified by the maintenance task, use a ground air source to supply conditioned air to the airplane per (SL 777-21-024). To supply conditioned air, do this task: Supply Conditioned Air with a Ground Air Source, TASK 21-00-00-800-805.

SUBTASK 21-00-00-860-355

(2) When conditions permit, open the doors for the air conditioning packs when they operate per (SL 777-21-024).

SUBTASK 21-00-00-910-001

(3) Unless specified by the maintenance task, use both cooling packs for operation of the Cabin Air Conditioning Temperature Control System (CACTCS), per (777-MT-21-028).

D. Prepare to Supply Conditioned Air with a Cooling Pack

SUBTASK 21-00-00-860-003

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

SUBTASK 21-00-00-860-004

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-00-00-210-001

WARNING MAKE SURE THERE IS AN EXIT IN THE AIRPLANE FUSELAGE FOR THE CONDITIONED AIR. IF THERE IS NO EXIT FOR THE CONDITIONED AIR, PRESSURIZATION OF THE CABIN WILL OCCUR WHICH CAN CAUSE INJURY TO PERSONS.

(3) Do one of these steps to make sure there is an exit for the conditioned air:

(a) Make sure the forward and aft outflow valves are open.

(b) Make sure at least one passenger entry door is open.

SUBTASK 21-00-00-210-024

CAUTION DO NOT OPERATE A COOLING PACK AND A GROUND AIR SOURCE AT THE SAME TIME. THE COOLING PACK CAN NOT CONTROL THE AIR TEMPERATURE IF YOU ALSO OPERATE A GROUND AIR SOURCE AT THE SAME TIME. YOU CAN CAUSE DAMAGE TO EQUIPMENT IF YOU OPERATE A COOLING PACK AND A GROUND AIR SOURCE AT THE SAME TIME.

(4) Make sure that the ground air source is disconnected.

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E. Supply Conditioned Air with a Cooling Pack

SUBTASK 21-00-00-860-005

(1) Push the applicable L PACK switch or the R PACK switch on the Pilot's Overhead Panel, P5, until the AUTO light comes on.

SUBTASK 21-00-00-860-006

(2) Push the applicable L TRIM AIR switch or the R TRIM AIR switch on the Pilot's Overhead Panel, P5, until the ON light comes on.

SUBTASK 21-00-00-860-007

(3) Turn the FLT DECK TEMP selector and the CABIN TEMP selector on the Pilot's Overhead Panel, P5, to set a target temperature in the flight deck and in the passenger cabin.

SUBTASK 21-00-00-860-356

(4) Push the UPPER RECIRC FANS switch and the LOWER RECIRC FANS switch on the Pilot's Overhead Panel, P5, until the ON lights come on.

SUBTASK 21-00-00-860-008

(5) Operate the cooling pack(s) for two minutes to have the full airflow.

——— END OF TASK ———

TASK 21-00-00-800-804

5. Remove Conditioned Air Supplied by a Cooling Pack

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

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

C. Remove Conditioned Air Supplied by a Cooling Pack

SUBTASK 21-00-00-860-009

(1) Push the applicable L PACK switch or the R PACK switch on the Pilot's Overhead Panel, P5, until the OFF light comes on.

SUBTASK 21-00-00-860-010

(2) Push the applicable L TRIM AIR switch or the R TRIM AIR switch on the Pilot's Overhead Panel, P5, until the ON light goes off.

SUBTASK 21-00-00-860-011

(3) Push the UPPER RECIRC FANS switch and the LOWER RECIRC FANS switch, on the Pilot's Overhead Panel, P5, until the ON light goes off.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-00-00-860-012

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

——— END OF TASK ———

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TASK 21-00-00-800-805

6. Supply Conditioned Air with a Ground Air Source

A. References

Reference	Title
31-61-00-800-804	Showing a Maintenance Page (P/B 201)

B. Location Zones

Zone	Area
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right

C. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
196CR	ECS Low Pressure Connection Door

D. Procedure

SUBTASK 21-00-00-210-025

CAUTION

DO NOT OPERATE A COOLING PACK AND A GROUND AIR SOURCE AT THE SAME TIME. THE COOLING PACK CAN NOT CONTROL THE AIR TEMPERATURE IF YOU ALSO OPERATE A GROUND AIR SOURCE. IF YOU OPERATE THEM AT THE SAME TIME, DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Make sure that the cooling packs are off.

SUBTASK 21-00-00-010-001

(2) To get access to the ground conditioned air connector, do this step:

Open the applicable access panels:

Number	Name/Location
195CL	ECS Low Pressure Connection Door
196CR	ECS Low Pressure Connection Door

SUBTASK 21-00-00-210-002

(3) Make sure the swing check valve in the ground conditioned air connector can move freely.

SUBTASK 21-00-00-860-014

(4) Do these steps to connect the duct from the ground air source to the ground conditioned air connector.

ARO ALL; AIRPLANES CONNECTED TO A SUB-FREEZING GROUND AIR SUPPLY

(a) Use only the right side ground conditioned air connector for the ground air source.

NOTE: Air supplied to the left side ground air connector goes directly to the flight deck. Use of the left side connector can cause ice formation in the flight deck air ducts.

ARO ALL

(b) Engage the fasteners on the duct with the slots in the ground conditioned air connector.

(c) Turn the duct until it is locked to the ground conditioned air connector.

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SUBTASK 21-00-00-210-003

WARNING MAKE SURE THERE IS AN EXIT IN THE AIRPLANE FUSELAGE FOR THE CONDITIONED AIR. IF THERE IS NO EXIT FOR THE CONDITIONED AIR, PRESSURIZATION OF THE CABIN WILL OCCUR WHICH CAN CAUSE INJURY TO PERSONS.

(5) Do one of these steps to make sure there is an exit for the conditioned air:

(a) Make sure the forward and aft outflow valves are open.

(b) Make sure at least one passenger entry door is open.

ARO ALL; AIRPLANES CONNECTED TO A NON-FREEZING GROUND AIR SUPPLY

SUBTASK 21-00-00-860-015

(6) Do these steps to supply the conditioned air:

(a) Make sure all of the recirc fans are off.

(b) Operate the ground air source to supply conditioned air to the airplane.

ARO ALL; AIRPLANES CONNECTED TO A SUB-FREEZING GROUND AIR SUPPLY

SUBTASK 21-00-00-860-537

(7) Do these steps to supply the conditioned air:

ARO ALL

(a) Make sure the UPPER RECIRC FANS are off and the LOWER RECIRC FANS are on.

ARO ALL; AIRPLANES CONNECTED TO A SUB-FREEZING GROUND AIR SUPPLY

(b) Operate the ground air source to supply conditioned air to the airplane.

1) Make sure the ground air source free moisture remains less than 17.0 grains per pound-mass of dry air (2.40 grams/kilogram).

2) Use the ECS Maintenance Page display to monitor the mix manifold temperature (Showing a Maintenance Page, TASK 31-61-00-800-804).

3) Adjust the ground air source as needed to make sure the mix manifold temperature remains greater than or equal to 35°F (1.7°C).

NOTE: A sub-freezing mix manifold temperature can cause ice formation in the air distribution ducts.

ARO ALL

END OF TASK

TASK 21-00-00-800-806

7. Remove Conditioned Air Supplied by a Ground Air Source

A. Location Zones

Zone	Area
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right

B. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
196CR	ECS Low Pressure Connection Door

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C. Procedure

SUBTASK 21-00-00-860-017

(1) Stop the operation of the ground air source.

ARO ALL; AIRPLANES CONNECTED TO A SUB-FREEZING GROUND AIR SUPPLY

SUBTASK 21-00-00-860-538

(2) Stop the operation of the recirc fans.

ARO ALL

SUBTASK 21-00-00-020-001

(3) Remove the duct for the ground air source from the ground conditioned air connector.

SUBTASK 21-00-00-010-002

(4) Close the applicable access panels:

Number	Name/Location
195CL	ECS Low Pressure Connection Door
196CR	ECS Low Pressure Connection Door

——— END OF TASK ———

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AIR CONDITIONING - 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 air conditioning system:

(1) MMEL 21-00-1 (DDG) Preparation - ECS Miscellaneous Cards (ECSMC) Inoperative

(2) MMEL 21-00-1 (DDG) Restoration - ECS Miscellaneous Cards (ECSMC) Inoperative

(3) MMEL 21-25-1 (DDG) Preparation - Recirculation Fans (Upper, Lower) Inoperative

(4) MMEL 21-25-1 (DDG) Restoration - Recirculation Fans (Upper, Lower) Inoperative

(5) MMEL 21-26-1 (DDG) Preparation - Lavatory/Galley Ventilation Fan Inoperative

(6) MMEL 21-26-1 (DDG) Restoration - Lavatory/Galley Ventilation Fan Inoperative

(7) MMEL 21-26-2 (DDG) Preparation - Chiller Boost Fan Inoperative

(8) MMEL 21-26-2 (DDG) Restoration - Chiller Boost Fan Inoperative

(9) MMEL 21-26-3 (DDG) Preparation - Bulk Cargo Ventilation Fan Inoperative

(10) MMEL 21-26-3 (DDG) Restoration - Bulk Cargo Ventilation Fan Inoperative

(11) MMEL 21-26-5 (DDG) Preparation - Forward Cargo Air Conditioning Exhaust Fan Inoperative

(12) MMEL 21-26-5 (DDG) Restoration - Forward Cargo Air Conditioning Exhaust Fan Inoperative

(13) MMEL 21-27-1 (DDG) Preparation - Equipment Cooling Air Filter Removal

(14) MMEL 21-27-1 (DDG) Restoration - Equipment Cooling Air Filter Removal

(15) MMEL 21-27-2 (DDG) Preparation - Equipment Cooling Supply Fans Inoperative

(16) MMEL 21-27-2 (DDG) Restoration - Equipment Cooling Supply Fans Inoperative

(17) MMEL 21-27-3 (DDG) Preparation - Equipment Cooling Override Valve Motors Inoperative

(18) MMEL 21-27-3 (DDG) Restoration - Equipment Cooling Override Valve Motors Inoperative

(19) MMEL 21-27-4 (DDG) Preparation - Equipment Cooling Low Flow Detectors Inoperative

(20) MMEL 21-27-4 (DDG) Restoration - Equipment Cooling Low Flow Detectors Inoperative

(21) MMEL 21-27-5 (DDG) Preparation - Equipment Cooling Vent Fan Inoperative

(22) MMEL 21-27-5 (DDG) Restoration - Equipment Cooling Vent Fan Inoperative

(23) MMEL 21-27-6 (DDG) Preparation - Equipment Cooling Vent Valve Inoperative

(24) MMEL 21-27-6 (DDG) Restoration - Equipment Cooling Vent Valve Inoperative

(25) MMEL 21-27-7 (DDG) Preparation - Forward Cargo Heat Valve Inoperative

(26) MMEL 21-27-7 (DDG) Restoration - Forward Cargo Heat Valve Inoperative

(27) MMEL 21-27-9 (DDG) Preparation - SATCOM Backup Cooling Fan Inoperative

(28) MMEL 21-27-9 (DDG) Restoration - SATCOM Backup Cooling Fan Inoperative

(29) MMEL 21-27-10 (DDG) Preparation - In-Flight Entertainment System (IFES) Equipment Cooling Fan Inoperative

(30) MMEL 21-27-10 (DDG) Restoration - In-Flight Entertainment System (IFES) Equipment Cooling Fan Inoperative

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(31) MMEL 21-27-11 (DDG) Preparation - In-Flight Entertainment System (IFES) Equipment Cooling Smoke Detector Inoperative

(32) MMEL 21-27-11 (DDG) Restoration - In-Flight Entertainment System (IFES) Equipment Cooling Smoke Detector Inoperative

(33) MMEL 21-27-13 (DDG) Preparation - Forward Cargo Air Conditioning Equipment Cooling Divert Valve Inoperative

(34) MMEL 21-27-13 (DDG) Restoration - Forward Cargo Air Conditioning Equipment Cooling Divert Valve Inoperative

(35) MMEL 21-27-14 (DDG) Preparation - Forward Cargo Air Conditioning Equipment Cooling Inboard Valve Inoperative

(36) MMEL 21-27-14 (DDG) Restoration - Forward Cargo Air Conditioning Equipment Cooling Inboard Valve Inoperative

(37) MMEL 21-28-1 (DDG) Preparation - Forward Cargo Air Conditioning Shutoff Valve Inoperative

(38) MMEL 21-28-1 (DDG) Restoration - Forward Cargo Air Conditioning Shutoff Valve Inoperative

(39) MMEL 21-31-1-1A (DDG) Preparation - Auto Cabin Pressure Controls (L and R) - One Control Inoperative

(40) MMEL 21-31-1-1A (DDG) Restoration - Auto Cabin Pressure Controls (L and R) - One Control Inoperative

(41) MMEL 21-31-1-1B (DDG) Preparation - Auto Cabin Pressure Controls (L and R) - Both Controls Inoperative

(42) MMEL 21-31-1-1B (DDG) Restoration - Auto Cabin Pressure Controls (L and R) - Both Controls Inoperative

(43) MMEL 21-31-1-3 (DDG) Preparation - Auto Cabin Pressure Controls (L and R) - Both Controls Inoperative

(44) MMEL 21-31-1-3 (DDG) Restoration - Auto Cabin Pressure Controls (L and R) - Both Controls Inoperative

(45) MMEL 21-31-2-1 (DDG) Preparation - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - One Control Inoperative

(46) MMEL 21-31-2-1 (DDG) Restoration - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - One Control Inoperative

(47) MMEL 21-31-2-3 (DDG) Preparation - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - Both Controls Inoperative

(48) MMEL 21-31-2-3 (DDG) Restoration - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - Both Controls Inoperative

(49) MMEL 21-31-3-2 (DDG) Preparation - Outflow Valves (FWD and AFT) - One Valve Inoperative

(50) MMEL 21-31-3-2 (DDG) Restoration - Outflow Valves (FWD and AFT) - One Valve Inoperative

(51) MMEL 21-31-3-4 (DDG) Preparation - Outflow Valves (FWD and AFT) - Both Valves Inoperative

(52) MMEL 21-31-3-4 (DDG) Restoration - Outflow Valves (FWD and AFT) - Both Valves Inoperative

(53) MMEL 21-31-5 (DDG) Preparation - Cabin Rate-of-Climb Indication Inoperative

(54) MMEL 21-31-5 (DDG) Restoration - Cabin Rate-of-Climb Indication Inoperative

(55) MMEL 21-31-6 (DDG) Preparation - Cabin Differential Pressure Indication Inoperative

(56) MMEL 21-31-6 (DDG) Restoration - Cabin Differential Pressure Indication Inoperative

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(57) MMEL 21-31-7 (DDG) Preparation - Cabin Altitude Indication Inoperative
(58) MMEL 21-31-7 (DDG) Restoration - Cabin Altitude Indication Inoperative
(59) MMEL 21-32-1A (DDG) Preparation - Positive Pressure Relief Valves - One Valve Inoperative
(60) MMEL 21-32-1A (DDG) Restoration - Positive Pressure Relief Valves - One Valve Inoperative
(61) MMEL 21-32-1B (DDG) Preparation - Positive Pressure Relief Valves - Both Valves Inoperative
(62) MMEL 21-32-1B (DDG) Restoration - Positive Pressure Relief Valves - Both Valves Inoperative
(63) MMEL 21-44-1 (DDG) Preparation - Aft Cargo Heat Valves Inoperative
(64) MMEL 21-44-1 (DDG) Restoration - Aft Cargo Heat Valves Inoperative
(65) MMEL 21-44-3 (DDG) Preparation - Bulk Cargo Heat Valves Inoperative
(66) MMEL 21-44-3 (DDG) Restoration - Bulk Cargo Heat Valves Inoperative
(67) MMEL 21-45-1 (DDG) Preparation - Flight Deck Shoulder Heaters Inoperative
(68) MMEL 21-45-1 (DDG) Restoration - Flight Deck Shoulder Heaters Inoperative
(69) MMEL 21-45-2 (DDG) Preparation - Flight Deck Shoulder Heaters Inoperative
(70) MMEL 21-45-2 (DDG) Restoration - Flight Deck Shoulder Heaters Inoperative
(71) MMEL 21-51-1 (DDG) Preparation - Air Conditioning Packs Inoperative
(72) MMEL 21-51-1 (DDG) Restoration - Air Conditioning Packs Inoperative
(73) MMEL 21-51-2 (DDG) Preparation - Pack Flow Control/Shutoff Valves (FCVs) Inoperative
(74) MMEL 21-51-2 (DDG) Restoration - Pack Flow Control/Shutoff Valves (FCVs) Inoperative
(75) MMEL 21-52-1 (DDG) Preparation - Air Cycle Machines (ACMs) Inoperative
(76) MMEL 21-52-1 (DDG) Restoration - Air Cycle Machines (ACMs) Inoperative
(77) MMEL 21-52-2 (DDG) Preparation - Economy Cooling Valves Inoperative
(78) MMEL 21-52-2 (DDG) Restoration - Economy Cooling Valves Inoperative
(79) MMEL 21-52-3 (DDG) Preparation - Compressor Discharge Temperature Sensing Systems Inoperative
(80) MMEL 21-52-3 (DDG) Restoration - Compressor Discharge Temperature Sensing Systems Inoperative
(81) MMEL 21-52-4 (DDG) Preparation - Pack Outlet Temperature Sensing Systems Inoperative
(82) MMEL 21-52-4 (DDG) Restoration - Pack Outlet Temperature Sensing Systems Inoperative
(83) MMEL 21-52-5A (DDG) Preparation - Ram Air Inlet Door Systems Inoperative (Pack Remains Operative)
(84) MMEL 21-52-5A (DDG) Restoration - Ram Air Inlet Door Systems Inoperative (Pack Remains Operative)
(85) MMEL 21-52-5B (DDG) Preparation - Ram Air Inlet Door Systems Inoperative (Pack Made Inoperative)
(86) MMEL 21-52-5B (DDG) Restoration - Ram Air Inlet Door Systems Inoperative (Pack Made Inoperative)
(87) MMEL 21-52-6 (DDG) Preparation - Ram Air Exit Door Systems Inoperative
(88) MMEL 21-52-6 (DDG) Restoration - Ram Air Exit Door Systems Inoperative
(89) MMEL 21-52-7 (DDG) Preparation - Condenser Inlet Temperature Sensing Systems Inoperative

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(90) MMEL 21-52-7 (DDG) Restoration - Condenser Inlet Temperature Sensing Systems Inoperative

(91) MMEL 21-61-1 (DDG) Preparation - Cabin Temperature Controllers (CTC) Inoperative

(92) MMEL 21-61-1 (DDG) Restoration - Cabin Temperature Controllers (CTC) Inoperative

(93) MMEL 21-61-2 (DDG) Preparation - Flight Deck Zone Temperature Control System Inoperative

(94) MMEL 21-61-2 (DDG) Restoration - Flight Deck Zone Temperature Control System Inoperative

(95) MMEL 21-61-3 (DDG) Preparation - Cabin Zone Temperature Control Systems Inoperative

(96) MMEL 21-61-3 (DDG) Restoration - Cabin Zone Temperature Control Systems Inoperative

(97) MMEL 21-61-05 (DDG) Preparation - Forward Cargo Air Conditioning Duct Temperature Sensing System Inoperative

(98) MMEL 21-61-05 (DDG) Restoration - Forward Cargo Air Conditioning Duct Temperature Sensing System Inoperative

(99) MMEL 21-61-7 (DDG) Preparation - Forward Cargo Air Conditioning Trim Air Valve Inoperative

(100) MMEL 21-61-7 (DDG) Restoration - Forward Cargo Air Conditioning Trim Air Valve Inoperative

(101) MMEL 21-61-8 (DDG) Preparation - Forward Cargo Air Conditioning Flight Deck Control Inoperative

(102) MMEL 21-61-8 (DDG) Restoration - Forward Cargo Air Conditioning Flight Deck Control Inoperative

(103) MMEL 21-62-2 (DDG) Preparation - Trim Air Pressure Regulating/Shutoff Valves (PRSOVs) Inoperative

(104) MMEL 21-62-2 (DDG) Restoration - Trim Air Pressure Regulating/Shutoff Valves (PRSOVs) Inoperative

TASK 21-00-00-040-801

2. MMEL 21-00-1 (DDG) Preparation - ECS Miscellaneous Cards (ECSMC) Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the left or the right ECS miscellaneous card inoperative.

(2) EICAS Status Messages

(a) ECS CARD L

(b) ECS CARD R

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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D. ECS Miscellaneous Card (ECSMC) Deactivation

SUBTASK 21-00-00-010-003

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-018

(2) Set the power switch for the applicable left or right ECS miscellaneous card to the OFF position to deactivate the ECS miscellaneous card.

NOTE: Use the power control decal on the front of the cardfile to find the appropriate switch.

SUBTASK 21-00-00-010-004

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-040-048

(4) When the right ECS miscellaneous card is deactivated it is necessary to deactivate the right lower recirculation fan and the aft upper recirculation fan. To deactivate the recirculation fans, do this task: MMEL 21-25-1 (DDG) Preparation - Recirculation Fan (Upper, Lower) Inoperative, TASK 21-00-00-040-805.

SUBTASK 21-00-00-040-049

(5) When the left ECS miscellaneous card is deactivated it is necessary to deactivate the left lower recirculation fan and the forward upper recirculation fan. To deactivate the recirculation fans, do this task: MMEL 21-25-1 (DDG) Preparation - Recirculation Fan (Upper, Lower) Inoperative, TASK 21-00-00-040-805.

SUBTASK 21-00-00-040-031

(6) When the right ECS miscellaneous card was deactivated put the FWD CARGO A/C temperature selector above the P5 panel to the OFF position.

(a) Attach an INOP OFF tag to the FWD CARGO A/C temperature selector.

——— END OF TASK ———

TASK 21-00-00-040-802

3. MMEL 21-00-1 (DDG) Restoration - ECS Miscellaneous Cards (ECSMC) Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the left or the right ECS miscellaneous card inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

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D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. ECS Miscellaneous Card (ECSMC) Reactivation

SUBTASK 21-00-00-440-056

(1) If the right ECS miscellaneous card was deactivated, put the right lower and aft upper recirculation fans back to their usual condition.

(a) To do this, (TASK 21-00-00-040-806).

SUBTASK 21-00-00-440-057

(2) If the left ECS miscellaneous card was deactivated, put the left lower and forward upper recirculation fans back to their usual condition.

(a) To do this, (TASK 21-00-00-040-806).

SUBTASK 21-00-00-010-005

(3) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-019

(4) Set the power switch for the applicable left or right ECS miscellaneous card to the ON position.

NOTE: Use the power control decal on the front of the cardfile to find the appropriate switch.

SUBTASK 21-00-00-410-151

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-440-055

(6) Remove the INOP OFF tag from the FWD CARGO A/C temperature selector above the P5 overhead panel.

F. ECS Miscellaneous Card (ECSMC) Check

SUBTASK 21-00-00-860-020

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

SUBTASK 21-00-00-740-001

(2) 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 21-00-00-810-001

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-002

(4) Go to the task in the FIM and do the steps in the task.

END OF TASK

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TASK 21-00-00-040-805

4. MMEL 21-25-1 (DDG) Preparation - Recirculation Fan (Upper, Lower) Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with a recirculation fan (upper, lower) inoperative.

(2) EICAS Status Message:

(a) RECIRC FAN

(3) Fuel usage increases when one or more recirculation fans are inoperative. See the Dispatch Deviation Guide to find the fuel usage increase to use for flight planning.

(4) There are two methods you can use to prepare the airplane for flight with a recirculation fan (upper, lower) inoperative:

(a) You can open the circuit breaker for the inoperative fan.

(b) The flight crew can use the (UPPER, LOWER) RECIRC FANS switch to turn off the inoperative fan.

NOTE: The (UPPER, LOWER) RECIRC FANS switch also turns off the other (upper, lower) recirculation fan. This method of deactivation makes two fans unavailable during flight.

(5) The right lower recirculation fan must be disconnected to complete its deactivation. It can not be deactivated with the RECIRC FANS switch.

B. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
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)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Deactivation

SUBTASK 21-00-00-710-037

(1) To find the inoperative recirculation fan, do these steps:

(a) Select the two PACK switches to the OFF position.

(b) Select the two RECIRC FANS switches to the ON position.

(c) Use a control display unit to show the air conditioning maintenance page display.

(d) Look at the RECIRC FAN indication to find the fan that is off.

NOTE: A fan that is off is inoperative.

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(e) Select the two RECIRC FANS switches to the OFF position.

F. Recirculation Fans (Upper, Lower) Deactivation

SUBTASK 21-00-00-860-317

(1) To deactivate the right lower recirculation fan, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

(c) 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.

(d) To get access to the lower recirculation fans, remove the aft endwall in the forward cargo compartment. To remove the aft endwall, do this task: Forward Cargo Compartment Aft End Wall Removal, TASK 25-52-17-000-801.

(e) Disconnect the electrical connector from the lower right recirculation fan, B21252.

(f) Cap and stow the electrical connector.

(g) Reinstall the aft endwall, do this task: Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801.

(h) 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.

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

NOTE: If you do not close the circuit breaker the aft upper recirculation fan will also be deactivated.

(j) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-318

(2) To deactivate the lower left recirculation fan or an upper recirculation fan with the circuit breaker, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

(b) To deactivate the left lower recirculation fan, do these steps:

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1) Open this circuit breaker and install safety lock:

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN

(c) To deactivate the forward upper recirculation fan, do these steps:

1) Open this circuit breaker and install safety lock:

Left Power Management Panel, P110

Row	Col	Number	Name
A	21	C21313	FWD UPR RECIRC FAN

(d) To deactivate the aft upper recirculation fan, do these steps:

1) Open this circuit breaker and install safety lock:

Right Power Management Panel, P210

Row	Col	Number	Name
B	5	C21314	AFT UPR RECIRC FAN

(e) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-710-038

(3) To make sure that the inoperative recirculation fan is deactivated, do these steps:

(a) Select the two PACK switches to the OFF position.

(b) If you deactivated the fan with the circuit breaker, then select the two RECIRC FANS switches to the ON position.

(c) If you deactivated the fan with the RECIRC FANS switch, then select the other RECIRC FANS switch to the ON position.

(d) Use a control display unit to show the air conditioning maintenance page display.

(e) Look at the RECIRC FAN indication to find the fan that is off.

NOTE: If you deactivated the fan with the RECIRC FANS switch, then the other (upper, lower) recirculation fan will also be off.

(f) If you deactivated the fan with the circuit breaker or disconnecting the electrical connector from the right lower recirculation fan, then select the two RECIRC FANS switches to the ON position.

SUBTASK 21-00-00-970-001

(4) Tell flight operations the number of recirculation fans that you deactivated.

——— END OF TASK ———

TASK 21-00-00-040-806

5. MMEL 21-25-1 (DDG) Restoration - Recirculation Fan (Upper, Lower) Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with a recirculation fan (upper, lower) inoperative.

(2) A maintenance access terminal is necessary for this procedure.

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B. References

Reference	Title
21-25-00-710-801	Recirculation Fans - Operational Test (P/B 501)
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
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)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Recirculation Fan (Upper, Lower) Reactivation

SUBTASK 21-00-00-860-322

(1) To reactivate the right lower recirculation fan, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

(c) 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.

(d) To get access to the lower recirculation fans, remove the aft endwall in the forward cargo compartment. To remove the aft endwall, do this task: Forward Cargo Compartment Aft End Wall Removal, TASK 25-52-17-000-801.

(e) Reconnect the electrical connector to the lower right recirculation fan, B21252.

(f) Reinstall the aft endwall, do this task: Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801.

(g) 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.

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

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(i) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-323

(2) If the left lower recirculation fan or an upper recirculation fan was deactivated with the circuit breaker, then do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

(b) To reactivate the left lower recirculation fan, do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN

(c) To reactivate the forward upper recirculation fan, do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	21	C21313	FWD UPR RECIRC FAN

(d) To reactivate the aft upper recirculation fan, do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
B	5	C21314	AFT UPR RECIRC FAN

(e) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-325

(3) If the left lower recirculation fan or an upper recirculation fan was deactivated with the (UPPER, LOWER) RECIRC FANS switch, then do these steps:

(a) Remove the DO-NOT-OPERATE tag from the applicable (UPPER, LOWER) RECIRC FANS switch.

(b) Select the applicable (UPPER, LOWER) RECIRC FANS switch to the ON position.

F. Recirculation Fans (Upper, Lower) Check

SUBTASK 21-00-00-740-003

(1) Do this task: Recirculation Fans - Operational Test, TASK 21-25-00-710-801.

——— END OF TASK ———

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TASK 21-00-00-040-807

6. MMEL 21-26-1 (DDG) Preparation - Lavatory/Galley Ventilation Fan Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the left or the right lavatory/galley ventilation fan inoperative.

(2) EICAS Status Messages

(a) LAV-GALLEY FAN L

(b) LAV-GALLEY FAN R

B. References

Reference	Title
25-52-19-000-801	Bulk Cargo Compartment Aft End Wall Removal (P/B 401)
25-52-19-400-801	Bulk Cargo Compartment Aft End Wall Installation (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

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. Lavatory/Galley Ventilation Fan Deactivation

SUBTASK 21-00-00-010-014

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-209

(2) To deactivate the left lavatory/galley ventilation fan, do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	26	C21607	L LAV/GLY FAN CTRL

(b) Open the bulk cargo door. To open the bulk cargo door, do this task: Open the Door, TASK 52-36-00-860-801.

(c) To get access to the lavatory/galley ventilation fans, remove the left endwall at Station 2062 in the bulk cargo compartment. To remove the left endwall at Station 2062, do this task: Bulk Cargo Compartment Aft End Wall Removal, TASK 25-52-19-000-801.

(d) Disconnect the electrical connector from the left lavatory/galley ventilation fan, B21262.

(e) Cap and stow the electrical connector.

(f) To re-install the left endwall at Station 2062, do this task: Bulk Cargo Compartment Aft End Wall Installation, TASK 25-52-19-400-801.

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(g) Close the bulk cargo door. To close the bulk cargo door, do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-00-00-860-210

(3) To deactivate the right lavatory/galley ventilation fan, do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	2	C21608	R LAV/GLY FAN CTRL

(b) Open the bulk cargo door. To open the bulk cargo door, do this task: Open the Door, TASK 52-36-00-860-801.

(c) To get access to the lavatory/galley ventilation fans, remove the left endwall at Station 2062 in the bulk cargo compartment. To remove the left endwall at Station 2062, do this task: Bulk Cargo Compartment Aft End Wall Removal, TASK 25-52-19-000-801.

(d) Disconnect the electrical connector from the right lavatory/galley ventilation fan, B21261.

(e) Cap and stow the electrical connector.

(f) To re-install the left endwall at Station 2062, do this task: Bulk Cargo Compartment Aft End Wall Installation, TASK 25-52-19-400-801.

(g) Close the bulk cargo door. To close the bulk cargo door, do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-00-00-010-015

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-808

7. MMEL 21-26-1 (DDG) Restoration - Lavatory/Galley Ventilation Fan Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the left or the right lavatory/galley ventilation fan inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-19-000-801	Bulk Cargo Compartment Aft End Wall Removal (P/B 401)
25-52-19-400-801	Bulk Cargo Compartment Aft End Wall Installation (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

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D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Lavatory/Galley Ventilation Fan Reactivation

SUBTASK 21-00-00-010-016

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-211

(2) To reactivate the left lavatory/galley ventilation fan, do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	26	C21607	L LAV/GLY FAN CTRL

(b) Open the bulk cargo door. To open the bulk cargo door, do this task: Open the Door, TASK 52-36-00-860-801.

(c) To get access to the lavatory/galley ventilation fans, remove the left endwall at Station 2062 in the bulk cargo compartment. To remove the left endwall at Station 2062, do this task: Bulk Cargo Compartment Aft End Wall Removal, TASK 25-52-19-000-801.

(d) Re-connect the electrical connector to the left lavatory/galley ventilation fan, B21262.

(e) To re-install the left endwall at Station 2062, do this task: Bulk Cargo Compartment Aft End Wall Installation, TASK 25-52-19-400-801.

(f) Close the bulk cargo door. To close the bulk cargo door, do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-00-00-860-212

(3) To reactivate the right lavatory/galley ventilation fan, do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	2	C21608	R LAV/GLY FAN CTRL

(b) Open the bulk cargo door. To open the bulk cargo door, do this task: Open the Door, TASK 52-36-00-860-801.

(c) To get access to the lavatory/galley ventilation fans, remove the left endwall at Station 2062 in the bulk cargo compartment. To remove the left endwall at Station 2062, do this task: Bulk Cargo Compartment Aft End Wall Removal, TASK 25-52-19-000-801.

(d) Re-connect the electrical connector to the right lavatory/galley ventilation fan, B21261.

(e) To re-install the left endwall at Station 2062, do this task: Bulk Cargo Compartment Aft End Wall Installation, TASK 25-52-19-400-801.

(f) Close the bulk cargo door. To close the bulk cargo door, do this task: Close the Door, TASK 52-36-00-860-802.

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SUBTASK 21-00-00-010-017

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Lavatory/Galley Ventilation Fan Check

SUBTASK 21-00-00-860-032

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

SUBTASK 21-00-00-740-004

(2) 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 21-00-00-810-003

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-004

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-809

8. MMEL 21-26-2 (DDG) Preparation - Chiller Boost Fan Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the chiller boost fan inoperative.

B. Location Zones

Zone	Area
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Chiller Boost Fan Deactivation

SUBTASK 21-00-00-010-018

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-034

(2) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
A	27	C21307	CHLR BOOST FAN

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(Continued)

Right Power Management Panel, P210

Row	Col	Number	Name
G	7	C21629	CHLR BOOST FAN CTRL

SUBTASK 21-00-00-010-019

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-810

9. MMEL 21-26-2 (DDG) Restoration - Chiller Boost Fan Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the chiller boost fan inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Chiller Boost Fan Reactivation

SUBTASK 21-00-00-010-020

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-035

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	27	C21307	CHLR BOOST FAN
G	7	C21629	CHLR BOOST FAN CTRL

SUBTASK 21-00-00-010-021

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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F. Chiller Boost Fan Check

SUBTASK 21-00-00-860-036

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

SUBTASK 21-00-00-740-005

(2) Do this ground test on the MAT: 21 Environmental Control System, System Test, Chiller Boost Fan.

(a) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

(b) 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 21-00-00-040-811

10. MMEL 21-26-3 (DDG) Preparation - Bulk Cargo Ventilation Fan Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the bulk cargo ventilation fan inoperative.

(2) EICAS Status Messages

(a) CARGO VENT FAN BULK

B. Location Zones

Zone	Area
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Bulk Cargo Ventilation Fan Deactivation

SUBTASK 21-00-00-010-022

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-038

(2) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
A	10	C21308	BULK CG0 VENT FAN
H	1	C21640	BULK CGO VENT FAN CTRL

SUBTASK 21-00-00-010-023

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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E. Chiller Boost Fan Deactivation

SUBTASK 21-00-00-010-420

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-412

(2) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
A	27	C21307	CHLR BOOST FAN
G	7	C21629	CHLR BOOST FAN CTRL

SUBTASK 21-00-00-010-421

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-812

11. MMEL 21-26-3 (DDG) Restoration - Bulk Cargo Ventilation Fan Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the bulk cargo ventilation fan inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Bulk Cargo Ventilation Reactivation

SUBTASK 21-00-00-010-024

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-00-00-860-039

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	10	C21308	BULK CG0 VENT FAN
H	1	C21640	BULK CGO VENT FAN CTRL

SUBTASK 21-00-00-010-025

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Bulk Cargo Ventilation Fan Check

SUBTASK 21-00-00-860-040

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

SUBTASK 21-00-00-740-006

(2) 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 21-00-00-810-005

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-006

(4) Go to the task in the FIM and do the steps in the task.

G. Chiller Boost Fan Reactivation

SUBTASK 21-00-00-010-422

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-413

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	27	C21307	CHLR BOOST FAN
G	7	C21629	CHLR BOOST FAN CTRL

SUBTASK 21-00-00-010-423

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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H. Chiller Boost Fan Check

SUBTASK 21-00-00-860-414

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

SUBTASK 21-00-00-740-077

(2) Go to the MAT and do an LRU replacement test of the Chiller Boost Fan.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) LRU REPLACEMENT TEST
6) Chiller Boost Fan
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 ———

TASK 21-00-00-040-896

12. MMEL 21-26-5 (DDG) Preparation - Forward Cargo Air Conditioning Exhaust Fan Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the forward cargo air conditioning (FCAC) exhaust fan inoperative.

(2) EICAS Status Messages

(a) CARGO EXH FAN FWD

B. Location Zones

Zone	Area
117	Main Equipment Center, Left

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. FCAC Exhaust Fan Deactivation

SUBTASK 21-00-00-010-316

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-00-00-860-357

(2) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
G	16	C21680	FWD CGO EXHAUST FAN CTRL
J	5	C21330	FWD CGO EXHAUST FAN

SUBTASK 21-00-00-010-317

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-440-833

13. MMEL 21-26-5 (DDG) Restoration - Forward Cargo Air Conditioning Exhaust Fan Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the forward cargo air conditioning (FCAC) exhaust fan inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. FCAC Exhaust Fan Reactivation

SUBTASK 21-00-00-010-318

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-358

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	16	C21680	FWD CGO EXHAUST FAN CTRL
J	5	C21330	FWD CGO EXHAUST FAN

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SUBTASK 21-00-00-010-319

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. FCAC Exhaust Fan Check

SUBTASK 21-00-00-860-359

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

SUBTASK 21-00-00-740-068

(2) Do this ground test on the MAT:

(a) 21 Environmental Control System, SYSTEM TEST, Forward Cargo Air Conditioning

(b) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

(c) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM to correct the fault.

——— END OF TASK ———

TASK 21-00-00-040-813

14. MMEL 21-27-1 (DDG) Preparation - Equipment Cooling Air Filter Removal

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the equipment cooling air filter removed.

B. References

Reference	Title
21-27-02-000-801	Equipment Cooling Air Filter Removal (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

D. Equipment Cooling Air Filter - Removal

SUBTASK 21-00-00-020-026

(1) Do this task: Equipment Cooling Air Filter Removal, TASK 21-27-02-000-801.

SUBTASK 21-00-00-020-027

(2) Put the loose clamp in a safe location on the duct and tighten it.

SUBTASK 21-00-00-410-027

(3) Re-install the sidewall panel that you removed to get access to the equipment cooling air filter.

SUBTASK 21-00-00-860-213

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

——— END OF TASK ———

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TASK 21-00-00-040-814

15. MMEL 21-27-1 (DDG) Restoration - Equipment Cooling Air Filter Removal

A. General

(1) This task puts the airplane back to its usual condition after operation with the equipment cooling air filter removed.

B. References

Reference	Title
21-27-02-400-801	Equipment Cooling Air Filter Installation (P/B 401)
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

D. Equipment Cooling Air Filter - Installation

SUBTASK 21-00-00-010-139

(1) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-00-00-860-214

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-00-00-010-140

(3) Remove this sidewall liner in the forward cargo compartment (TASK 25-52-06-000-801).

(a) The left sidewall liner between STA 571.00 and STA 592.00.

SUBTASK 21-00-00-020-028

(4) Loosen the clamp that was put in a safe location on the duct.

SUBTASK 21-00-00-420-019

(5) Do this task: Equipment Cooling Air Filter Installation, TASK 21-27-02-400-801.

——— END OF TASK ———

TASK 21-00-00-040-815

16. MMEL 21-27-2 (DDG) Preparation - Equipment Cooling Supply Fans Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the left or the right equipment cooling supply fan inoperative.

(2) EICAS Status Messages

(a) EQUIP COOLING FAN L

(b) EQUIP COOLING FAN R

B. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)

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(Continued)

Reference	Title
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
122	Forward Cargo Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Equipment Cooling Supply Fan Deactivation

SUBTASK 21-00-00-010-026

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-042

(2) To deactivate the left equipment cooling supply fan:

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	27	C21605	EQPT CLG SPLY FAN 1 CTRL

SUBTASK 21-00-00-860-043

(3) To deactivate the right equipment cooling supply fan:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	1	C21600	EQPT CLG SPLY FAN 2 CTRL

SUBTASK 21-00-00-010-027

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-156

(5) Open the forward cargo compartment door, do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-00-00-010-157

(6) Remove the left sidewall liner at station 535 in the forward cargo compartment to get access to the equipment cooling supply fans, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-00-00-020-029

(7) To deactivate the left equipment cooling supply fan:

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(a) Disconnect the electrical connector, DB21581, from the fan.

(b) Cap and stow the electrical connector, DB21581.

SUBTASK 21-00-00-020-030

(8) To deactivate the right equipment cooling supply fan:

(a) Disconnect the electrical connector, DB21582, from the fan.

(b) Cap and stow the electrical connector, DB21582.

SUBTASK 21-00-00-410-039

(9) Reinstall the left sidewall liner in the forward cargo compartment, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

——— END OF TASK ———

TASK 21-00-00-040-816

17. MMEL 21-27-2 (DDG) Restoration - Equipment Cooling Supply Fans Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the left or the right equipment cooling supply fan inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (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)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Equipment Cooling Supply Fan Reactivation

SUBTASK 21-00-00-010-158

(1) Open the forward cargo compartment door, do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-00-00-010-159

(2) Remove the left sidewall liner at station 535 in the forward cargo compartment to get access to the equipment cooling supply fans, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-00-00-020-031

(3) To reactivate the left equipment cooling supply fan:

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(a) Uncap the electrical connector, DB21581.

(b) Reconnect the electrical connector, DB21581, to the fan.

SUBTASK 21-00-00-020-032

(4) To reactivate the right equipment cooling supply fan:

(a) Uncap the electrical connector, DB21582.

(b) Reconnect the electrical connector, DB21582, to the fan.

SUBTASK 21-00-00-410-040

(5) Reinstall the left sidewall liner in the forward cargo compartment, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-00-00-010-028

(6) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-044

(7) To reactivate the left equipment cooling supply fan:

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	27	C21605	EQPT CLG SPLY FAN 1 CTRL

SUBTASK 21-00-00-860-045

(8) To reactivate the right equipment cooling supply fan:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	1	C21600	EQPT CLG SPLY FAN 2 CTRL

SUBTASK 21-00-00-010-029

(9) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Equipment Cooling Supply Fan Check

SUBTASK 21-00-00-860-046

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

SUBTASK 21-00-00-740-007

(2) 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 21-00-00-810-007

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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.

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SUBTASK 21-00-00-810-008

(4) Go to the task in the FIM and do the steps in the task.

END OF TASK

TASK 21-00-00-040-817

18. MMEL 21-27-3 (DDG) Preparation - Equipment Cooling Override Valve Motors Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the left or the right equipment cooling override valve motor inoperative.

(2) EICAS Status Messages

(a) OVRD VALVE MOTOR L

(b) OVRD VALVE MOTOR R

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Equipment Cooling Override Valve Motor Deactivation

SUBTASK 21-00-00-010-030

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-048

(2) To deactivate the left equipment cooling override valve motor:

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

Standby Power Management Panel, P310

Row	Col	Number	Name
H	9	C21632	EQPT CLG SMOKE OVRD VLV MOT 1

SUBTASK 21-00-00-860-049

(3) To deactivate the right equipment cooling override valve motor:

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

Standby Power Management Panel, P310

Row	Col	Number	Name
H	10	C21634	EQPT CLG SMOKE OVRD VLV MOT 2

SUBTASK 21-00-00-010-031

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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TASK 21-00-00-040-818

19. MMEL 21-27-3 (DDG) Restoration - Equipment Cooling Override Valve Motors Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the left or the right equipment cooling override valve motor inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Equipment Cooling Override Valve Motor Reactivation

SUBTASK 21-00-00-010-032

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-050

(2) To reactivate the left equipment cooling override valve motor:

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

Standby Power Management Panel, P310

Row	Col	Number	Name
H	9	C21632	EQPT CLG SMOKE OVRD VLV MOT 1

SUBTASK 21-00-00-860-051

(3) To reactivate the right equipment cooling override valve motor:

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

Standby Power Management Panel, P310

Row	Col	Number	Name
H	10	C21634	EQPT CLG SMOKE OVRD VLV MOT 2

SUBTASK 21-00-00-010-033

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Equipment Cooling Override Valve Motor Check

SUBTASK 21-00-00-860-052

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

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SUBTASK 21-00-00-740-008

(2) 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 21-00-00-810-009

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-010

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-819

20. MMEL 21-27-4 (DDG) Preparation - Equipment Cooling Low Flow Sensors Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the one of the two equipment cooling low flow sensors inoperative.

(2) EICAS Status Messages

(a) EQUIP FLOW DET

(b) FLT DECK FLOW DET

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Equipment Cooling Low Flow Sensors Deactivation

SUBTASK 21-00-00-010-034

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-054

(2) To deactivate the equipment cooling low flow sensor (Equipment Bay):

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

Standby Power Management Panel, P310

Row	Col	Number	Name
H	12	C21663	EQPT BAY LOW FLOW DET

SUBTASK 21-00-00-860-055

(3) To deactivate the equipment cooling low flow sensor (Flight Deck):

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	10	C21662	F/D LOW FLOW DET

SUBTASK 21-00-00-010-035

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-820

21. MMEL 21-27-4 (DDG) Restoration - Equipment Cooling Low Flow Sensors Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the one of the two equipment cooling low flow sensors inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Equipment Cooling Low Flow Sensor Reactivation

SUBTASK 21-00-00-010-036

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-056

(2) To reactivate the equipment cooling low flow sensor (Equipment Bay):

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

Standby Power Management Panel, P310

Row	Col	Number	Name
H	12	C21663	EQPT BAY LOW FLOW DET

SUBTASK 21-00-00-860-057

(3) To reactivate the equipment cooling low flow sensor (Flight Deck):

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	10	C21662	F/D LOW FLOW DET

SUBTASK 21-00-00-010-037

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Equipment Cooling Low Flow Sensor Check

SUBTASK 21-00-00-860-058

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

SUBTASK 21-00-00-740-009

(2) 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 21-00-00-810-011

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-012

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-821

22. MMEL 21-27-5 (DDG) Preparation - Equipment Cooling Vent Fan Inoperative

A. General

CAUTION

MAKE SURE THAT THE TWO AIR CONDITIONING PACKS ARE ON OR THAT THE PASSENGER COMPARTMENT IS SUPPLIED WITH CONDITIONED AIR FROM AN EXTERNAL SOURCE FOR GROUND OPERATIONS WHEN THE AMBIENT TEMPERATURE IS ABOVE 85 °F (29.5 °C). THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN GET TOO HOT IF THE EQUIPMENT COOLING VENT FAN IS DEACTIVATED AND THE PASSENGER COMPARTMENT IS NOT SUPPLIED WITH CONDITIONED AIR. THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BE DAMAGED IF IT GETS TOO HOT.

(1) This task gives the maintenance steps which prepare the airplane for flight with the equipment cooling vent fan inoperative.

(2) EICAS Status Messages

(a) EQUIP VENT FAN

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B. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
122	Forward Cargo Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Equipment Cooling Vent Fan Deactivation

SUBTASK 21-00-00-010-038

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-060

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	28	C21601	EQPT CLG VENT FAN CTRL

SUBTASK 21-00-00-010-039

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-160

(4) Open the forward cargo compartment door, do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-00-00-010-161

(5) Remove the right sidewall liner at station 450 in the forward cargo compartment to get access to the equipment cooling vent fan, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-00-00-020-033

(6) To deactivate the equipment cooling vent fan:

(a) Disconnect the electrical connector, DB21583, from the fan.

(b) Cap and stow the electrical connector, DB21583.

SUBTASK 21-00-00-410-041

(7) Reinstall the right sidewall liner in the forward cargo compartment, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

END OF TASK

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TASK 21-00-00-040-822

23. MMEL 21-27-5 (DDG) Restoration - Equipment Cooling Vent Fan Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the equipment cooling vent fan inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (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)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
122	Forward Cargo Compartment, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Equipment Cooling Vent Fan Reactivation

SUBTASK 21-00-00-010-162

(1) Open the forward cargo compartment door, do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-00-00-010-163

(2) Remove the right sidewall liner at station 450 in the forward cargo compartment to get access to the equipment cooling vent fan, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-00-00-020-034

(3) To reactivate the equipment cooling vent fan:

(a) Uncap the electrical connector, DB21583.

(b) Reconnect the electrical connector, DB21583, to the fan.

SUBTASK 21-00-00-410-042

(4) Reinstall the right sidewall liner in the forward cargo compartment, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-00-00-010-040

(5) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-00-00-860-061

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	28	C21601	EQPT CLG VENT FAN CTRL

SUBTASK 21-00-00-010-041

(7) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Equipment Cooling Vent Fan Check

SUBTASK 21-00-00-860-062

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

SUBTASK 21-00-00-740-010

(2) 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 21-00-00-810-013

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-014

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-823

24. MMEL 21-27-6 (DDG) Preparation - Equipment Cooling Vent Valve Inoperative

(Figure 901)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the equipment cooling vent valve inoperative.

(2) EICAS Status Messages

(a) EQUIP VENT VALVE

(3) For ground operations with an outside ambient temperature of 86 ° F (30 ° C) or greater the passenger cabin must be supplied with conditioned air from both packs or a ground cart.

(4) For operation with the equipment cooling vent valve deactivated you must also do these steps:

(a) Deactivate the forward cargo air conditioning exhaust fan.

B. References

Reference	Title
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)

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(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)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
123	Area Below Forward Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Equipment Cooling Vent Valve Deactivation

SUBTASK 21-00-00-010-042

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-064

(2) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
E	28	C21415	EQPT CLG VENT VLV
G	21	C21624	EQPT CLG VENT VLV CTRL

SUBTASK 21-00-00-010-043

(3) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-00-00-010-044

(4) Remove the necessary floor panel(s) in the forward cargo compartment to get access to the equipment cooling vent valve. To remove the necessary floor panel(s), do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801.

SUBTASK 21-00-00-010-045

(5) Remove the moisture shroud.

SUBTASK 21-00-00-980-001

(6) Turn the manual open/close knob/lever until the position indicator on the equipment cooling vent valve shows the fully CLOSED position.

SUBTASK 21-00-00-410-001

(7) Re-install the moisture shroud.

SUBTASK 21-00-00-410-002

(8) Install the floor panels. To install the floor panels, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801.

SUBTASK 21-00-00-010-046

(9) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

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SUBTASK 21-00-00-860-296

(10) To deactivate the forward cargo air conditioning exhaust fan, do this step:

(a) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
G	16	C21680	FWD CGO EXHAUST FAN CTRL
J	5	C21330	FWD CGO EXHAUST FAN

SUBTASK 21-00-00-860-297

(11) Deactivate the equipment cooling vent fan. To deactivate the fan, do this task: MMEL 21-27-5 (DDG) Preparation - Equipment Cooling Vent Fan Inoperative, TASK 21-00-00-040-821

SUBTASK 21-00-00-010-047

(12) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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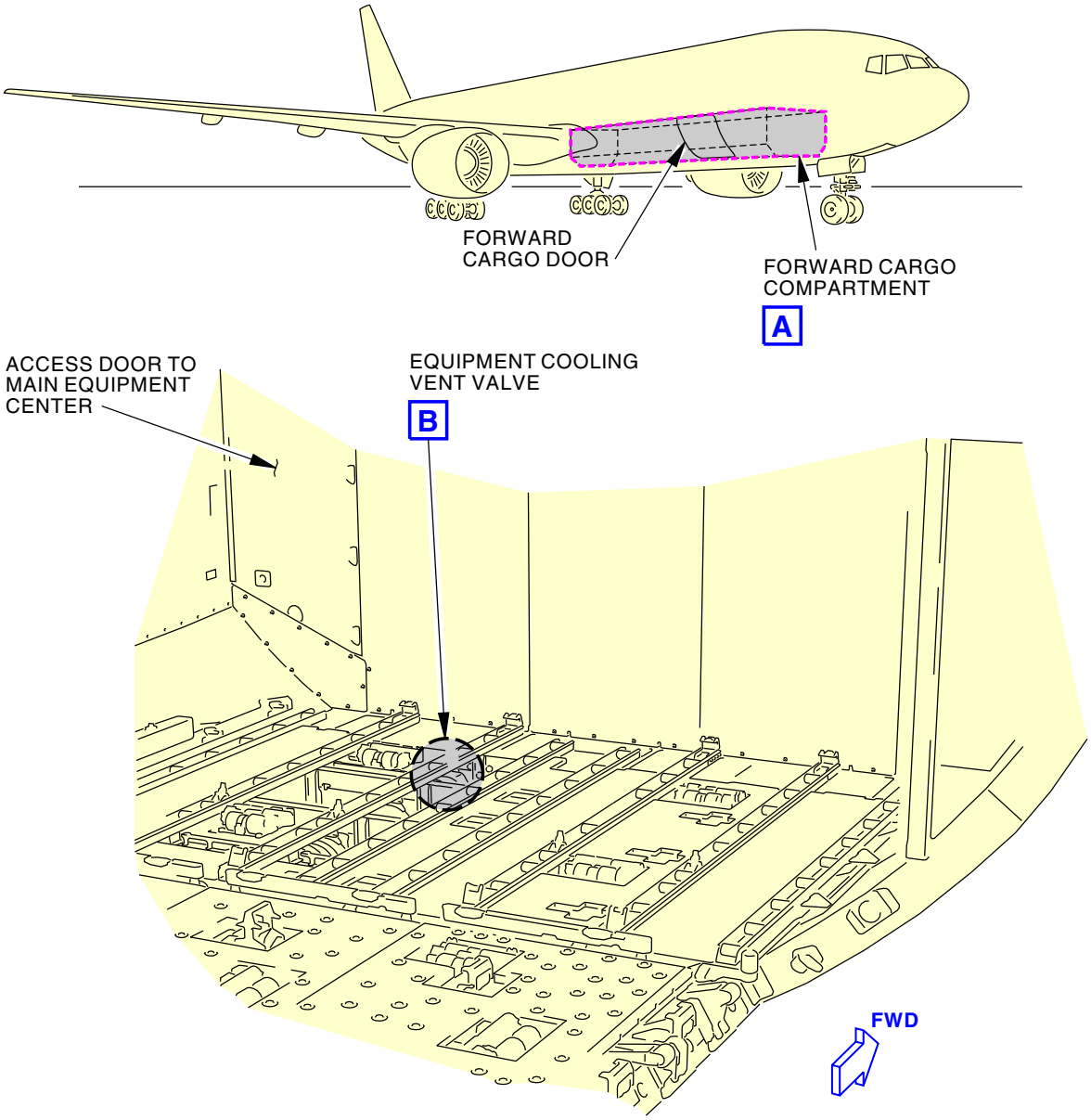

FORWARD CARGO COMPARTMENT (THE FLOOR PANEL AND THE WALKWAY ARE NOT SHOWN)A

A

E32085 S0006402817_V2

Equipment Cooling Vent Valve Deactivation
Figure 901/21-00-00-990-801 (Sheet 1 of 2)

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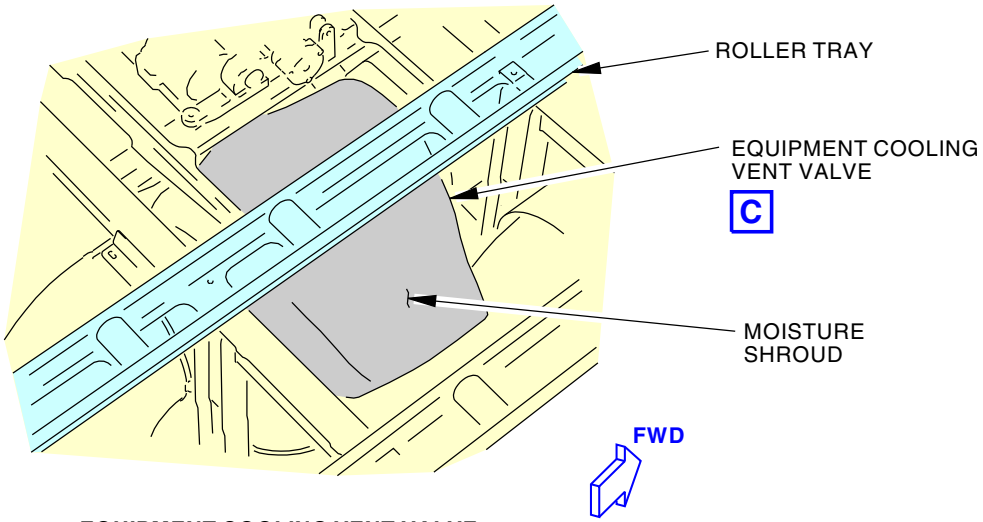
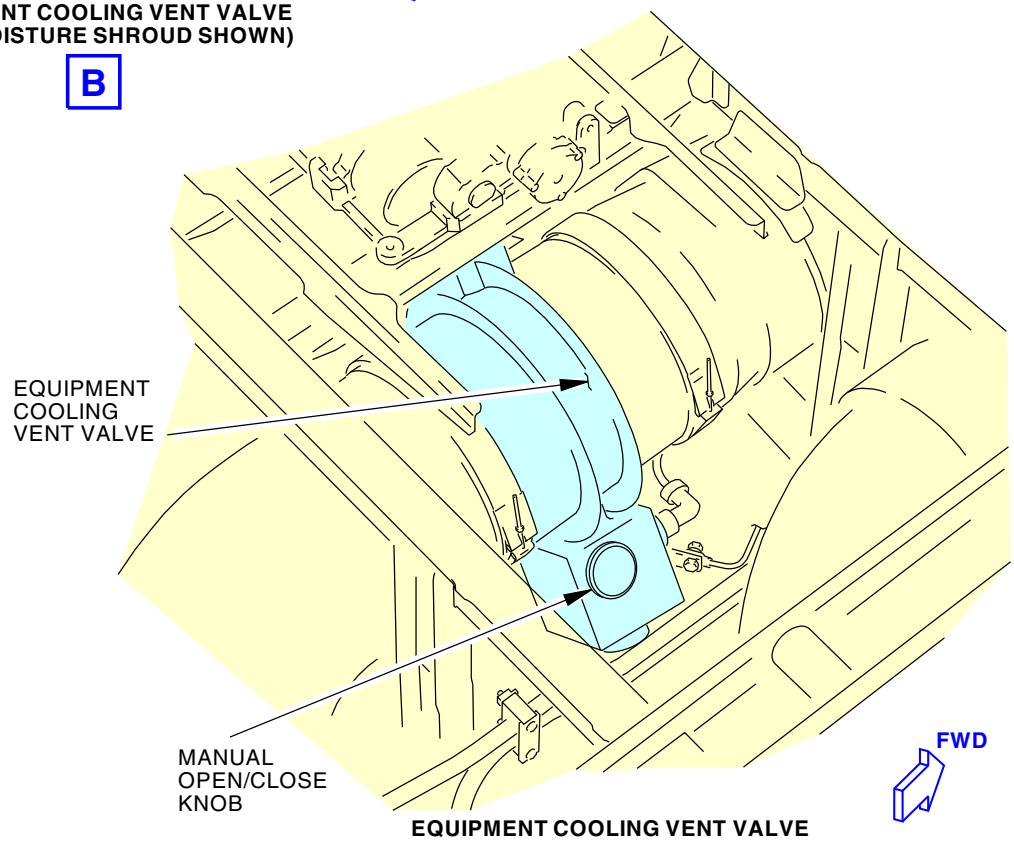


EQUIPMENT COOLING VENT VALVE (WITH MOISTURE SHROUD SHOWN)

B



EQUIPMENT COOLING VENT VALVE (WITHOUT MOISTURE SHROUD SHOWN)

C

E32110 S0006402818_V2

Equipment Cooling Vent Valve Deactivation
Figure 901/21-00-00-990-801 (Sheet 2 of 2)

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TASK 21-00-00-040-824

25. MMEL 21-27-6 (DDG) Restoration - Equipment Cooling Vent Valve Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the equipment cooling vent valve inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Equipment Cooling Vent Valve Reactivation

SUBTASK 21-00-00-010-048

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-065

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

Left Power Management Panel, P110

Row	Col	Number	Name
E	28	C21415	EQPT CLG VENT VLV
G	21	C21624	EQPT CLG VENT VLV CTRL

SUBTASK 21-00-00-860-298

(3) To return the forward cargo air conditioning exhaust fan to its usual condition, do this step:

(a) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
G	16	C21680	FWD CGO EXHAUST FAN CTRL
J	5	C21330	FWD CGO EXHAUST FAN

SUBTASK 21-00-00-860-299

(4) Return the equipment cooling vent fan to its usual condition. To restore the fan, do this task: MMEL 21-27-5 (DDG) Restoration - Equipment Cooling Vent Fan Inoperative, TASK 21-00-00-040-822

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SUBTASK 21-00-00-010-049

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Equipment Cooling Vent Valve Check

SUBTASK 21-00-00-860-066

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

SUBTASK 21-00-00-740-011

(2) 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 21-00-00-810-015

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-016

(4) Go to the task in the FIM and do the steps in the task.

SUBTASK 21-00-00-010-050

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-825

26. MMEL 21-27-7 (DDG) Preparation - Forward Cargo Heat Valve Inoperative

(Figure 902)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the forward cargo heat valve inoperative.

(2) EICAS Status Messages

(a) CARGO HEAT VALVE FWD

B. References

Reference	Title
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
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)

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C. Location Zones

Zone	Area
117	Main Equipment Center, Left
123	Area Below Forward Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Forward Cargo Heat Valve Deactivation

SUBTASK 21-00-00-010-051

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-068

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	17	C21613	EQPT CLG CGO HT VLV CTRL

SUBTASK 21-00-00-010-052

(3) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-00-00-010-053

(4) Remove the necessary floor panel(s) in the forward cargo compartment to get access to the forward cargo heat valve. To remove the necessary floor panel(s), do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801.

SUBTASK 21-00-00-010-054

(5) Remove the moisture shroud.

SUBTASK 21-00-00-980-021

(6) Turn the manual open/close knob or lever until the forward cargo heat valve is fully closed.

SUBTASK 21-00-00-410-003

(7) Re-install the moisture shroud.

SUBTASK 21-00-00-410-004

(8) Install the floor panels. To install the floor panels, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801.

SUBTASK 21-00-00-010-055

(9) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

SUBTASK 21-00-00-010-056

(10) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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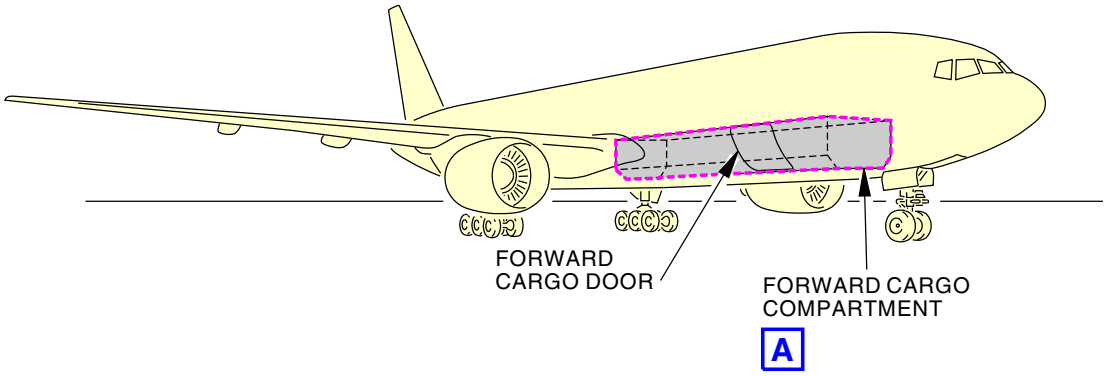

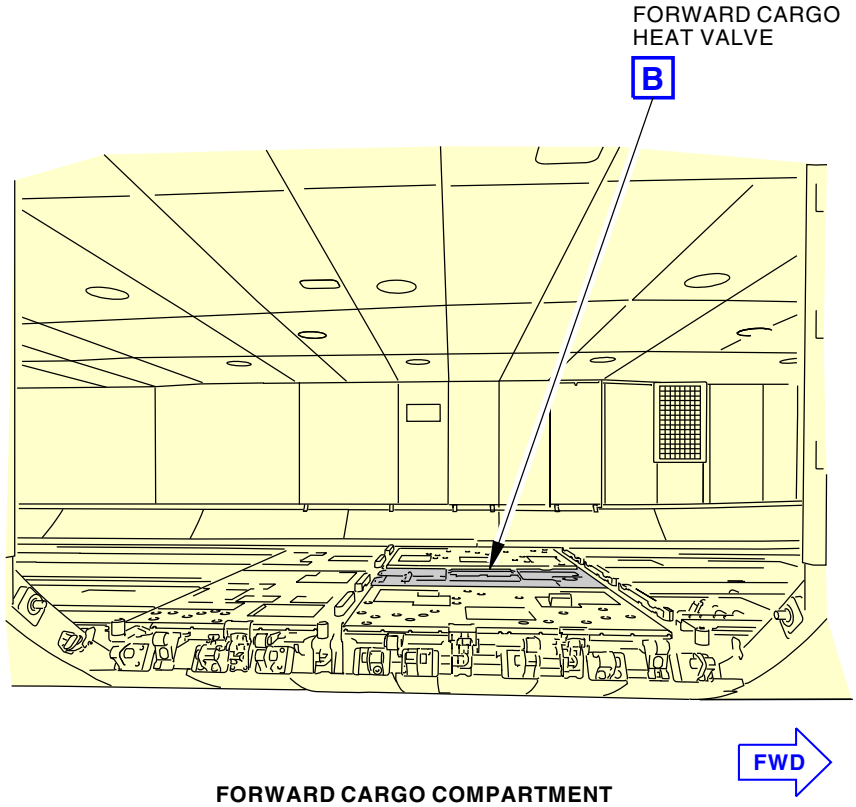

**FORWARD CARGO COMPARTMENT
(THE FLOOR PANEL AND THE
WALKWAY ARE NOT SHOWN)A**

A

H74814 S0006402823_V2

**Forward Cargo Heat Valve Deactivation
Figure 902/21-00-00-990-802 (Sheet 1 of 2)**

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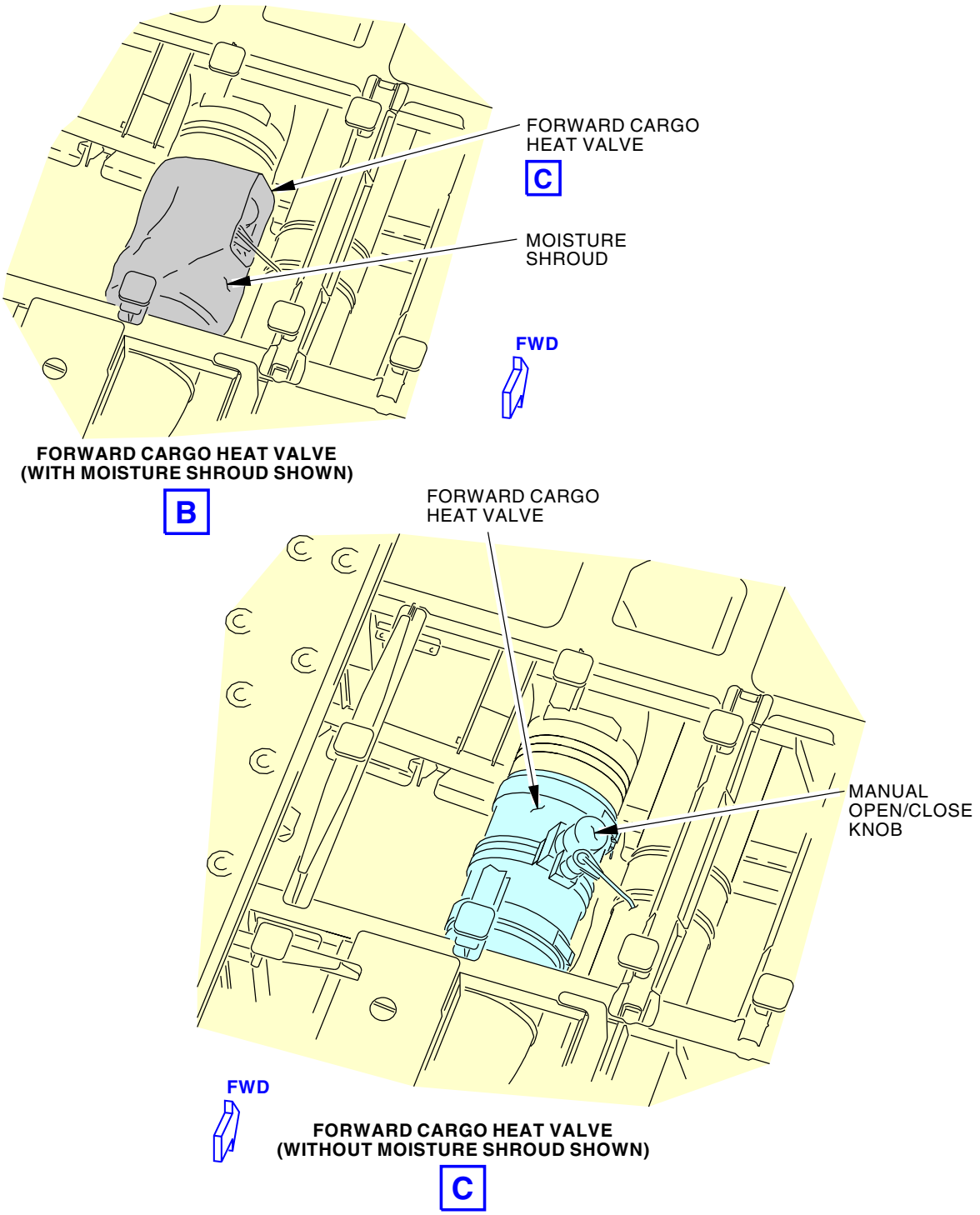

Forward Cargo Heat Valve Deactivation
Figure 902/21-00-00-990-802 (Sheet 2 of 2)

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TASK 21-00-00-040-826

27. MMEL 21-27-7 (DDG) Restoration - Forward Cargo Heat Valve Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the forward cargo heat valve inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Forward Cargo Heat Valve Reactivation

SUBTASK 21-00-00-010-057

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-309

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	17	C21613	EQPT CLG CGO HT VLV CTRL

SUBTASK 21-00-00-010-058

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Forward Cargo Heat Valve Check

SUBTASK 21-00-00-860-070

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

SUBTASK 21-00-00-740-012

(2) 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 21-00-00-810-017

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: The first two digits of the fault code are the FIM chapter.

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(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 21-00-00-810-018

(4) Go to the task in the FIM and do the steps in the task.

SUBTASK 21-00-00-010-059

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-829

28. MMEL 21-27-9 (DDG) Preparation - SATCOM Backup Cooling Fan Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with a SATCOM backup cooling fan inoperative.

(2) EICAS Status Messages

(a) SATCOM COOLING FAN L

(b) SATCOM COOLING FAN R

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. SATCOM Backup Cooling Fan Deactivation With Both Lavatory/Galley Vent Fans Operational

SUBTASK 21-00-00-010-062

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-074

(2) If the left SATCOM backup cooling fan is inoperative, then do these steps:

NOTE: The left SATCOM backup cooling fan is on the E11 rack.

(a) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
E	15	C21453	L SATCOM BACKUP CLG FAN
H	18	C21691	L SATCOM BACKUP CLG FAN CTRL

SUBTASK 21-00-00-860-075

(3) If the right SATCOM backup cooling fan is inoperative, then do these steps:

NOTE: The right SATCOM backup cooling fan is on the E13 rack.

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(a) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
E	12	C21452	R SATCOM BACKUP CLG FAN
H	7	C21692	R SATCOM BACKUP CLG FAN CTRL

SUBTASK 21-00-00-010-063

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

E. SATCOM Backup Cooling Fan Deactivation With a Lavatory/Galley Ventilation Fan Inoperative

SUBTASK 21-00-00-010-515

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-529

(2) If the left SATCOM backup cooling fan is inoperative, then do these steps:

NOTE: The left SATCOM backup cooling fan is on the E11 rack.

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

Left Power Management Panel, P110

Row	Col	Number	Name
E	15	C21453	L SATCOM BACKUP CLG FAN
E	17	C23427	SATL SDU L
E	20	C23431	SAT HIGH L
H	18	C21691	L SATCOM BACKUP CLG FAN CTRL

SUBTASK 21-00-00-860-530

(3) If the right SATCOM backup cooling fan is inoperative, then do these steps:

NOTE: The right SATCOM backup cooling fan is on the E13 rack.

(a) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
E	12	C21452	R SATCOM BACKUP CLG FAN
H	7	C21692	R SATCOM BACKUP CLG FAN CTRL

SUBTASK 21-00-00-410-180

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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TASK 21-00-00-040-830

29. MMEL 21-27-9 (DDG) Restoration - SATCOM Backup Cooling Fan Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with a SATCOM backup cooling fan inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. SATCOM Backup Cooling Fan Reactivation With Both Lavatory/Galley Ventilation Fans Operational

SUBTASK 21-00-00-010-064

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-076

(2) If the left SATCOM backup cooling fan is inoperative, then do these steps:

NOTE: The left SATCOM backup cooling fan is on the E11 rack.

(a) Remove the safety locks and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
E	15	C21453	L SATCOM BACKUP CLG FAN
H	18	C21691	L SATCOM BACKUP CLG FAN CTRL

SUBTASK 21-00-00-860-077

(3) If the right SATCOM backup cooling fan is inoperative, then do these steps:

NOTE: The right SATCOM backup cooling fan is on the E13 rack.

(a) Remove the safety locks and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
E	12	C21452	R SATCOM BACKUP CLG FAN
H	7	C21692	R SATCOM BACKUP CLG FAN CTRL

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SUBTASK 21-00-00-010-065

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. SATCOM Backup Cooling Fan Reactivation With a Lavatory/Galley Ventilation Fan Inoperative

SUBTASK 21-00-00-010-516

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-531

(2) If the left SATCOM backup cooling fan is inoperative, then do these steps:

NOTE: The left SATCOM backup cooling fan is on the E11 rack.

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

Left Power Management Panel, P110

Row	Col	Number	Name
E	15	C21453	L SATCOM BACKUP CLG FAN
E	17	C23427	SATL SDU L
E	20	C23431	SAT HIGH L
H	18	C21691	L SATCOM BACKUP CLG FAN CTRL

SUBTASK 21-00-00-860-532

(3) If the right SATCOM backup cooling fan is inoperative, then do these steps:

NOTE: The right SATCOM backup cooling fan is on the E13 rack.

(a) Remove the safety locks and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
E	12	C21452	R SATCOM BACKUP CLG FAN
H	7	C21692	R SATCOM BACKUP CLG FAN CTRL

SUBTASK 21-00-00-410-181

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

G. SATCOM Backup Cooling Fan Check

SUBTASK 21-00-00-860-078

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

SUBTASK 21-00-00-740-013

(2) 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 21-00-00-810-019

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: The first two digits of the fault code are the FIM chapter.

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(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 21-00-00-810-020

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-880

30. MMEL 21-27-10 (DDG) Preparation - In-Flight Entertainment System (IFES) Equipment Cooling Fan Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the in-flight entertainment system equipment cooling fan inoperative.

(2) EICAS Status Messages

(a) IFES COOLING FAN

B. Location Zones

Zone	Area
117	Main Equipment Center, Left

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. IFES Equipment Cooling Fan Deactivation

SUBTASK 21-00-00-010-236

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-360

CAUTION

REVIEW THE IFES EQUIPMENT COOLING REQUIREMENTS. WHEN THE IFES EQUIPMENT COOLING FAN IS DEACTIVATED THE IFES COOLING SYSTEM IS MADE INOPERATIVE. IF YOU OPERATE THE IFES EQUIPMENT WHEN THE IFES EQUIPMENT COOLING SYSTEM IS INOPERATIVE, THE IFES EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE IFES EQUIPMENT.

(2) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
G	19	C21656	IFE CLG FAN CTRL
Z	2	C21339	IFE CLG FAN

NOTE: When the IFES Equipment Cooling Fan is deactivated the IFES cooling system is made inoperative.

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SUBTASK 21-00-00-860-301

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	21	C23355	VOD

Right Power Management Panel, P210

Row	Col	Number	Name
E	5	C23403	VIDEO PGMS & CTRL
E	8	C23471	VIDEO PGMS & CTRL B

This circuit breaker is inoperative and should remain open:

Right Power Management Panel, P210

Row	Col	Number	Name
C	13	C23405	CABIN PRINTER (INOP)

NOTE: Some circuit breakers may be provisional or not installed.

SUBTASK 21-00-00-010-237

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-881

31. MMEL 21-27-10 (DDG) Restoration - In-Flight Entertainment System (IFES) Equipment Cooling Fan Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the in-flight entertainment system equipment cooling fan inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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E. IFES Equipment Cooling Fan Reactivation

SUBTASK 21-00-00-010-238

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-302

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	19	C21656	IFE CLG FAN CTRL
Z	2	C21339	IFE CLG FAN

SUBTASK 21-00-00-860-361

(3) Remove the safety locks and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
D	21	C23355	VOD

Right Power Management Panel, P210

Row	Col	Number	Name
E	5	C23403	VIDEO PGMS & CTRL
E	8	C23471	VIDEO PGMS & CTRL B

This circuit breaker is inoperative and should remain open:

Right Power Management Panel, P210

Row	Col	Number	Name
C	13	C23405	CABIN PRINTER (INOP)

NOTE: Some circuit breakers may be provisional or not installed.

SUBTASK 21-00-00-010-239

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. IFES Equipment Cooling Fan Check

SUBTASK 21-00-00-860-303

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

SUBTASK 21-00-00-740-060

(2) 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 21-00-00-810-078

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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.

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SUBTASK 21-00-00-810-079

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-882

32. MMEL 21-27-11 (DDG) Preparation - In-Flight Entertainment System (IFES) Equipment Cooling Smoke Detector Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the equipment cooling smoke detector of the in-flight entertainment system inoperative.

(2) EICAS Status Messages

(a) DETECTOR IFES SMOKE

B. Location Zones

Zone	Area
117	Main Equipment Center, Left

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. IFES Equipment Cooling Smoke Detector Deactivation

SUBTASK 21-00-00-010-240

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-304

CAUTION

REVIEW THE IFES EQUIPMENT COOLING REQUIREMENTS. WHEN THE IFES EQUIPMENT COOLING SMOKE DETECTOR IS DEACTIVATED THE IFES COOLING SYSTEM IS MADE INOPERATIVE. IF YOU OPERATE THE IFES EQUIPMENT WHEN THE IFES EQUIPMENT COOLING SYSTEM IS INOPERATIVE, THE IFES EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE IFES EQUIPMENT.

(2) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
G	17	C21659	IFE CLG SMK DET
G	19	C21656	IFE CLG FAN CTRL
Z	2	C21339	IFE CLG FAN

SUBTASK 21-00-00-860-362

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	21	C23355	VOD

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Right Power Management Panel, P210

Row	Col	Number	Name
E	5	C23403	VIDEO PGMS & CTRL
E	8	C23471	VIDEO PGMS & CTRL B

This circuit breaker is inoperative and should remain open:

Right Power Management Panel, P210

Row	Col	Number	Name
C	13	C23405	CABIN PRINTER (INOP)

NOTE: Some circuit breakers may be provisional or not installed.

SUBTASK 21-00-00-010-241

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-883

33. MMEL 21-27-11 (DDG) Restoration - In-Flight Entertainment System (IFES) Equipment Cooling Smoke Detector Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the equipment cooling smoke detector of the in-flight entertainment system inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. IFES Equipment Cooling Smoke Detector Reactivation

SUBTASK 21-00-00-010-242

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-00-00-860-305

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	17	C21659	IFE CLG SMK DET
G	19	C21656	IFE CLG FAN CTRL
Z	2	C21339	IFE CLG FAN

SUBTASK 21-00-00-860-363

(3) Remove the safety locks and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
D	21	C23355	VOD

Right Power Management Panel, P210

Row	Col	Number	Name
E	5	C23403	VIDEO PGMS & CTRL
E	8	C23471	VIDEO PGMS & CTRL B

This circuit breaker is inoperative and should remain open:

Right Power Management Panel, P210

Row	Col	Number	Name
C	13	C23405	CABIN PRINTER (INOP)

NOTE: Some circuit breakers may be provisional or not installed.

SUBTASK 21-00-00-010-243

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. IFES Equipment Cooling Smoke Detector Check

SUBTASK 21-00-00-860-306

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

SUBTASK 21-00-00-740-061

(2) 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 21-00-00-810-080

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-081

(4) Go to the task in the FIM and do the steps in the task.

END OF TASK

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TASK 21-00-00-040-897

34. MMEL 21-27-13 (DDG) Preparation - Forward Cargo Air Conditioning Equipment Cooling Divert Valve Inoperative

A. General

CAUTION

MAKE SURE THAT THE TWO AIR CONDITIONING PACKS ARE ON OR THAT THE PASSENGER COMPARTMENT IS SUPPLIED WITH CONDITIONED AIR FROM AN EXTERNAL SOURCE FOR GROUND OPERATIONS WHEN THE AMBIENT TEMPERATURE IS ABOVE 85 °F (29.5 °C). THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN GET TOO HOT IF THE EQUIPMENT COOLING VENT FAN IS DEACTIVATED AND THE PASSENGER COMPARTMENT IS NOT SUPPLIED WITH CONDITIONED AIR. THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BE DAMAGED IF IT GETS TOO HOT.

(1) This task gives the maintenance steps which prepare the airplane for flight with the forward cargo air conditioning (FCAC) equipment cooling divert valve inoperative.

(2) EICAS Status Messages

(a) EQUIP DIVERT VALVE

B. References

Reference	Title
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
25-53-03-000-801	Roller Tray - Removal (P/B 401)
25-53-03-400-801	Roller Tray - Installation (P/B 401)
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)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
123	Area Below Forward Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. FCAC Equipment Cooling Divert Valve Deactivation

SUBTASK 21-00-00-010-320

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-00-00-840-013

(2) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
C	14	C21456	EQPT CLG DIVERT VLV
H	13	C21681	EQPT CLG DIVERT VLV CTRL

SUBTASK 21-00-00-010-321

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-322

(4) Open the forward cargo door (TASK 52-34-00-860-801).

SUBTASK 21-00-00-010-323

(5) Remove the floor panel and the walkway on the left side of the compartment and forward of the cargo door, do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801.

SUBTASK 21-00-00-010-324

(6) Remove the roller tray which is above the equipment cooling divert valve, do this task: Roller Tray - Removal, TASK 25-53-03-000-801.

SUBTASK 21-00-00-010-325

(7) Remove the moisture shroud from the equipment cooling divert valve.

SUBTASK 21-00-00-010-326

(8) Turn the manual open/close knob until the equipment cooling divert valve is fully closed.

SUBTASK 21-00-00-420-029

(9) Reinstall the moisture shroud around the equipment cooling divert valve.

SUBTASK 21-00-00-010-327

(10) Reinstall the roller tray, do this task: Roller Tray - Installation, TASK 25-53-03-400-801.

SUBTASK 21-00-00-010-328

(11) Reinstall the floor panel and the walkway, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801.

SUBTASK 21-00-00-010-329

(12) Close the forward cargo door (TASK 52-34-00-860-803).

SUBTASK 21-00-00-040-066

(13) Deactivate the equipment cooling vent fan, do this task: MMEL 21-27-5 (DDG) Preparation - Equipment Cooling Vent Fan Inoperative, TASK 21-00-00-040-821.

——— END OF TASK ———

TASK 21-00-00-440-834

35. MMEL 21-27-13 (DDG) Restoration - Forward Cargo Air Conditioning Equipment Cooling Divert Valve Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the forward cargo air conditioning (FCAC) equipment cooling divert valve inoperative.

(2) A maintenance access terminal is necessary for this procedure.

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B. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (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)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. FCAC Equipment Cooling Divert Valve Reactivation

SUBTASK 21-00-00-010-330

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-840-014

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

Right Power Management Panel, P210

Row	Col	Number	Name
C	14	C21456	EQPT CLG DIVERT VLV
H	13	C21681	EQPT CLG DIVERT VLV CTRL

SUBTASK 21-00-00-010-331

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-040-067

(4) Restore the equipment cooling vent fan to its usual condition, do this task: MMEL 21-27-5 (DDG) Restoration - Equipment Cooling Vent Fan Inoperative, TASK 21-00-00-040-822.

F. FCAC Equipment Cooling Divert Valve Check

SUBTASK 21-00-00-860-364

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

SUBTASK 21-00-00-860-365

(2) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-00-00-730-012

(3) Use a maintenance access terminal (MAT) to do a test of the equipment cooling divert valve.

How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

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3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Forward Cargo Air Conditioning
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 ———

TASK 21-00-00-040-898

36. MMEL 21-27-14 (DDG) Preparation - Forward Cargo Air Conditioning Equipment Cooling Inboard Valve Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the forward cargo air conditioning (FCAC) equipment cooling inboard valve inoperative.

(2) EICAS Status Messages
(a) EQUIP INBOARD VALVE

B. References

Reference	Title
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
25-53-03-000-801	Roller Tray - Removal (P/B 401)
25-53-03-400-801	Roller Tray - Installation (P/B 401)
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)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
123	Area Below Forward Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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E. FCAC Equipment Cooling Inboard Valve Deactivation

SUBTASK 21-00-00-010-332

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-840-015

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

Right Power Management Panel, P210

Row	Col	Number	Name
H	14	C21679	EQPT CLG INBD VLV

SUBTASK 21-00-00-010-333

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-334

(4) Open the forward cargo door (TASK 52-34-00-860-801).

SUBTASK 21-00-00-010-335

(5) Remove the aft floor panel and the aft walkway in the center of the forward cargo compartment, do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801.

SUBTASK 21-00-00-010-336

(6) Remove the roller tray from above the equipment cooling inboard valve, do this task: Roller Tray - Removal, TASK 25-53-03-000-801.

SUBTASK 21-00-00-010-337

(7) Remove the moisture shroud from the equipment cooling inboard valve.

SUBTASK 21-00-00-010-338

(8) Turn the manual open/close lever until the equipment cooling inboard valve is fully closed.

SUBTASK 21-00-00-420-030

(9) Reinstall the moisture shroud around the equipment cooling inboard valve.

SUBTASK 21-00-00-010-339

(10) Reinstall the roller tray, do this task: Roller Tray - Installation, TASK 25-53-03-400-801.

SUBTASK 21-00-00-010-340

(11) Reinstall the floor panel and the walkway, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801.

SUBTASK 21-00-00-010-341

(12) Close the forward cargo door (TASK 52-34-00-860-803).

SUBTASK 21-00-00-040-068

(13) Deactivate the equipment cooling vent fan, do this task: MMEL 21-27-5 (DDG) Preparation - Equipment Cooling Vent Fan Inoperative, TASK 21-00-00-040-821.

——— END OF TASK ———

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TASK 21-00-00-440-835

37. MMEL 21-27-14 (DDG) Restoration - Forward Cargo Air Conditioning Equipment Cooling Inboard Valve Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the forward cargo air conditioning (FCAC) equipment cooling inboard valve inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. FCAC Equipment Cooling Inboard Valve Reactivation

SUBTASK 21-00-00-010-342

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-840-016

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

Right Power Management Panel, P210

Row	Col	Number	Name
H	14	C21679	EQPT CLG INBD VLV

SUBTASK 21-00-00-010-343

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-040-069

(4) Restore the equipment cooling vent fan to its usual condition, do this task: MMEL 21-27-5 (DDG) Restoration - Equipment Cooling Vent Fan Inoperative, TASK 21-00-00-040-822.

F. FCAC Equipment Cooling Inboard Valve Check

SUBTASK 21-00-00-860-366

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

SUBTASK 21-00-00-860-367

(2) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-00-00-740-070

(3) Do this ground test on the MAT:

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(a) 21 Environmental Control System, SYSTEM TEST, Forward Cargo Air Conditioning

1) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

2) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM to correct the fault.

——— END OF TASK ———

TASK 21-00-00-040-872

38. MMEL 21-28-1 (DDG) Preparation - Forward Cargo Air Conditioning Shutoff Valve Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the forward cargo air conditioning shutoff valve inoperative.

(2) EICAS Status Messages

(a) CARGO A/C SOV FWD

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
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)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
126	Area Aft of Forward Cargo Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Forward Cargo Air Conditioning Shutoff Valve Deactivation

SUBTASK 21-00-00-860-266

(1) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-00-00-010-172

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-840-001

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

Right Power Management Panel, P210

Row	Col	Number	Name
C	8	C21457	FWD CGO A/C SOV

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(Continued)

Right Power Management Panel, P210

Row	Col	Number	Name
H	12	C21682	FWD CGO A/C SOV CTRL

SUBTASK 21-00-00-010-173

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-174

(5) Open the forward cargo door (TASK 52-34-00-860-801).

SUBTASK 21-00-00-010-175

(6) Remove the aft end wall of the forward cargo compartment, (TASK 25-52-17-000-801).

SUBTASK 21-00-00-010-176

(7) Turn the manual open/close knob until the forward cargo air conditioning shutoff valve is fully closed.

SUBTASK 21-00-00-010-177

(8) Reinstall the aft end wall in the forward cargo compartment, (TASK 25-52-17-400-801).

SUBTASK 21-00-00-010-178

(9) Close the forward cargo door (TASK 52-34-00-860-803).

——— END OF TASK ———

TASK 21-00-00-440-825

39. MMEL 21-28-1 (DDG) Restoration - Forward Cargo Air Conditioning Shutoff Valve Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the forward cargo air conditioning shutoff valve inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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E. Forward Cargo Air Conditioning Shutoff Valve Reactivation

SUBTASK 21-00-00-010-179

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-840-002

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

Right Power Management Panel, P210

Row	Col	Number	Name
C	8	C21457	FWD CGO A/C SOV
H	12	C21682	FWD CGO A/C SOV CTRL

SUBTASK 21-00-00-010-180

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Forward Cargo Air Conditioning Shutoff Valve Check

SUBTASK 21-00-00-860-267

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

SUBTASK 21-00-00-860-268

(2) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-00-00-740-053

(3) Do this ground test on the MAT:

(a) 21 Environmental Control System, SYSTEM TEST, Forward Cargo Air Conditioning

1) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

2) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM to correct the fault.

——— END OF TASK ———

TASK 21-00-00-040-831

40. MMEL 21-31-1-1A (DDG) Preparation - Auto Cabin Pressure Controls (L and R) - One Control Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with Auto Cabin Pressure Control (L and R) - One Control Inoperative.

(2) EICAS Status Messages:

(a) CABIN ALT AUTO L

(b) CABIN ALT AUTO R

B. References

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

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C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. FWD and AFT Outflow Valves Manual Mode Operational Check

SUBTASK 21-00-00-860-080

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

SUBTASK 21-00-00-710-001

(2) Push the FWD and the AFT OUTFLOW VALVE - AUTO/MAN switch-lights, on the pilot's overhead panel, P5, to the MAN position.

(a) Make sure that the MAN switch-lights come on.

SUBTASK 21-00-00-210-004

(3) Use the EICAS primary display to determine the FWD and the AFT outflow valves position indications (if available).

SUBTASK 21-00-00-710-002

(4) If the FWD or the AFT outflow valves are not in the open position, then do these steps:

(a) Push and hold the FWD(AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the OPEN position.

1) Make sure the FWD(AFT) OUTFLOW VALVE position indication on the EICAS primary display (if available) moves toward the open (OP) position.

NOTE: If the EICAS primary display is not available hold the switch to the OPEN position for 30 seconds.

2) Look at the outflow valve to make sure it is in the open position.

3) Release the FWD(AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

SUBTASK 21-00-00-710-003

(5) Do these steps to make sure the aft outflow valve operates in the manual mode:

(a) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the CLOSE position.

1) Make sure the AFT OUTFLOW VALVE position indication (if available) on the EICAS primary display moves toward the closed (CL) position.

NOTE: If the EICAS primary display is not available hold the switch to the CLOSED position for 30 seconds.

2) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the aft outflow valve to make sure it is in the closed position.

(b) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the OPEN position.

1) Make sure the AFT OUTFLOW VALVE position indication on the EICAS primary display (if available) moves toward the open (OP) position.

NOTE: If the EICAS primary display is not available hold the switch to the OPEN position for 30 seconds.

2) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

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3) Look at the aft outflow valve to make sure it is in the open position.

SUBTASK 21-00-00-710-004

(6) Do these steps to make sure the forward outflow valve operates in the manual mode:

(a) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the CLOSE position.

1) Make sure the FWD OUTFLOW VALVE position indication on the EICAS primary display (if available) moves toward the closed (CL) position.

NOTE: If the EICAS primary display is not available hold the switch to the CLOSED position for 30 seconds.

2) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the forward outflow valve to make sure it is in the closed position.

(b) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the OPEN position.

1) Make sure the FWD OUTFLOW VALVE position indication on the EICAS primary display (if available) moves toward the open (OP) position.

NOTE: If the EICAS primary display is not available hold the switch to the OPEN position for 30 seconds.

2) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the forward outflow valve to make sure it is in the open position.

SUBTASK 21-00-00-710-045

(7) Push the FWD and the AFT OUTFLOW VALVE - AUTO/MAN switch-lights, on the pilot's overhead panel, P5, to the AUTO position.

(a) Make sure that the MAN switch-lights go off.

SUBTASK 21-00-00-710-005

(8) Make sure the operative outflow valve operates normally on the two channels in the MANUAL mode. To check the outflow valve operation, do this task: MMEL 21-31-3-2 (DDG) Preparation - Outflow Valves (FWD and AFT) - One Valve Inoperative, TASK 21-00-00-040-939.

——— END OF TASK ———

TASK 21-00-00-440-801

41. MMEL 21-31-1-1A (DDG) Restoration - Auto Cabin Pressure Controls (L and R) - One Control Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with Auto Cabin Pressure Control (L and R) - One Control Inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-31-00-700-806-001	Cabin Pressure Control System - System Test (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

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D. Prepare for Auto Cabin Pressure Control Reactivation

SUBTASK 21-00-00-860-219

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

E. Cabin Pressure Control System Repair

SUBTASK 21-00-00-740-014

(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 21-00-00-810-021

(2) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-022

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

F. Cabin Pressure Control System Test

SUBTASK 21-00-00-810-067

(1) Do this task: Cabin Pressure Control System - System Test, TASK 21-31-00-700-806-001.

——— END OF TASK ———

TASK 21-00-00-040-942

42. MMEL 21-31-1-1B (DDG) Preparation - Auto Cabin Pressure Controls (L and R) - One Outflow Valve Deactivated/Manual Control Operates on Other Valve

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with one Outflow Valve inoperative and the Manual Cabin Pressure Outflow Valve Control operates the other Outflow Valve.

B. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

C. One Outflow Valve Deactivated/Manual Control Operates on Other Valve

SUBTASK 21-00-00-860-560

(1) Use MMEL 21-31-3-2 (DDG) Preparation - Outflow Valves (FWD and AFT) - One Valve Inoperative, TASK 21-00-00-040-939.

——— END OF TASK ———

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TASK 21-00-00-440-872

43. MMEL 21-31-1-1B (DDG) Restoration - Auto Cabin Pressure Controls (L and R) - One Outflow Valve Deactivated/Manual Control Operates on Other Valve

A. General

(1) This task puts the airplane back to its usual condition after operation with one Outflow Valve (FWD and AFT) Inoperative.

B. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

C. Outflow Valve Reactivation

SUBTASK 21-00-00-860-561

(1) Use MMEL 21-31-3-2 (DDG) Restoration - Outflow Valves (FWD and AFT) - One Valve Inoperative, TASK 21-00-00-440-869.

——— END OF TASK ———

TASK 21-00-00-040-832

44. MMEL 21-31-1-3 (DDG) Preparation - Auto Cabin Pressure controls (L and R) - Both Controls Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with Auto Cabin Pressure Controls (L and R) - Both Controls Inoperative.

(2) EICAS Status Messages:

(a) CABIN ALT AUTO L

(b) CABIN ALT AUTO R

B. References

Reference	Title
21-31-00-040-802-001	Preparation For Unpressurized Flight (P/B 201)
21-31-00-700-807-001	Operational Check of the Manual Mode Control (P/B 501)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Forward and Aft Outflow Valves Deactivation - UNPRESSURIZED FLIGHT

SUBTASK 21-00-00-710-048

(1) For extended overwater flight, make sure the manual cabin pressure control operates normally on both outflow valves (Operational Check of the Manual Mode Control, TASK 21-31-00-700-807-001).

SUBTASK 21-00-00-860-084

(2) Do this task: Preparation For Unpressurized Flight, TASK 21-31-00-040-802-001.

——— END OF TASK ———

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TASK 21-00-00-440-802

45. MMEL 21-31-1-3 (DDG) Restoration - Auto Cabin Pressure Controls (L and R) - Both Controls Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with Auto Cabin Pressure Controls (L and R) - Both Controls Inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-31-00-440-802-001	Restoration For Pressurized Flight (P/B 201)
21-31-00-700-806-001	Cabin Pressure Control System - System Test (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Prepare for outflow Valve Reactivation

SUBTASK 21-00-00-860-220

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

E. Forward and Aft Outflow Valves Reactivation

SUBTASK 21-00-00-860-085

(1) Do this task: Restoration For Pressurized Flight, TASK 21-31-00-440-802-001.

F. Cabin Pressure Control System Repair

SUBTASK 21-00-00-740-015

(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 21-00-00-810-023

(2) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-024

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

G. Cabin Pressure Control System Test

SUBTASK 21-00-00-730-001

(1) Do this task: Cabin Pressure Control System - System Test, TASK 21-31-00-700-806-001.

——— END OF TASK ———

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TASK 21-00-00-040-864

46. MMEL 21-31-2-1 (DDG) Preparation - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - One Control Inoperative

(Figure 903)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - One Control Inoperative.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (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)
31-61-00-800-804	Showing a Maintenance Page (P/B 201)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00016	Grease - Aircraft, General Purpose, Wide Temperature Range	MIL-PRF-81322

D. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Outflow Valve Manual Mode Operational Check

NOTE: This procedure does a check of the manual mode control for the operational outflow valve. If the aft outflow valve is operational do the applicable instructions within the parentheses. If the FWD (AFT) outflow valve position indication on the EICAS primary display is not operational, then you must do a visual check of the outflow valve position when you do this operational check.

SUBTASK 21-00-00-860-224

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

SUBTASK 21-00-00-710-026

(2) Push the FWD (AFT) OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the MAN position.

(a) Make sure that the MAN switch-light comes on.

SUBTASK 21-00-00-210-015

(3) Use the EICAS primary display (if available) to view the FWD (AFT) outflow valve position indication (OP or CL).

(a) Make sure the manual mode control indicator (M) shows on the FWD (AFT) outflow valve position indication.

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SUBTASK 21-00-00-210-016

(4) Do a visual check of the forward (aft) outflow valve to see if it is in the open position.

SUBTASK 21-00-00-710-027

(5) If the forward (aft) outflow valve is not in the open position, then do these steps:

(a) Push and hold the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the OPEN position.

1) Make sure the FWD (AFT) outflow valve position indication on the EICAS primary display (if available) moves toward the open (OP) position.

2) Release the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the forward (aft) outflow valve to make sure it is in the open position.

SUBTASK 21-00-00-710-028

(6) Do these steps to make sure the FWD (AFT) outflow valve operates in the manual mode:

(a) Push and hold the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position.

1) Make sure the FWD (AFT) outflow valve position indication on the EICAS primary display (if available) moves toward the closed (CL) position.

2) Release the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the forward (aft) outflow valve to make sure it is in the closed position.

(b) Push and hold the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position.

1) Make sure the FWD (AFT) outflow valve position indication on the EICAS primary display (if available) moves toward the open (OP) position.

2) Release the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the forward (aft) outflow valve to make sure it is in the open position.

SUBTASK 21-00-00-710-041

(7) Do these steps to make sure the FWD outflow valve operates in the manual mode on both the left and the right control channels:

(a) Open the applicable circuit breaker to do a test each control channel:

NOTE: Do not open the two circuit breakers at the same time.

1) To make sure the right channel operates,

Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

2) To make sure the left channel operates,

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

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(b) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position.

1) Make sure the FWD outflow valve position indication on the EICAS primary display (if available) moves toward the closed (CL) position.

2) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the forward outflow valve to make sure it is in the closed position.

(c) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position.

1) Make sure the FWD outflow valve position indication on the EICAS primary display (if available) moves toward the open (OP) position.

2) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the forward outflow valve to make sure it is in the open position.

(d) Close the applicable circuit breaker:

1) Remove the safety tag and close this circuit breaker:

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

2) Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

(e) Do the steps again to make sure the opposite manual control channel for the FWD outflow valve operates.

SUBTASK 21-00-00-710-042

(8) Do these steps to make sure the AFT outflow valve operates in the manual mode on both the left and the right control channels:

(a) Open the applicable circuit breaker to do a test each control channel:

NOTE: Do not open the two circuit breakers at the same time.

1) To make sure the right channel operates,

Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

2) To make sure the left channel operates,

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

(b) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position.

1) Make sure the AFT outflow valve position indication on the EICAS primary display (if available) moves toward the closed (CL) position.

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2) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the aft outflow valve to make sure it is in the closed position.

(c) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position.

1) Make sure the AFT outflow valve position indication on the EICAS primary display (if available) moves toward the open (OP) position.

2) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the aft outflow valve to make sure it is in the open position.

(d) Close the applicable circuit breaker:

1) Remove the safety tag and close this circuit breaker:

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

2) Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

(e) Do the steps again to make sure the opposite manual control channel for the AFT outflow valve operates.

SUBTASK 21-00-00-710-029

(9) Push the FWD (AFT) OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

(a) Make sure that the MAN switch-light goes off.

G. Outflow Valve Deactivation

NOTE: This procedure gives instructions to deactivate the inoperative outflow valve. If the forward outflow valve is inoperative do the applicable instructions within the parentheses.

SUBTASK 21-00-00-980-012

(1) If the manual mode control of the inoperative outflow valve is operational, do these steps to manually move and deactivate the inoperative outflow valve in the partially position:

(a) Select the 36 AIR SUPPLY maintenance page from a multifunction display unit and make a record of the OUTFLOW VALVES-AFT(FWD) position indication. To do this, do this task: Showing a Maintenance Page, TASK 31-61-00-800-804.

1) If no OUTFLOW VALVES-AFT(FWD) position indication shows on the 36 AIR SUPPLY maintenance page, do these steps to get the position indication to show on the maintenance page:

a) If the ASCPC IN CONTROL indication on the 36 AIR SUPPLY maintenance page shows L, then do this step:

Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

b) If the ASCPC IN CONTROL indication on the 36 AIR SUPPLY maintenance page shows R, then do this step:

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Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
P	12	C36612	AIR SPLY R PRI

c) If no position indication shows, then continue the procedure and ignore reference to the OUTFLOW VALVES-AFT(FWD) position indication in the subsequent steps.

(b) Push the AFT (FWD) OUTFLOW VALVE - AUTO/MAN switch-light to the MAN position.

(c) Operate the AFT (FWD) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to open or close the aft (forward) outflow valve until the OUTFLOW VALVES-AFT(FWD) position indication shows 0.07.

NOTE: If no OUTFLOW VALVES-AFT(FWD) position indication is available, you will need to visually check the position of the outflow valve as noted in the subsequent step. You may need to operate the toggle switch several times in order to get the outflow valve in the partially open position.

WARNING

DO NOT OPERATE THE 'AFT (FWD) OUTFLOW VALVE - MANUAL OPEN/CLOSE' TOGGLE SWITCH WHEN YOU MEASURE THE DISTANCE BETWEEN THE OUTFLOW VALVE DOORS. DO NOT PUT YOUR HANDS OR OBJECTS BETWEEN THE OUTFLOW VALVE DOORS WHEN YOU OPERATE THE TOGGLE SWITCH. MAKE SURE THE PERSON AT THE OUTFLOW VALVE IS IN COMMUNICATION WITH THE PERSON WHO OPERATES THE TOGGLE SWITCH. INJURY TO PERSONS CAN OCCUR IF YOU DO NOT OBSERVE THESE INSTRUCTIONS.

(d) Use a feeler gage to measure the distance between the two doors of the outflow valve and make sure the distance is approximately 0.375 ±0.031 inch (Figure 903).

(e) Do this step if you opened one of the above AIR SPLY PRI circuit breakers to view the outflow valve position indication on the 36 AIR SUPPLY maintenance page:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	12	C36612	AIR SPLY R PRI

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

(f) Do these steps to deactivate the inoperative outflow valve in the partially open position:

1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

2) If the aft outflow valve is inoperative, then do this step:

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Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

3) If the forward outflow valve is inoperative, then do this step:

Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(g) Push the FWD (AFT) OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

1) Make sure that the MAN switch-light goes off.

SUBTASK 21-00-00-820-007

(2) If the manual mode control of the inoperative outflow valve is not operational, do these steps to manually move the inoperative outflow valve to the deactivated position (partially open):

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

(b) If the aft outflow valve is inoperative, then do this step:

Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(c) If the forward outflow valve is inoperative, then do this step:

Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

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Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(d) If the aft outflow valve is inoperative, do these steps to get access to the aft outflow valve:

1) To open the bulk cargo door, do this task: Open the Door, TASK 52-36-00-860-801.

2) To remove the left sidewall liner at the aft end of the bulk cargo compartment, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

(e) If the forward outflow valve is inoperative, do these steps to get access to the forward outflow valve:

NOTE: The forward outflow valve assembly is installed below the left power management panel, P110 and under the floor panel on the left side of the main equipment center.

1) Remove the floor panel.

2) Remove the kick panel.

(f) Do these steps to remove one of the two DC motor [2] on the outflow valve assembly:

NOTE: The removal of a DC motor [2] will allow you to manually move the outflow valve doors to a partially open position.

1) Disconnect the DC motor electrical connector from the back of the valve control unit (VCU). (Figure 903).

2) Loosen the four captive screws on the DC motor [2].

3) Remove the DC motor [2] from the outflow valve assembly.

4) Remove and discard the packing [1] from the DC motor [2].

(g) Manually move the outflow valve doors with your hands until the distance between the two doors is approximately 0.375 ±0.031 inch (Figure 903).

1) Hold the outflow valve doors in this partially open position until you do the subsequent steps.

(h) Do these steps to re-install the DC motor [2] to the outflow valve assembly:

NOTE: Make sure the outflow valve doors do not move when you install the DC motor [2]. After the installation of the DC motor [2]the outflow valve doors will be locked in the partially open position.

1) Apply grease, D00016 to a new packing [1] and install the packing [1] on the DC motor [2].

2) Put the DC motor [2] in its position on the outflow valve assembly.

3) Tighten the four captive screws on the DC motor [2].

4) Connect the DC motor electrical connector to the back of the VCU.

(i) Measure the distance between the two doors of the outflow valve again and make sure the distance is still approximately 0.375 ±0.031 inch (Figure 903).

(j) Push the FWD (AFT) OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

(k) If you deactivated the aft outflow valve, then do these steps:

1) To install the left sidewall liner at the aft end of the bulk cargo compartment, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

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2) To close the bulk cargo door, do this task: Close the Door, TASK 52-36-00-860-802.

(l) If you deactivated the forward outflow valve, then do these steps:

1) Install the kick panel.

2) Install the floor panel.

SUBTASK 21-00-00-410-032

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-700-002

(4) To confirm that the manual cabin pressure control operates normally on the remaining outflow valve, do these steps:

(a) Push the FWD (AFT) OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the MAN position.

(b) Push and hold the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position.

1) Make sure the FWD (AFT) outflow valve position indication on the EICAS primary display moves toward the closed (CL) position. If the EICAS display is not available, hold the switch CLOSED for 30 seconds.

2) Release the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the fwd (aft) outflow valve to make sure it is in the closed position.

(c) Push and hold the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position.

1) Make sure the FWD (AFT) outflow valve position indication on the EICAS primary display moves toward the open (OP) position. If the EICAS display is not available, hold the switch OPEN for 30 seconds.

2) Release the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the fwd (aft) outflow valve to make sure it is in the open position.

(d) Push the FWD (AFT) OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

1) Make sure that the MAN switch-light goes off.

——— END OF TASK ———

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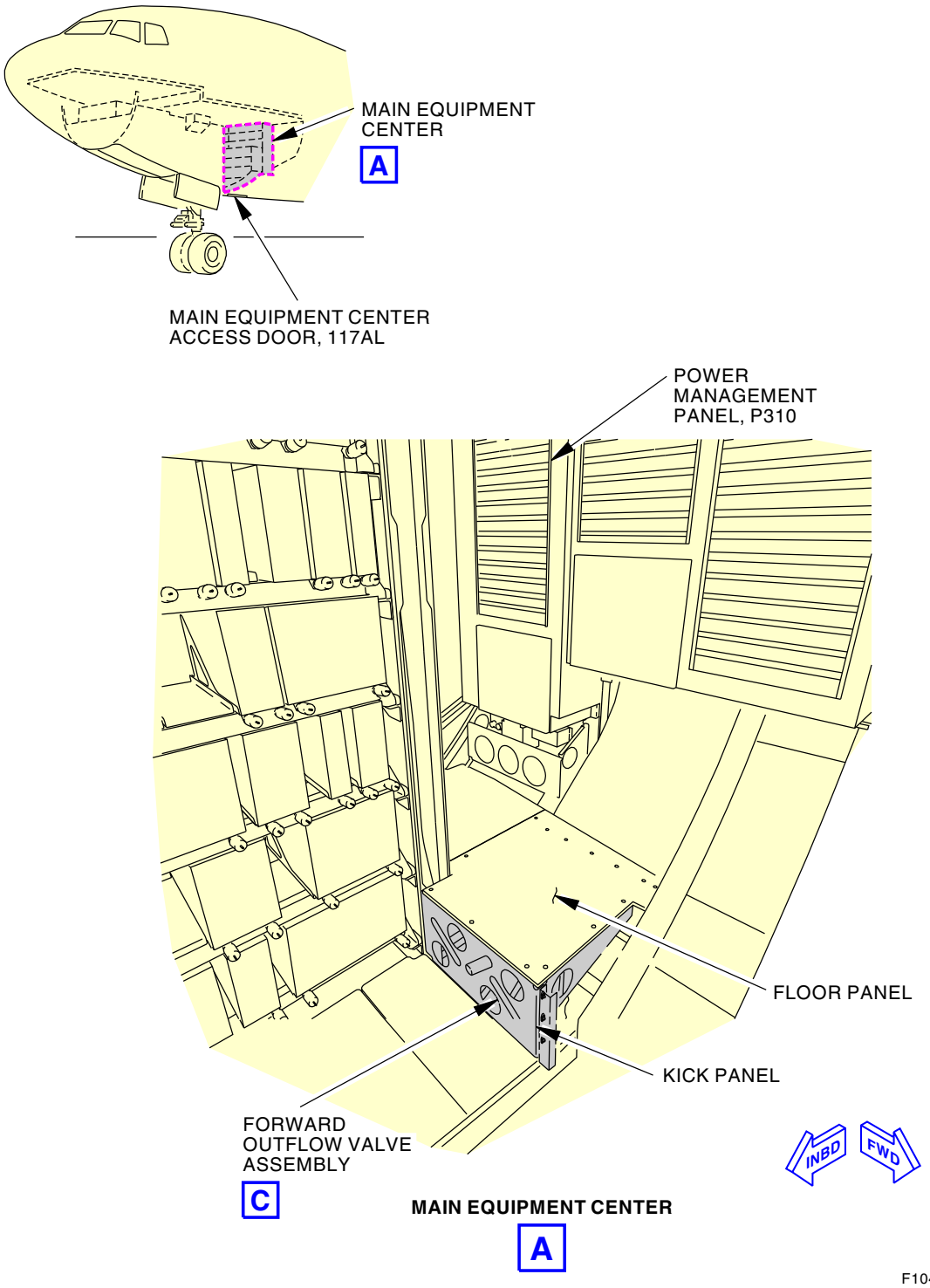

Outflow Valve Assembly Deactivation
Figure 903/21-00-00-990-803 (Sheet 1 of 5)

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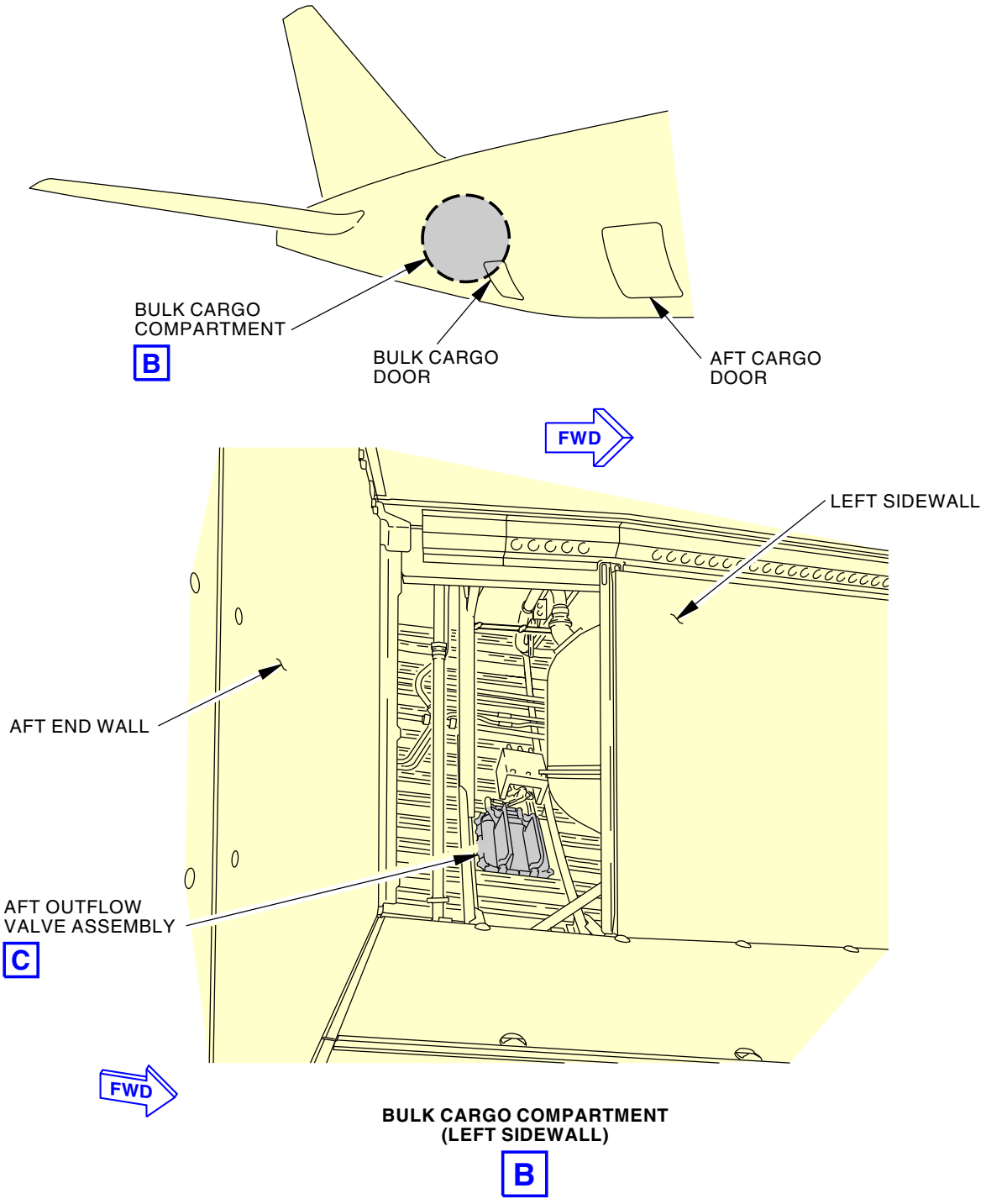

**BULK CARGO COMPARTMENT
(LEFT SIDEWALL)**

B

F10483 S0006402870_V2

**Outflow Valve Assembly Deactivation
Figure 903/21-00-00-990-803 (Sheet 2 of 5)**

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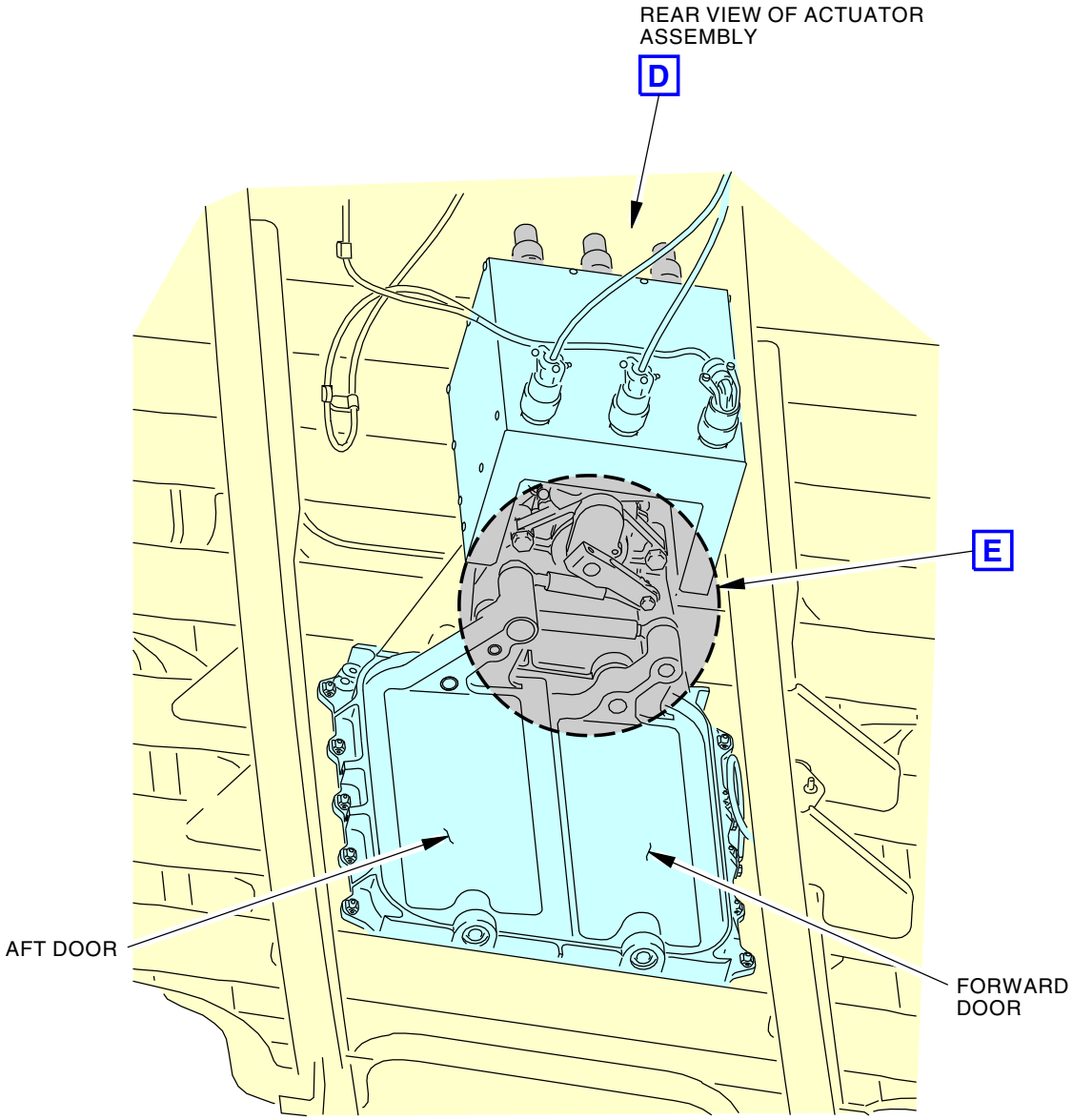

Outflow Valve Assembly Deactivation
Figure 903/21-00-00-990-803 (Sheet 3 of 5)

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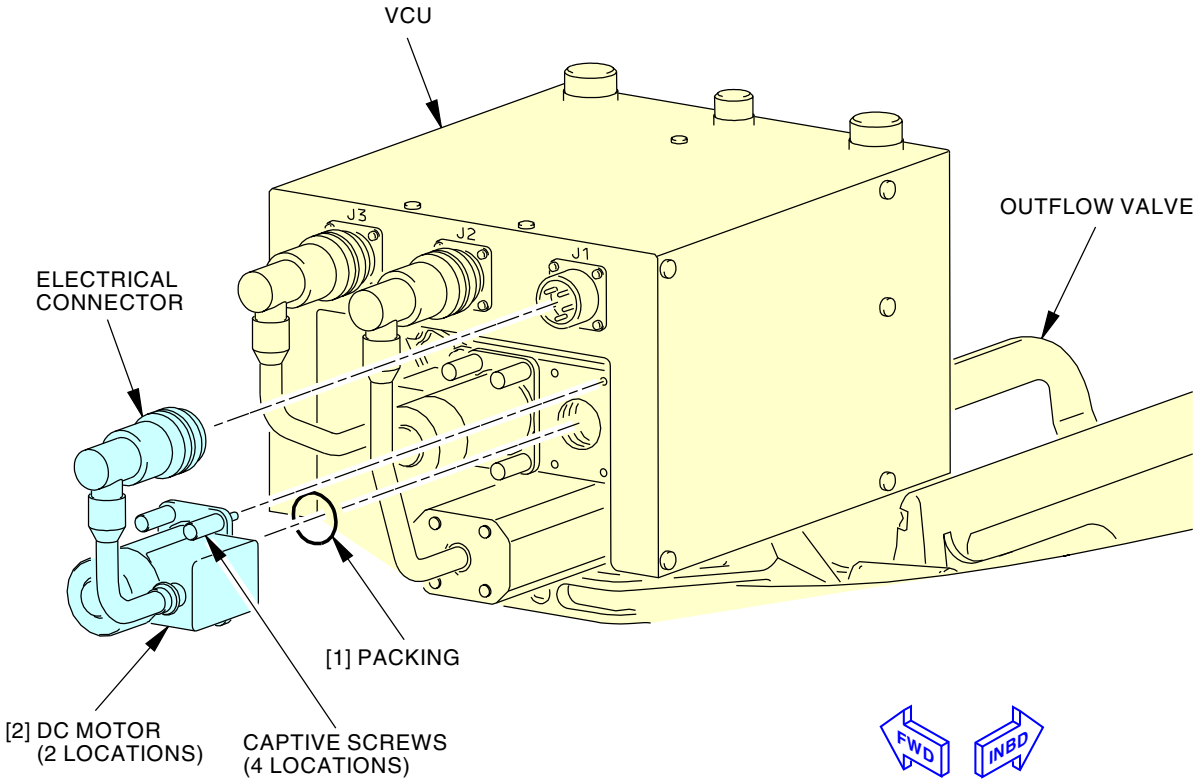

REAR VIEW OF ACTUATOR ASSEMBLY

D

F10479 S0006402872_V2

Outflow Valve Assembly Deactivation
Figure 903/21-00-00-990-803 (Sheet 4 of 5)

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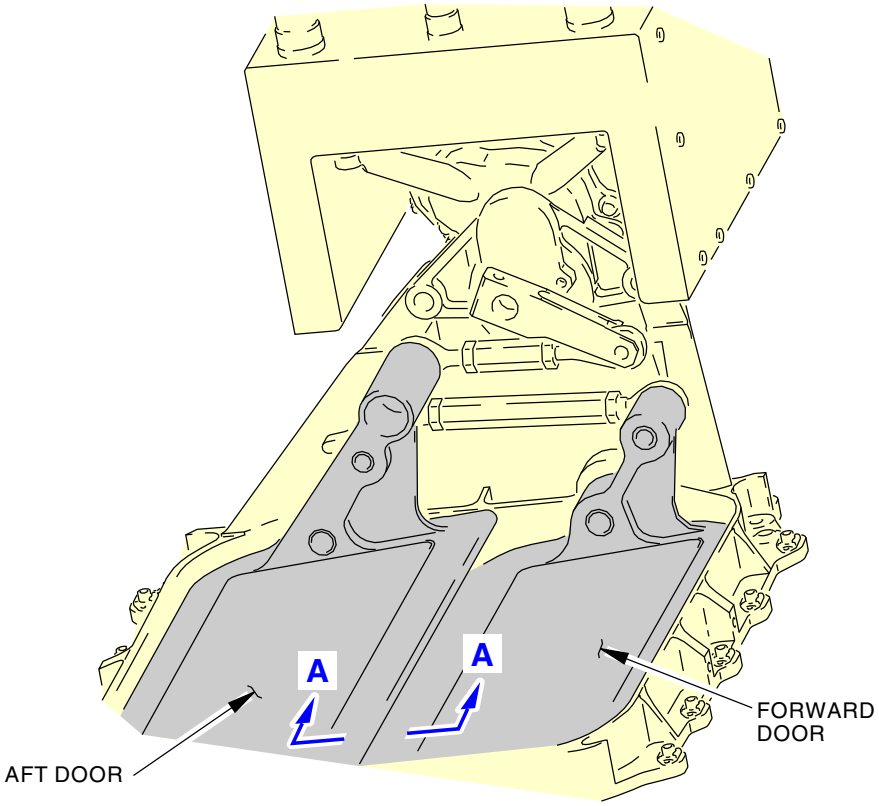
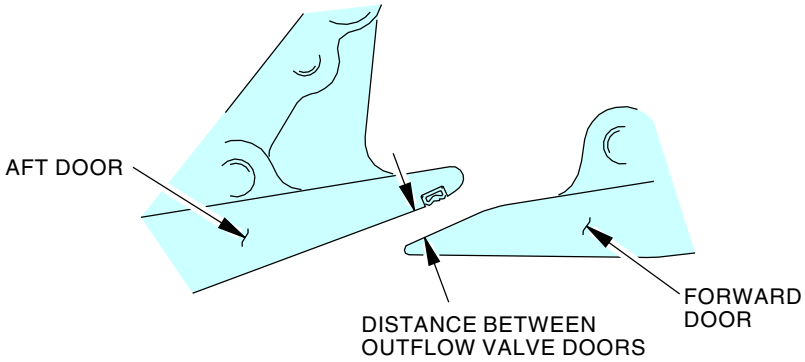


E



A-A

F02672 S0006402873_V2

Outflow Valve Assembly Deactivation
Figure 903/21-00-00-990-803 (Sheet 5 of 5)

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TASK 21-00-00-440-823

47. MMEL 21-31-2-1 (DDG) Restoration - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - One Control Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with one Manual Cabin Pressure Outflow Valve Control (FWD and AFT) Inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-31-00-700-806-001	Cabin Pressure Control System - System Test (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Prepare for Outflow Valve Reactivation

SUBTASK 21-00-00-860-226

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

E. Outflow Valve Reactivation

SUBTASK 21-00-00-440-015

(1) If you deactivated the forward outflow valve, then do these steps:

(a) Remove the safety locks and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-00-00-440-016

(2) If you deactivated the aft outflow valve, then do these steps:

(a) Remove the safety locks and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

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F. Cabin Pressure Control System Repair

SUBTASK 21-00-00-740-043

(1) Go to the MAT and look at Extended Maintenance, Existing Faults for ATA 21 Cabin Pressure Control System faults.

(a) Find the maintenance message in the applicable FIM Maintenance Message Index.

(b) Find the task number on the same line as the maintenance message number.

(c) Do the specified task for each maintenance message.

G. Cabin Pressure Control System Test

SUBTASK 21-00-00-730-003

(1) Do this task: Cabin Pressure Control System - System Test, TASK 21-31-00-700-806-001.

——— END OF TASK ———

TASK 21-00-00-040-834

48. MMEL 21-31-2-3 (DDG) Preparation - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - Both Controls Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - Both Controls Inoperative.

B. References

Reference	Title
21-31-00-040-802-001	Preparation For Unpressurized Flight (P/B 201)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Unpressurized Flight Preparation

SUBTASK 21-00-00-040-001

(1) Do this task: Preparation For Unpressurized Flight, TASK 21-31-00-040-802-001.

——— END OF TASK ———

TASK 21-00-00-440-804

49. MMEL 21-31-2-3 (DDG) Restoration - Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - Both Controls Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Manual Cabin Pressure Outflow Valve Control (FWD and AFT) - Both Controls Inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-31-00-440-802-001	Restoration For Pressurized Flight (P/B 201)
21-31-00-700-806-001	Cabin Pressure Control System - System Test (P/B 501)

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(Continued)

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

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Prepare for Outflow Valve Reactivation

SUBTASK 21-00-00-860-228

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

E. Pressurized Flight Preparation

SUBTASK 21-00-00-040-002

(1) Do this task: Restoration For Pressurized Flight, TASK 21-31-00-440-802-001.

F. Cabin Pressure Control System Repair

SUBTASK 21-00-00-740-044

(1) Go to the MAT and look at Extended Maintenance, Existing Faults for ATA 21 Cabin Pressure Control System faults.

(a) Find the maintenance message in the applicable FIM Maintenance Message Index.

(b) Find the task number on the same line as the maintenance message number.

(c) Do the specified task for each maintenance message.

G. Cabin Pressure Control System Test

SUBTASK 21-00-00-730-004

(1) Do this task: Cabin Pressure Control System - System Test, TASK 21-31-00-700-806-001.

——— END OF TASK ———

TASK 21-00-00-040-939

50. MMEL 21-31-3-2 (DDG) Preparation - Outflow Valves (FWD and AFT) - One Valve Inoperative

(Figure 903)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Outflow Valves (FWD and AFT) - One Valve Inoperative.

(2) EICAS Status Messages:

(a) OUTFLOW VALVE AFT

(b) OUTFLOW VALVE FWD

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (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)
31-61-00-800-804	Showing a Maintenance Page (P/B 201)
52-36-00-860-801	Open the Door (P/B 201)

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(Continued)

Reference	Title
52-36-00-860-802	Close the Door (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00016	Grease - Aircraft, General Purpose, Wide Temperature Range	MIL-PRF-81322

D. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Forward Outflow Valve Inoperative

NOTE: This procedure gives maintenance steps which prepare the airplane for flight when the forward outflow valve is inoperative. The following steps make sure that the aft outflow valve operates and the requirements in the MMEL and DDG are satisfied.

SUBTASK 21-00-00-710-100

(1) Aft Outflow Valve Manual Mode Operational Check:

NOTE: This procedure does a check of the manual mode control for the AFT outflow valve. If the AFT outflow valve position indication on the EICAS primary display is not operational, then you must do a visual check of the outflow valve position when you do this operational check.

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

(b) Push the AFT OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the MAN position.

1) Make sure that the MAN switch-light comes on.

(c) Use the EICAS primary display (if available) to view the AFT outflow valve position indication (OP or CL).

1) Make sure the manual mode control indicator (M) shows on the AFT outflow valve position indication.

(d) Do a visual check of the aft outflow valve to see if it is in the open position.

(e) If the aft outflow valve is not in the open position, then do these steps:

1) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the OPEN position.

a) Make sure the AFT outflow valve position indication on the EICAS primary display (if available) moves toward the open (OP) position.

b) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

c) Look at the aft outflow valve to make sure it is in the open position.

(f) Do these steps to make sure the AFT outflow valve operates in the manual mode:

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1) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position
   a) Make sure the AFT outflow valve position indication on the EICAS primary display (if available) moves toward the closed (CL) position.
   b) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.
   c) Look at the aft outflow valve to make sure it is in the closed position.
2) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position.
   a) Make sure the AFT outflow valve position indication on the EICAS primary display (if available) moves toward the open (OP) position.
   b) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.
   c) Look at the aft outflow valve to make sure it is in the open position.

(g) Do these steps to make sure the AFT outflow valve operates in the manual mode on both the left and the right control channels:

1) Open the applicable circuit breaker to do a test each control channel:

   NOTE: Do not open the two circuit breakers at the same time.

   a) To make sure the right channel operates:

      Open this circuit breaker and install safety tag:

      Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

   b) To make sure the left channel operates:

      Open this circuit breaker and install safety tag:

      Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

2) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position.
   a) Make sure the AFT outflow valve position indication on the EICAS primary display (if available) moves toward the closed (CL) position.
   b) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.
   c) Look at the aft outflow valve to make sure it is in the closed position.
3) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position.
   a) Make sure the AFT outflow valve position indication on the EICAS primary display (if available) moves toward the open (OP) position.
   b) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.
   c) Look at the aft outflow valve to make sure it is in the open position.
4) Close the applicable circuit breaker:

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a) Remove the safety tag and close this circuit breaker:

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

b) Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

5) Do the steps again to make sure the opposite manual control channel for the AFT outflow valve operates.

(h) Push the AFT OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

1) Make sure that the MAN switch-light goes off.

SUBTASK 21-00-00-040-123

(2) Forward Outflow Valve Deactivation:

(a) If the manual mode control of the forward outflow valve is operational, do these steps to manually move the forward outflow valve to the deactivated position (partially open):

1) Select the 36 AIR SUPPLY maintenance page from a multifunction display unit and make a record of the OUTFLOW VALVES-FWD position indication. To do this, do this task: Showing a Maintenance Page, TASK 31-61-00-800-804.

a) If no OUTFLOW VALVES-FWD position indication shows on the 36 AIR SUPPLY maintenance page, do these steps to get the position indication to show on the maintenance page:

<1> If the ASCPC IN CONTROL indication on the 36 AIR SUPPLY maintenance page shows L, then

Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

<2> If the ASCPC IN CONTROL indication on the 36 AIR SUPPLY maintenance page shows R, then

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
P	12	C36612	AIR SPLY R PRI

<3> If no position indication shows, then continue the procedure and ignore reference to the OUTFLOW VALVES-FWD position indication in the subsequent steps.

2) Push the FWD OUTFLOW VALVE - AUTO/MAN switch-light to the MAN position.

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3) Operate the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to open or close the forward outflow valve until the OUTFLOW VALVES-FWD position indication shows 0.07.

NOTE: If no OUTFLOW VALVES-FWD position indication is available, you will need to visually check the position of the outflow valve as noted in the subsequent step. You may need to operate the toggle switch several times in order to get the outflow valve in the partially open position.

4) Do this step if you opened one of the above AIR SPLY PRI circuit breakers to view the outflow valve position indication on the 36 AIR SUPPLY maintenance page:

a) Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
P	12	C36612	AIR SPLY R PRI

Remove the safety tag and close this circuit breaker:

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

5) Do these steps to deactivate the inoperative outflow valve in the partially open position:

a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

b) Open this circuit breaker and install safety lock:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Open this circuit breaker and install safety lock:

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

6) Push the AFT OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE FORWARD AND THE AFT OUTFLOW VALVE ASSEMBLIES BEFORE YOU DO THIS TEST. INJURIES TO PERSONNEL CAN OCCUR.

7) Use a feeler gage to measure the distance between the two doors of the outflow valve and make sure the distance is approximately 0.375 ±0.031 in. (9.525 ±0.787 mm) (Figure 903).

(b) If the manual mode control of the forward outflow valve is not operational, do these steps to manually move the forward outflow valve to the deactivated position (partially open):

1) Do these steps to deactivate the forward outflow valve in the partially open position:

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a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

b) Open this circuit breaker and install safety lock:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Open this circuit breaker and install safety lock:

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

2) Do these steps to get access to the forward outflow valve:

NOTE: The forward outflow valve assembly is installed below the left power management panel, P110 and under the floor panel on the left side of the main equipment center.

a) Remove the floor panel.

b) Remove the kick panel.

3) Do these steps to remove one of the two DC motor [2] on the outflow valve assembly:

NOTE: The removal of a DC motor [2] will allow you to manually move the outflow valve doors to a partially open position.

a) Disconnect the DC motor electrical connector from the back of the valve control unit (VCU). (Figure 903).

b) Loosen the four captive screws on the DC motor [2].

c) Remove the DC motor [2] from the outflow valve assembly.

d) Remove and discard the packing [1] from the DC motor [2].

4) Manually move the outflow valve doors with your hands until the distance between the two doors is approximately 0.375 ±0.031 in. (9.525 ±0.787 mm) (Figure 903).

a) Hold the outflow valve doors in this partially open position until you do the subsequent steps.

5) Do these steps to re-install the DC motor [2] to the outflow valve assembly:

NOTE: Make sure the outflow valve doors do not move when you install the DC motor [2]. After the installation of the DC motor [2] the outflow valve doors will be locked in the partially open position.

a) Apply grease, D00016 to a new packing [1] and install the packing [1] on the DC motor [2].

b) Put the DC motor [2] in its position on the outflow valve assembly.

c) Tighten the four captive screws on the DC motor [2].

d) Connect the DC motor electrical connector to the back of the VCU.

6) Push the AFT OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

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7) Measure the distance between the two doors of the outflow valve again and make sure the distance is still approximately 0.375 ±0.031 in. (9.525 ±0.787 mm) (Figure 903).

8) Install the kick panel.

9) Install the floor panel.

(c) To confirm that the manual cabin pressure control operates normally on the aft outflow valve, do these steps:

1) Push the AFT OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the MAN position.

2) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position.

a) Make sure the AFT outflow valve position indication on the EICAS primary display moves toward the closed (CL) position. If the EICAS display is not available, hold the switch CLOSED for 30 seconds.

b) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

c) Look at the aft outflow valve to make sure it is in the closed position.

3) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position.

a) Make sure the AFT outflow valve position indication on the EICAS primary display moves toward the open (OP) position. If the EICAS display is not available, hold the switch OPEN for 30 seconds.

b) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

c) Look at the aft outflow valve to make sure it is in the open position.

4) Push the AFT OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

a) Make sure that the MAN switch-light goes off.

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

G. Aft Outflow Valve Inoperative

NOTE: This procedure gives maintenance steps which prepare the airplane for flight when the aft outflow valve is inoperative. The following steps make sure that the forward outflow valve operates and the requirements in the MMEL and DDG are satisfied.

SUBTASK 21-00-00-710-101

(1) Forward Outflow Valve Manual Mode Operational Check:

NOTE: This procedure does a check of the manual mode control for the forward outflow valve. If the FWD outflow valve position indication on the EICAS primary display is not operational, then you must do a visual check of the outflow valve position when you do this operational check.

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

(b) Push the FWD OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the MAN position.

1) Make sure that the MAN switch-light comes on.

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(c) Use the EICAS primary display (if available) to view the FWD outflow valve position indication (OP or CL).

1) Make sure the manual mode control indicator (M) shows on the FWD outflow valve position indication.

(d) Do a visual check of the forward outflow valve to see if it is in the open position.

(e) If the forward outflow valve is not in the open position, then do these steps:

1) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the OPEN position.

a) Make sure the FWD outflow valve position indication on the EICAS primary display (if available) moves toward the open (OP) position.

b) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

c) Look at the forward outflow valve to make sure it is in the open position.

(f) Do these steps to make sure the FWD outflow valve operates in the manual mode:

1) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position.

a) Make sure the FWD outflow valve position indication on the EICAS primary display (if available) moves toward the closed (CL) position.

b) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

c) Look at the forward outflow valve to make sure it is in the closed position.

2) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position.

a) Make sure the FWD outflow valve position indication on the EICAS primary display (if available) moves toward the open (OP) position.

b) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

c) Look at the forward outflow valve to make sure it is in the open position.

(g) Do these steps to make sure the FWD outflow valve operates in the manual mode on both the left and the right control channels:

1) Open the applicable circuit breaker to do a test each control channel:

NOTE: Do not open the two circuit breakers at the same time.

a) To make sure the right channel operates,

Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

b) To make sure the left channel operates,

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

2) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position.

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a) Make sure the FWD outflow valve position indication on the EICAS primary display (if available) moves toward the closed (CL) position.

b) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

c) Look at the forward outflow valve to make sure it is in the closed position.

3) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position.

a) Make sure the FWD outflow valve position indication on the EICAS primary display (if available) moves toward the open (OP) position.

b) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

c) Look at the forward outflow valve to make sure it is in the open position.

4) Close the applicable circuit breaker:

a) Remove the safety tag and close this circuit breaker:

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

b) Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

5) Do the steps again to make sure the opposite manual control channel for the FWD outflow valve operates.

6) Push the FWD OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

a) Make sure that the MAN switch-light goes off.

SUBTASK 21-00-00-040-124

(2) Aft Outflow Valve Deactivation:

(a) If the manual mode control of the aft outflow valve is operational, do these steps to manually move the aft outflow valve to the deactivated position (partially open):

1) Select the 36 AIR SUPPLY maintenance page from a multifunction display unit and make a record of the OUTFLOW VALVES-AFT position indication. To do this, do this task: Showing a Maintenance Page, TASK 31-61-00-800-804.

a) If no OUTFLOW VALVES-AFT position indication shows on the 36 AIR SUPPLY maintenance page, do these steps to get the position indication to show on the maintenance page:

<1> If the ASCPC IN CONTROL indication on the 36 AIR SUPPLY maintenance page shows L, then

Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

<2> If the ASCPC IN CONTROL indication on the 36 AIR SUPPLY maintenance page shows R, then

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Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
P	12	C36612	AIR SPLY R PRI

<3> If no position indication shows, then continue the procedure and ignore reference to the OUTFLOW VALVES-AFT position indication in the subsequent steps.

b) Push the AFT OUTFLOW VALVE - AUTO/MAN switch-light to the MAN position.

c) Operate the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to open or close the aft outflow valve until the OUTFLOW VALVES-AFT position indication shows 0.07.

NOTE: If no OUTFLOW VALVES-AFT position indication is available, you will need to visually check the position of the outflow valve as noted in the subsequent step. You may need to operate the toggle switch several times in order to get the outflow valve in the partially open position.

d) Do this step if you opened one of the above AIR SPLY PRI circuit breakers to view the outflow valve position indication on the 36 AIR SUPPLY maintenance page:

<1> Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	12	C36612	AIR SPLY R PRI

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

e) Do these steps to deactivate the aft outflow valve in the partially open position:

<1> Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

<2> Open this circuit breaker and install safety lock:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Open this circuit breaker and install safety lock:

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

f) Push the FWD OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

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WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE FORWARD AND THE AFT OUTFLOW VALVE ASSEMBLIES BEFORE YOU DO THIS TEST. INJURIES TO PERSONNEL CAN OCCUR.

g) Use a feeler gage to measure the distance between the two doors of the outflow valve and make sure the distance is approximately 0.375 ±0.031 in. (9.525 ±0.787 mm) (Figure 903).

(b) If the manual mode control of the aft outflow valve is not operational, do these steps to manually move the aft outflow valve to the deactivated position (partially open):

1) Do these steps to deactivate the aft outflow valve in the partially open position:

a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

b) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

2) Do these steps to get access to the aft outflow valve:

a) To open the bulk cargo door, do this task: Open the Door, TASK 52-36-00-860-801.

b) To remove the left sidewall liner at the aft end of the bulk cargo compartment, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

3) Do these steps to remove one of the two DC motor [2] on the outflow valve assembly:

NOTE: The removal of a DC motor [2] will allow you to manually move the outflow valve doors to a partially open position.

a) Disconnect the DC motor electrical connector from the back of the valve control unit (VCU) (Figure 903).

b) Loosen the four captive screws on the DC motor [2].

c) Remove the DC motor [2] from the outflow valve assembly.

d) Remove and discard the packing [1] from the DC motor [2].

4) Manually move the outflow valve doors with your hands until the distance between the two doors is approximately 0.375 ±0.031 in. (9.525 ±0.787 mm) (Figure 903).

a) Hold the outflow valve doors in this partially open position until you do the subsequent steps.

5) Do these steps to re-install the DC motor [2] to the outflow valve assembly:

NOTE: Make sure the outflow valve doors do not move when you install the DC motor [2]. After the installation of the DC motor [2] the outflow valve doors will be locked in the partially open position.

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a) Apply grease, D00016 to a new packing [1] and install the packing [1] on the DC motor [2].

b) Put the DC motor [2] in its position on the outflow valve assembly.

c) Tighten the four captive screws on the DC motor [2].

d) Connect the DC motor electrical connector to the back of the VCU.

6) Push the FWD OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

7) Measure the distance between the two doors of the outflow valve again and make sure the distance is still approximately 0.375 ±0.031 in. (9.525 ±0.787 mm) (Figure 903).

8) To install the left sidewall liner at the aft end of the bulk cargo compartment, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

9) To close the bulk cargo door, do this task: Close the Door, TASK 52-36-00-860-802.

(c) To confirm that the manual cabin pressure control operates normally on the remaining outflow valve, do these steps:

1) Push the FWD OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the MAN position.

2) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position.

a) Make sure the FWD outflow valve position indication on the EICAS primary display moves toward the closed (CL) position. If the EICAS display is not available, hold the switch CLOSED for 30 seconds.

b) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

c) Look at the fwd outflow valve to make sure it is in the closed position.

3) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position.

a) Make sure the FWD outflow valve position indication on the EICAS primary display moves toward the open (OP) position. If the EICAS display is not available, hold the switch OPEN for 30 seconds.

b) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

c) Look at the fwd outflow valve to make sure it is in the open position.

4) Push the FWD OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the AUTO position.

a) Make sure that the MAN switch-light goes off.

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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TASK 21-00-00-440-869

51. MMEL 21-31-3-2 (DDG) Restoration - Outflow Valves (FWD and AFT) - One Valve Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with Outflow Valves (FWD and AFT) - One Valve Inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-31-00-700-806-001	Cabin Pressure Control System - System Test (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Prepare for Outflow Valve Reactivation

SUBTASK 21-00-00-860-550

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

E. Outflow Valve Reactivation

SUBTASK 21-00-00-440-079

(1) If you deactivated the forward outflow valve, then do these steps:

(a) Remove the safety locks and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-00-00-440-080

(2) If you deactivated the aft outflow valve, then do these steps:

(a) Remove the safety locks and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

F. Cabin Pressure Control System Repair

SUBTASK 21-00-00-740-097

(1) Go to the MAT and find the EICAS status message.

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(a) Find the fault code and the correlated maintenance message numbers on the MAT.

SUBTASK 21-00-00-810-101

(2) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-102

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

G. Cabin Pressure Control System Test

SUBTASK 21-00-00-730-015

(1) Do this task: Cabin Pressure Control System - System Test, TASK 21-31-00-700-806-001.

——— END OF TASK ———

TASK 21-00-00-040-836

52. MMEL 21-31-3-4 (DDG) Preparation - Outflow Valves (FWD and AFT) - Both Valves Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with Outflow Valves (FWD and AFT) - Both Valves Inoperative.

(2) EICAS Status Messages:

(a) OUTFLOW VALVE AFT

(b) OUTFLOW VALVE FWD

B. References

Reference	Title
21-31-00-040-802-001	Preparation For Unpressurized Flight (P/B 201)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Unpressurized Flight Preparation

SUBTASK 21-00-00-040-043

(1) Do this task: Preparation For Unpressurized Flight, TASK 21-31-00-040-802-001.

——— END OF TASK ———

TASK 21-00-00-440-806

53. MMEL 21-31-3-4 (DDG) Restoration - Outflow Valves (FWD and AFT) - Both Valves Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Outflow Valves (FWD and AFT) - Both Valves Inoperative.

(2) A maintenance access terminal is necessary for this procedure.

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B. References

Reference	Title
21-31-00-440-802-001	Restoration For Pressurized Flight (P/B 201)
21-31-00-700-806-001	Cabin Pressure Control System - System Test (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Prepare for Outflow Valve Reactivation

SUBTASK 21-00-00-860-235

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

E. Pressurized Flight Preparation

SUBTASK 21-00-00-040-044

(1) Do this task: Restoration For Pressurized Flight, TASK 21-31-00-440-802-001.

F. Cabin Pressure Control System Repair

SUBTASK 21-00-00-740-046

(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 21-00-00-810-070

(2) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-071

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

G. Cabin Pressure Control System Test

SUBTASK 21-00-00-730-007

(1) Do this task: Cabin Pressure Control System - System Test, TASK 21-31-00-700-806-001.

——— END OF TASK ———

TASK 21-00-00-040-837

54. MMEL 21-31-5 (DDG) Preparation - Cabin Rate-of-Climb Indication Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Cabin Rate-of-Climb Indication Inoperative.

B. References

Reference	Title
21-31-00-040-802-001	Preparation For Unpressurized Flight (P/B 201)

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C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Unpressurized Flight Preparation

SUBTASK 21-00-00-040-006

(1) Do this task: Preparation For Unpressurized Flight, TASK 21-31-00-040-802-001.

END OF TASK

TASK 21-00-00-440-807

55. MMEL 21-31-5 (DDG) Restoration - Cabin Rate-of-Climb Indication Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Cabin Rate-of-Climb Indication Inoperative.

B. References

Reference	Title
21-31-00-440-802-001	Restoration For Pressurized Flight (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Prepare for Cabin Rate-of-Climb Indication Reactivation

SUBTASK 21-00-00-860-237

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

E. Pressurized Flight Preparation

SUBTASK 21-00-00-040-007

(1) Do this task: Restoration For Pressurized Flight, TASK 21-31-00-440-802-001.

F. Cabin Pressure Control System Repair

SUBTASK 21-00-00-740-047

(1) Look at the Extended Maintenance, Existing Faults display on the MAT for ATA 21 Cabin Pressure Control System, 36 Air Supply and Cabin Pressure Controller, and 45 AIMS Central Maintenance Computing System.

(a) If a maintenance message related to the cabin pressure control system, the ASCPC or communication problems with AIMS shows in existing faults, then do these steps:

(b) Find each maintenance message in the applicable FIM Maintenance Message Index.

NOTE: The most likely causes for an indication fault would be the ASCPC, communication problems between the ASCPC and AIMS and problems with IOM (input output modules in AIMS).

(c) Do the specified task for each maintenance message.

G. Cabin Rate-of-Climb Indication Test

SUBTASK 21-00-00-210-005

(1) Make sure the upper EICAS display shows a cabin rate-of-climb indication.

END OF TASK

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TASK 21-00-00-040-838

56. MMEL 21-31-6 (DDG) Preparation - Cabin Differential Pressure Indication Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Cabin Differential Pressure Indication Inoperative.

B. References

Reference	Title
21-31-00-040-802-001	Preparation For Unpressurized Flight (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Unpressurized Flight Preparation

SUBTASK 21-00-00-040-008

(1) Do this task: Preparation For Unpressurized Flight, TASK 21-31-00-040-802-001.

——— END OF TASK ———

TASK 21-00-00-440-808

57. MMEL 21-31-6 (DDG) Restoration - Cabin Differential Pressure Indication Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Cabin Differential Pressure Indication Inoperative.

B. References

Reference	Title
21-31-00-440-802-001	Restoration For Pressurized Flight (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Prepare for Cabin Differential Pressure Indication Reactivation

SUBTASK 21-00-00-860-238

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

E. Pressurized Flight Preparation

SUBTASK 21-00-00-040-009

(1) Do this task: Restoration For Pressurized Flight, TASK 21-31-00-440-802-001.

F. Cabin Pressure Control System Repair

SUBTASK 21-00-00-740-048

(1) Look at the Extended Maintenance, Existing Faults display on the MAT for ATA 21 Cabin Pressure Control System, 36 Air Supply and Cabin Pressure Controller, and 45 AIMS Central Maintenance Computing System.

(a) If a maintenance message related to the cabin pressure control system, the ASCPC or communication problems with AIMS shows in existing faults, then do these steps:

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(b) Find each maintenance message in the applicable FIM Maintenance Message Index.

NOTE: The most likely causes for an indication fault would be the ASCPC, communication problems between the ASCPC and AIMS and problems with IOM (input output modules in AIMS).

(c) Do the specified task for each maintenance message.

G. Cabin Differential Pressure Indication Test

SUBTASK 21-00-00-210-006

(1) Make sure the upper EICAS display shows a cabin differential pressure indication.

——— END OF TASK ———

TASK 21-00-00-040-839

58. MMEL 21-31-7 (DDG) Preparation - Cabin Altitude Indication Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Cabin Altitude Indication Inoperative.

B. References

Reference	Title
21-31-00-040-802-001	Preparation For Unpressurized Flight (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Unpressurized Flight Preparation

SUBTASK 21-00-00-040-010

(1) Do this task: Preparation For Unpressurized Flight, TASK 21-31-00-040-802-001.

——— END OF TASK ———

TASK 21-00-00-440-809

59. MMEL 21-31-7 (DDG) Restoration - Cabin Altitude Indication Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Cabin Altitude Indication Inoperative.

B. References

Reference	Title
21-31-00-440-802-001	Restoration For Pressurized Flight (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Prepare for Cabin Altitude Indication Reactivation

SUBTASK 21-00-00-860-239

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

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E. Pressurized Flight Preparation

SUBTASK 21-00-00-040-011

(1) Do this task: Restoration For Pressurized Flight, TASK 21-31-00-440-802-001.

F. Cabin Pressure Control System Repair

SUBTASK 21-00-00-740-049

(1) Look at the Extended Maintenance, Existing Faults display on the MAT for ATA 21 Cabin Pressure Control System, 36 Air Supply and Cabin Pressure Controller, and 45 AIMS Central Maintenance Computing System.

(a) If a maintenance message related to the cabin pressure control system, the ASCPC or communication problems with AIMS shows in existing faults, then do these steps:

(b) Find each maintenance message in the applicable FIM Maintenance Message Index.

NOTE: The most likely causes for an indication fault would be the ASCPC, communication problems between the ASCPC and AIMS and problems with IOM (input output modules in AIMS).

(c) Do the specified task for each maintenance message.

G. Cabin Altitude Indication Test

SUBTASK 21-00-00-210-007

(1) Make sure the upper EICAS display shows a cabin altitude indication.

——— END OF TASK ———

TASK 21-00-00-040-841

60. MMEL 21-32-1A (DDG) Preparation - Positive Pressure Relief Valves - One Valve Inoperative

(Figure 904)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Positive Pressure Relief Valves - One Valve Inoperative.

B. References

Reference	Title
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-34-00-860-805	Open the Door Manually (P/B 201)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Positive Pressure Relief Valve Deactivation

SUBTASK 21-00-00-210-008

(1) From outside the airplane, look at the position of the positive pressure relief valve that does not operate.

(a) If the positive pressure relief valve is open, then do the steps that follows:

NOTE: If you can see into the airplane the positive pressure relief valve is open.

1) Push the tabs in.

2) Close the flapper doors.

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(b) If the positive pressure relief valve is closed, then continue.

SUBTASK 21-00-00-010-068

(2) To gain access to the positive pressure relief valves, do the steps that follow:

(a) Do this task: Open the Door Manually, TASK 52-34-00-860-805.

(b) Remove the applicable sidewall liner on the left side of the forward cargo compartment, (TASK 52-36-00-860-801).

SUBTASK 21-00-00-860-108

(3) If the flapper doors for the positive pressure relief valve are open, then do this step:

(a) Push the tabs in.

(b) From out of the airplane, press the flapper doors closed until flush with the fuselage.

SUBTASK 21-00-00-020-002

(4) Disconnect the remote ambient sense hose from the primary metering section cap.

(a) Put a cap on the remote ambient sense hose and the primary metering section cap.

SUBTASK 21-00-00-020-003

(5) Disconnect the integral ambient sense tube from the secondary metering section cap.

(a) Put a cap on the integral ambient sense tube and the secondary metering section cap.

SUBTASK 21-00-00-410-005

(6) Install the applicable sidewall liner on the left side of the forward cargo compartment, (TASK 25-52-06-400-801).

SUBTASK 21-00-00-410-006

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

——— END OF TASK ———

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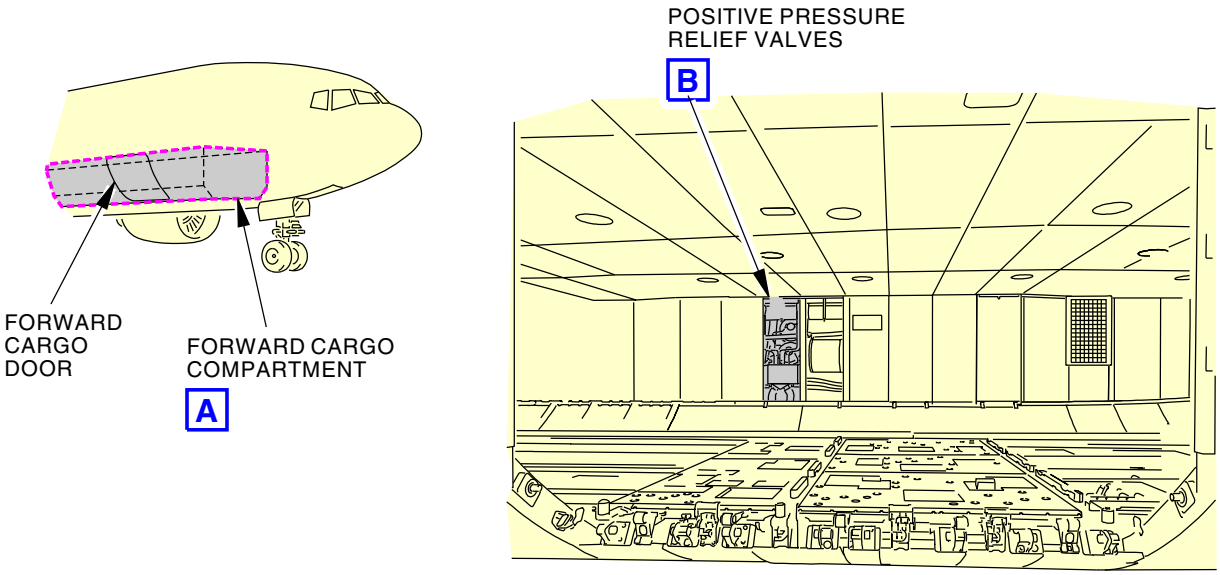
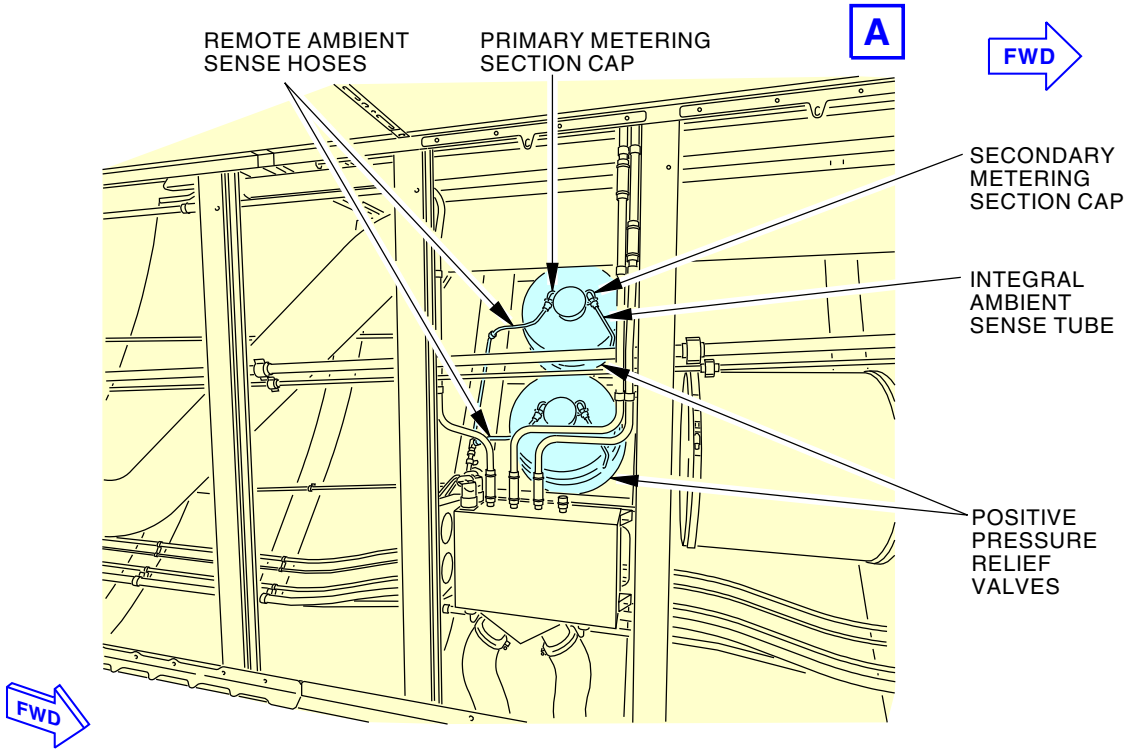


FORWARD CARGO COMPARTMENT

A



POSITIVE PRESSURE RELIEF VALVES

B

E32803 S0006402890_V2

Positive Pressure Relief Valve Deactivation
Figure 904/21-00-00-990-804

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TASK 21-00-00-440-811

61. MMEL 21-32-1A (DDG) Restoration - Positive Pressure Relief Valves - One Valve Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Positive Pressure Relief Valves - One Valve Inoperative.

B. References

Reference	Title
21-31-00-440-802-001	Restoration For Pressurized Flight (P/B 201)
21-32-01-000-801	Positive Pressure Relief Valve Removal (P/B 201)
21-32-01-400-801	Positive Pressure Relief Valve Installation (P/B 201)
21-32-01-700-801	Positive Pressure Relief Valve - System Test (P/B 501)
21-32-01-790-801	Positive Pressure Relief Valve - Static System Leak Check (P/B 201)
52-34-00-860-805	Open the Door Manually (P/B 201)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Positive Pressure Relief Valve Reactivation

SUBTASK 21-00-00-440-003

(1) If the airplane was configured for unpressurized flight, then do these steps:

(a) Do this task: Restoration For Pressurized Flight, TASK 21-31-00-440-802-001.

SUBTASK 21-00-00-440-004

(2) If the positive pressure relief valve was deactivated closed, then do these steps:

(a) To gain access to the positive pressure relief valves, do these steps:

1) Do this task: Open the Door Manually, TASK 52-34-00-860-805.

2) Remove the applicable sidewall liner on the left side of the forward cargo compartment, (TASK 52-36-00-860-801).

(b) Remove the caps from the remote ambient sense hose and from the primary metering section port.

(c) Remove the caps from the integral ambient sense tube and from the secondary metering section port.

(d) Connect the remote ambient sense hose to the primary metering section port.

(e) Connect the integral ambient sense tube to the secondary metering section port.

(f) Do this task: Positive Pressure Relief Valve - System Test, TASK 21-32-01-700-801.

E. Positive Pressure Relief Valves Repair

SUBTASK 21-00-00-790-001

(1) Do this task: Positive Pressure Relief Valve - Static System Leak Check, TASK 21-32-01-790-801.

SUBTASK 21-00-00-790-002

(2) If you find leaks in the static sense lines, then do these steps:

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(a) Repair the lines.

(b) Do this task: Positive Pressure Relief Valve - System Test, TASK 21-32-01-700-801.

(c) If the system test for the positive pressure relief valve is not satisfactory, then do the step that follows:

1) Replace the positive pressure relief valve.

Do this task:

Positive Pressure Relief Valve Removal, TASK 21-32-01-000-801,

Positive Pressure Relief Valve Installation, TASK 21-32-01-400-801.

SUBTASK 21-00-00-790-003

(3) If you do not find leaks in the static sense lines, then do the step that follows:

(a) Replace the positive pressure relief valve.

Do this task:

Positive Pressure Relief Valve Removal, TASK 21-32-01-000-801,

Positive Pressure Relief Valve Installation, TASK 21-32-01-400-801.

——— END OF TASK ———

TASK 21-00-00-040-842

62. MMEL 21-32-1B (DDG) Preparation - Positive Pressure Relief Valves - Both Valves Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Positive Pressure Relief Valves - Both Valves Inoperative.

B. References

Reference	Title
21-31-00-040-802-001	Preparation For Unpressurized Flight (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Unpressurized Flight Preparation

SUBTASK 21-00-00-040-014

(1) Do this task: Preparation For Unpressurized Flight, TASK 21-31-00-040-802-001.

——— END OF TASK ———

TASK 21-00-00-440-812

63. MMEL 21-32-1B (DDG) Restoration - Positive Pressure Relief Valves - Both Valves Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Positive Pressure Relief Valves - Both Valves Inoperative.

B. References

Reference	Title
21-31-00-440-802-001	Restoration For Pressurized Flight (P/B 201)
21-32-01-000-801	Positive Pressure Relief Valve Removal (P/B 201)

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(Continued)

Reference	Title
21-32-01-400-801	Positive Pressure Relief Valve Installation (P/B 201)
21-32-01-700-801	Positive Pressure Relief Valve - System Test (P/B 501)
21-32-01-790-801	Positive Pressure Relief Valve - Static System Leak Check (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Positive Pressure Relief Valves Reactivation

SUBTASK 21-00-00-040-015

(1) Do this task: Restoration For Pressurized Flight, TASK 21-31-00-440-802-001.

E. Positive Pressure Relief Valves Repair

SUBTASK 21-00-00-790-004

(1) Do this task: Positive Pressure Relief Valve - Static System Leak Check, TASK 21-32-01-790-801.

SUBTASK 21-00-00-790-005

(2) If you find leaks in the static sense lines, then do these steps:

(a) Repair the lines.

(b) Do this task: Positive Pressure Relief Valve - System Test, TASK 21-32-01-700-801.

(c) If the system test for the positive pressure relief valve is not satisfactory, then do the step that follows:

1) Replace the positive pressure relief valve.

Do these asks:

Positive Pressure Relief Valve Removal, TASK 21-32-01-000-801,

Positive Pressure Relief Valve Installation, TASK 21-32-01-400-801.

SUBTASK 21-00-00-790-006

(3) If you do not find leaks in the static sense lines, then do the step that follows:

(a) Replace the positive pressure relief valve.

Do these tasks:

Positive Pressure Relief Valve Removal, TASK 21-32-01-000-801,

Positive Pressure Relief Valve Installation, TASK 21-32-01-400-801.

——— END OF TASK ———

TASK 21-00-00-040-843

64. MMEL 21-44-1 (DDG) Preparation - Aft Cargo Heat Valves Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the aft cargo heat valves inoperative.

(2) EICAS Status Messages

(a) CARGO HEAT VALVE AFT

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B. References

Reference	Title
21-44-01-000-801	Aft Cargo Heat Shutoff Valve and Temperature Control Valve Removal (P/B 401)
21-44-01-000-802	Aft Cargo Heat Shutoff Valve and Temperature Control Valve Installation (P/B 401)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Aft Cargo Heat Valves Deactivation

SUBTASK 21-00-00-860-109

(1) Put the AFT CARGO TEMP SELECT switch, which is on the CARGO HEAT panel, in the OFF position.

NOTE: The CARGO HEAT panel is on the Maintenance Panel, P61.

SUBTASK 21-00-00-010-069

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-110

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV
G	25	C21615	AFT CGO HT SOV

SUBTASK 21-00-00-010-070

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-148

(5) Do this task: Open the Door, TASK 52-36-00-860-801.

SUBTASK 21-00-00-010-149

(6) Disconnect the divider net along the left sidewall and move it out of the way.

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SUBTASK 21-00-00-860-415

(7) For the location of the aft and bulk cargo heat valves, see Figure 905.

SUBTASK 21-00-00-010-150

(8) Remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-00-00-210-026

(9) Supply pneumatic power with the APU. To supply pneumatic power with the APU, do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-00-00-210-020

(10) Look at the position indicator on the aft cargo heat shutoff valve and on the aft cargo heat temperature control valve.

SUBTASK 21-00-00-210-021

(11) If the two aft cargo heat valves are open, then do these steps:

NOTE: At least one of the two valves must be closed for proper operation of the aft cargo compartment fire extinguishing system.

(a) Remove pressure from the pneumatic system. To remove pressure from the pneumatic system, do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

(b) Replace at least one of the two aft cargo heat valves.

These are the tasks:

Aft Cargo Heat Shutoff Valve and Temperature Control Valve Removal, TASK 21-44-01-000-801,

Aft Cargo Heat Shutoff Valve and Temperature Control Valve Installation, TASK 21-44-01-000-802.

NOTE: If you replace only one of the aft cargo heat valves, do not perform the installation test. All four of the aft and bulk cargo temperature control valves and shutoff valves are interchangeable. Valves may be interchanged between the aft and bulk cargo heat systems to achieve at least one closed valve in each system.

(c) If you replaced the two aft cargo heat valves, then do the Restoration - Aft Cargo Heat Valves Inoperative procedure below.

(d) If you replaced only one of the two aft cargo heat valves, then do these steps:

1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

2) Remove the safety locks and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV
G	25	C21615	AFT CGO HT SOV

NOTE: The aft cargo heat valves can not be closed manually. Power must be supplied to close the valve.

3) Make sure that the valve you replaced is in the closed position.

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4) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV
G	25	C21615	AFT CGO HT SOV

5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-151

(12) Reinstall the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-00-00-410-037

(13) Do this task: Close the Door, TASK 52-36-00-860-802.

——— END OF TASK ———

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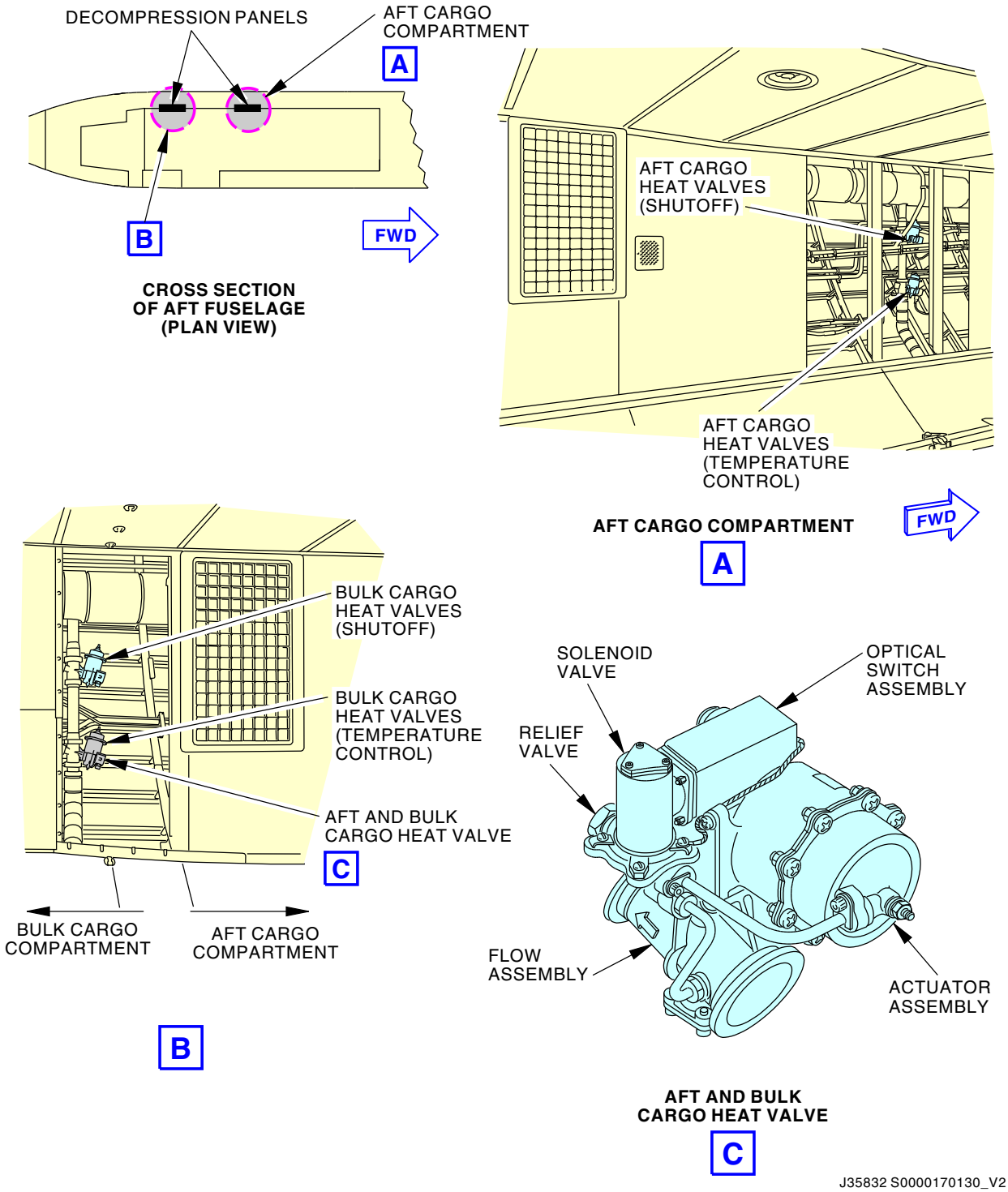

AIR CONDITIONING - AFT AND BULK CARGO COMPARTMENT HEATING - HEAT VALVES
Figure 905/21-00-00-990-823

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TASK 21-00-00-040-844

65. MMEL 21-44-1 (DDG) Restoration - Aft Cargo Heat Valves Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the aft cargo heat valves inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Aft Cargo Heat Valves Reactivation

SUBTASK 21-00-00-010-071

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-111

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV
G	25	C21615	AFT CGO HT SOV

SUBTASK 21-00-00-010-072

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Aft Cargo Heat Valves Check

SUBTASK 21-00-00-860-112

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

SUBTASK 21-00-00-740-024

(2) 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 21-00-00-810-037

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: The first two digits of the fault code are the FIM chapter.

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(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 21-00-00-810-038

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-845

66. MMEL 21-44-3 (DDG) Preparation - Bulk Cargo Heat Valves Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the bulk cargo heat valves inoperative.

(2) EICAS Status Messages

(a) CARGO HEAT VALVE BULK

B. References

Reference	Title
21-44-03-000-801	Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Removal (P/B 401)
21-44-03-000-802	Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Installation (P/B 401)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Bulk Cargo Heat Valves Deactivation

SUBTASK 21-00-00-860-114

(1) Put the BULK CARGO TEMP SELECT switch, which is on the CARGO HEAT panel, in the OFF position.

NOTE: The CARGO HEAT panel is on the Maintenance Panel, P61.

SUBTASK 21-00-00-010-074

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-00-00-860-115

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	3	C21616	BULK CGO HT SOV
G	4	C21620	BULK CGO HT TCV

SUBTASK 21-00-00-010-075

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-152

(5) Do this task: Open the Door, TASK 52-36-00-860-801.

SUBTASK 21-00-00-010-153

(6) Disconnect the divider net along the left sidewall and move it out of the way.

SUBTASK 21-00-00-010-154

(7) Remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-00-00-210-027

(8) Supply pneumatic power with the APU. To supply pneumatic power with the APU, do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-00-00-210-022

(9) Look at the position indicator on the bulk cargo heat shutoff valve and on the bulk cargo heat temperature control valve.

SUBTASK 21-00-00-210-023

(10) If the two bulk cargo heat valves are open, then do these steps:

NOTE: At least one of the two valves must be closed for proper operation of the bulk cargo compartment fire extinguishing system.

(a) Remove pressure from the pneumatic system. To remove pressure from the pneumatic system, do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

(b) Replace at least one of the two bulk cargo heat valves.

These are the tasks:

Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Removal, TASK 21-44-03-000-801,

Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Installation, TASK 21-44-03-000-802.

NOTE: If you replace only one of the bulk cargo heat valves, do not perform the installation test. All four of the aft and bulk cargo temperature control valves and shutoff valves are interchangeable. Valves may be interchanged between the aft and bulk cargo heat systems to achieve at least one closed valve in each system.

(c) If you replaced the two bulk cargo heat valves, then do the Restoration - Bulk Cargo Heat Valves Inoperative procedure below.

(d) If you replaced only one of the two bulk cargo heat valves, then do these steps:

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1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

2) Remove the safety locks and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	3	C21616	BULK CGO HT SOV
G	4	C21620	BULK CGO HT TCV

NOTE: The bulk cargo heat valves can not be closed manually. Power must be supplied to close the valve.

3) Make sure that the valve you replaced is in the closed position.

4) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
G	3	C21616	BULK CGO HT SOV
G	4	C21620	BULK CGO HT TCV

5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-155

(11) Reinstall the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-00-00-410-038

(12) Do this task: Close the Door, TASK 52-36-00-860-802.

——— END OF TASK ———

TASK 21-00-00-040-846

67. MMEL 21-44-3 (DDG) Restoration - Bulk Cargo Heat Valves Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the bulk cargo heat valves inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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E. Bulk Cargo Heat Valves Reactivation

SUBTASK 21-00-00-010-076

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-116

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	3	C21616	BULK CGO HT SOV
G	4	C21620	BULK CGO HT TCV

SUBTASK 21-00-00-010-077

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Bulk Cargo Heat Valves Check

SUBTASK 21-00-00-860-117

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

SUBTASK 21-00-00-740-025

(2) 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 21-00-00-810-039

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-040

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-868

68. MMEL 21-45-1 (DDG) Preparation - Flight Deck Foot Heaters Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the flight deck foot heaters inoperative.

NOTE: This task also deactivates the shoulder heaters.

B. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

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C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Flight Deck Foot Heaters Deactivation

SUBTASK 21-00-00-710-049

(1) Set the related foot heater selector to the OFF position.

NOTE: The Captain's foot heater selector is found on the P13 sidewall panel. The First Officer's foot heater selector is found on the P14 sidewall panel.

SUBTASK 21-00-00-010-164

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-254

(3) To deactivate the Captain's foot heater:

(a) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
H	20	C21654	CAPT FT & SHLDR HTR CTRL

SUBTASK 21-00-00-860-255

(4) To deactivate the First Officer's foot heater:

(a) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

SUBTASK 21-00-00-010-165

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-869

69. MMEL 21-45-1 (DDG) Restoration - Flight Deck Foot Heaters Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the flight deck foot heaters inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

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C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Flight Deck Foot Heaters Reactivation

SUBTASK 21-00-00-010-166

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-256

(2) To reactivate the Captain's foot heater:

(a) Remove the safety locks and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
H	20	C21654	CAPT FT & SHLDR HTR CTRL

SUBTASK 21-00-00-860-257

(3) To reactivate the First Officer's foot heater:

(a) Remove the safety locks and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

SUBTASK 21-00-00-010-167

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Flight Deck Foot Heaters Check

SUBTASK 21-00-00-860-258

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

SUBTASK 21-00-00-740-051

(2) 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 21-00-00-810-072

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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.

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SUBTASK 21-00-00-810-073

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-870

70. MMEL 21-45-2 (DDG) Preparation - Flight Deck Shoulder Heaters Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the flight deck shoulder heaters inoperative.

NOTE: This task also deactivates the foot heaters.

B. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Flight Deck Shoulder Heaters Deactivation

SUBTASK 21-00-00-710-050

(1) Set the related shoulder heater control to the OFF position.

NOTE: The Captain's shoulder heater control is found on the P13 sidewall panel. The First Officer's shoulder heater control is found on the P14 sidewall panel.

SUBTASK 21-00-00-010-168

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-259

(3) To deactivate the Captain's shoulder heater:

(a) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
H	20	C21654	CAPT FT & SHLDR HTR CTRL

SUBTASK 21-00-00-860-260

(4) To deactivate the First Officer's shoulder heater:

(a) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

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SUBTASK 21-00-00-010-169

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-871

71. MMEL 21-45-2 (DDG) Restoration - Flight Deck Shoulder Heaters Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the flight deck shoulder heaters inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Flight Deck Shoulder Heaters Reactivation

SUBTASK 21-00-00-010-170

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-261

(2) To reactivate the Captain's shoulder heater:

(a) Remove the safety locks and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
H	20	C21654	CAPT FT & SHLDR HTR CTRL

SUBTASK 21-00-00-860-262

(3) To reactivate the First Officer's shoulder heater:

(a) Remove the safety locks and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

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SUBTASK 21-00-00-010-171

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Flight Deck Shoulder Heaters Check

SUBTASK 21-00-00-860-263

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

SUBTASK 21-00-00-740-052

(2) 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 21-00-00-810-074

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-075

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-847

72. MMEL 21-51-1 (DDG) Preparation - Air Conditioning Packs Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Air Conditioning Packs Inoperative.

(2) EICAS Status Messages:

(a) PACK L

(b) PACK R

B. References

Reference	Title
21-31-00-040-802-001	Preparation For Unpressurized Flight (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Pressurized Flight Preparation - One Pack Inoperative

E. Unpressurized Flight Preparation - Two Packs Inoperative

SUBTASK 21-00-00-040-016

(1) Do this task: Preparation For Unpressurized Flight, TASK 21-31-00-040-802-001.

SUBTASK 21-00-00-040-046

(2) Put the FWD CARGO A/C selector on the overhead P5 panel to the OFF position.

——— END OF TASK ———

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TASK 21-00-00-040-848

73. MMEL 21-51-1 (DDG) Restoration - Air Conditioning Packs Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Air Conditioning Packs Inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-31-00-440-802-001	Restoration For Pressurized Flight (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Air Conditioning Pack Reactivation

SUBTASK 21-00-00-440-005

(1) Do this task: Restoration For Pressurized Flight, TASK 21-31-00-440-802-001.

E. Air Conditioning Pack Check

SUBTASK 21-00-00-860-119

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

SUBTASK 21-00-00-740-026

(2) 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 21-00-00-810-041

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-042

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-849

74. MMEL 21-51-2 (DDG) Preparation - Pack Flow Control/Shutoff Valves (FCVs) Inoperative

(Figure 906)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Pack Flow Control/Shutoff Valves (FCVs) Inoperative.

(2) Airplanes that do not have AIMS BPV14 or later installed have EICAS status messages PACK FCV L or PACK FCV R and do require confirmation that the defective flow control and shutoff valve has been deactivated.

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(3) Airplanes that have AIMS BPV14 or later installed have EICAS messages PACK FCV LWR L, PACK FCV LWR R, PACK FCV UPR L AND PACK FCV UPR R and do not require confirmation that the defective flow control and shutoff valve has been deactivated.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Deactivation

SUBTASK 21-00-00-860-121

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-079

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-122

(3) Do these steps for the deactivation of the upper or lower flow control and shutoff valve for the left cooling pack:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	23	C21645	L ECV FCV POS SNSR
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-123

(4) Do these steps for the deactivation of the upper or lower flow control and shutoff valve for the right cooling pack:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
H	4	C21646	R ECV/FCV POS SNSR

SUBTASK 21-00-00-010-080

(5) To get access to the upper or lower flow control and shutoff valve for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-010-081

(6) To get access to the upper or lower flow control and shutoff valve for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

F. Flow Control Valve and Shutoff Valve (FCV) Deactivation (Locked Closed)

SUBTASK 21-00-00-980-003

(1) If the manual lock is not in the closed (CL) position, then do this step:

(a) Turn the manual wrench until the manual lock is in the closed position.

NOTE: Look at the position of the manual lock, in relation to the OP and CL marks on top of the actuator housing. The actuator arm will move from one mark to the other mark as the FCV opens and closes.

SUBTASK 21-00-00-020-039

(2) Remove the locking plug from the FCV actuator boss.

SUBTASK 21-00-00-420-001

(3) Install the locking plug in the hole in the manual lock.

CAUTION

DO NOT USE THE 20 POUND-FEET (27.1 NEWTON-METERS) OF TORQUE IDENTIFIED ON THE DECAL TO INSTALL THE LOCKING PLUG. THE 20 POUND-FEET OF TORQUE IS THE MAXIMUM TORQUE NECESSARY TO CLOSE THE VALVE. IF YOU USE THE 20 POUND-FEET OF TORQUE ON THE LOCKING PLUG, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(a) Tighten the locking plug.

NOTE: The usual running torque for the locking plug is 10-15 pound-inches (1.1-1.7 newton-meters). The locking plug is installed when there is an increase in the running torque.

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SUBTASK 21-00-00-860-124

(4) If you deactivated the upper or lower flow control and shutoff valve for the left cooling pack, then do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	23	C21645	L ECV FCV POS SNSR
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-125

(5) If you deactivated the upper or lower flow control and shutoff valve for the right cooling pack, then do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
H	4	C21646	R ECV/FCV POS SNSR

SUBTASK 21-00-00-700-006

(6) For airplanes with EICAS status messages PACK FCV L or PACK FCV R, confirm that the defective flow control and shutoff valve is the one that is deactivated as follows:

NOTE: The EICAS Status Messages do not identify the upper or lower FCV. These steps are necessary to make sure that the defective valve has been deactivated.

(a) Pressurize the pneumatic system, do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

(b) Push the applicable PACK switch (on the P5 panel) to the AUTO position.

(c) Wait 35 seconds after pushing the PACK switch, then look for the applicable pack's advisory and status messages.

NOTE: If a defective FCV is locked closed and the other FCV operates correctly, then the PACK FCV L (or R) status message is displayed and the pack continues to operate. If a good FCV is locked closed and the other FCV is defective, then the PACK L (or R) advisory message is displayed and the pack does not operate.

(d) If the pack continues to operate, then the defective FCV has been deactivated.

(e) If the pack does not operate, follow the procedures in the Fault Isolation Manual to correct the problem.

NOTE: The pack does not operate if a good FCV is locked closed and the other FCV is defective.

(f) Push the applicable PACK switch (on the P5 panel) to the OFF position.

(g) Wait for the pack OFF light to come on.

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(h) Depressurize the pneumatic system, do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-410-007

(7) If you deactivated the upper or lower flow control and shutoff valve for the right cooling pack, then close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-410-008

(8) If you deactivated the upper or lower flow control and shutoff valve for the left cooling pack, then close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-010-082

(9) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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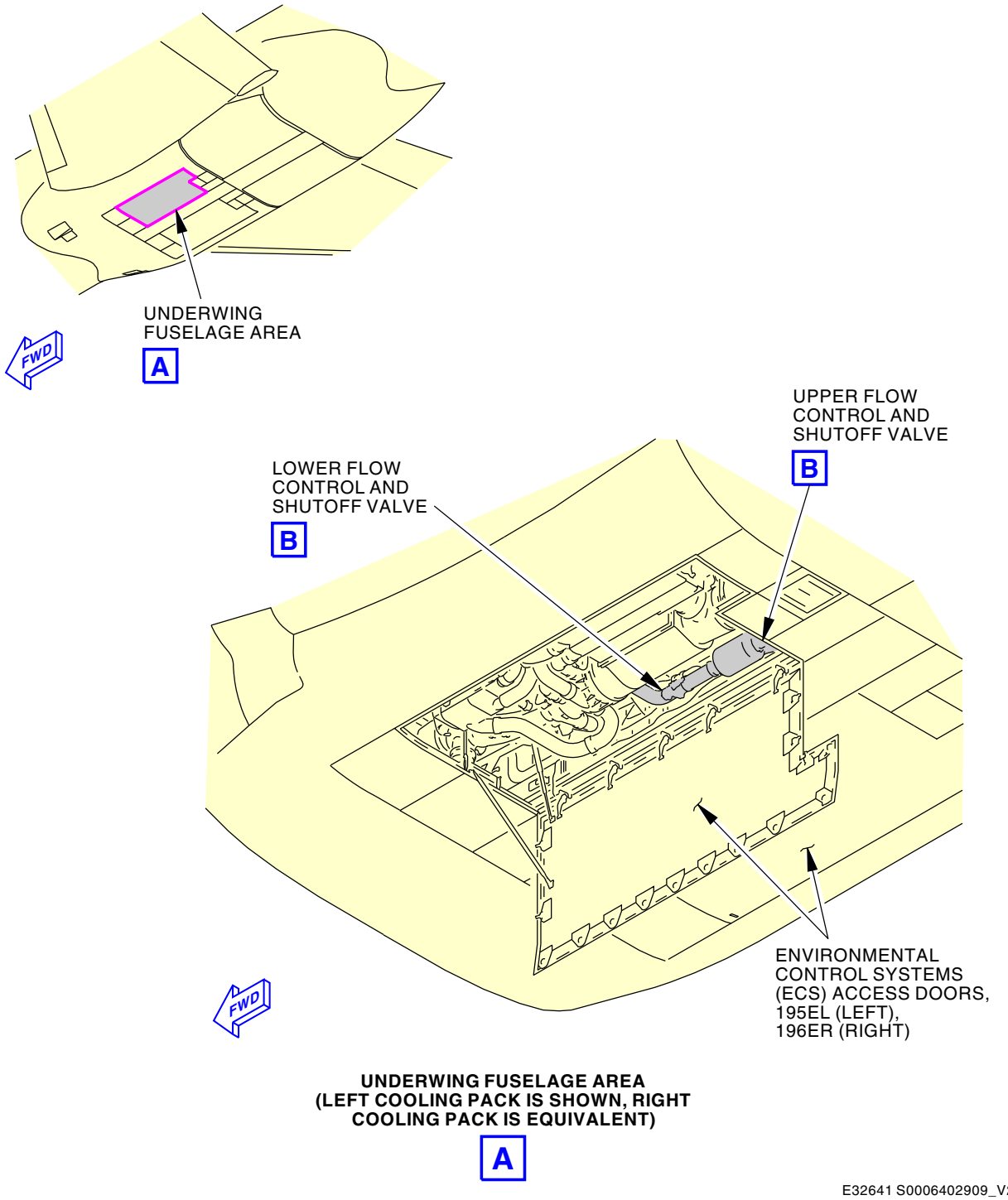

UNDERWING FUSELAGE AREA
(LEFT COOLING PACK IS SHOWN, RIGHT COOLING PACK IS EQUIVALENT)

A

E32641 S0006402909_V2

Pack Flow Control And Shutoff Valve Deactivation
Figure 906/21-00-00-990-805 (Sheet 1 of 3)

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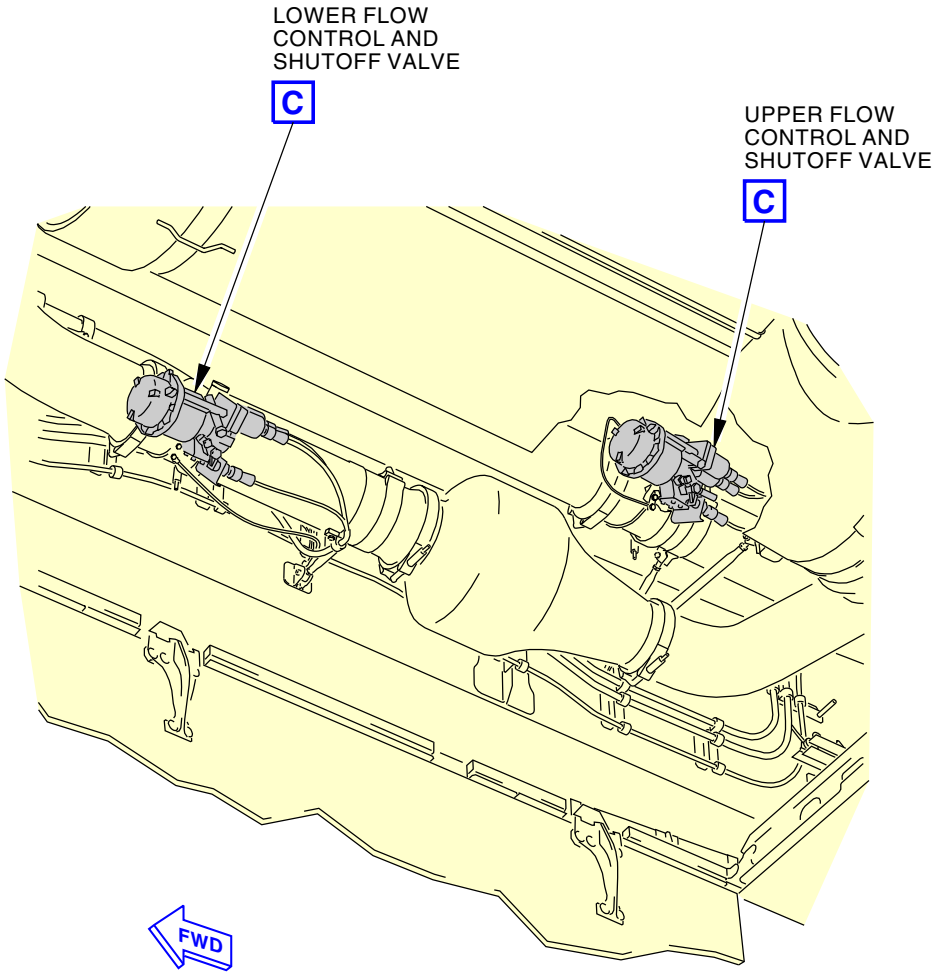

LOWER AND UPPER FLOW CONTROL AND SHUTOFF VALVES

B

E33180 S0006402910_V2

Pack Flow Control And Shutoff Valve Deactivation
Figure 906/21-00-00-990-805 (Sheet 2 of 3)

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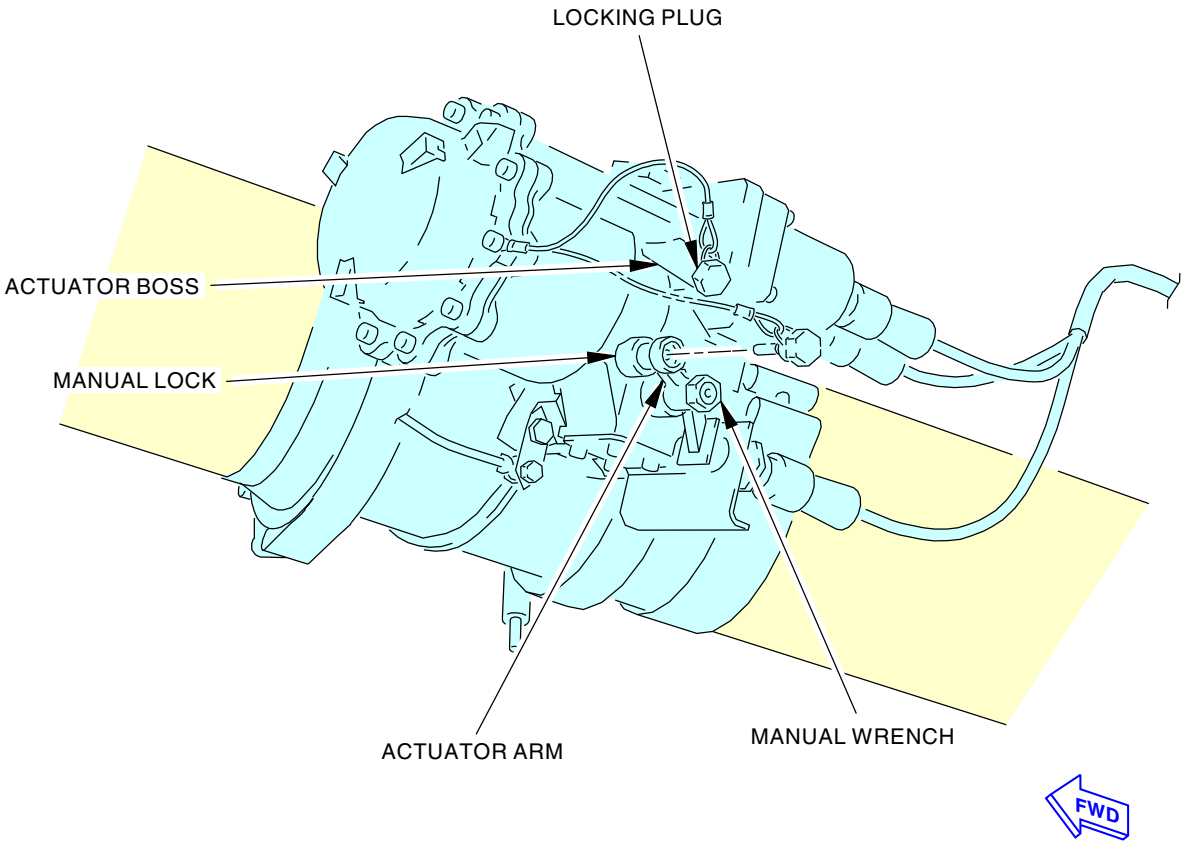

FLOW CONTROL AND SHUTOFF VALVE (EXAMPLE)

C

E33223 S0006402911_V2

Pack Flow Control And Shutoff Valve Deactivation
Figure 906/21-00-00-990-805 (Sheet 3 of 3)

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TASK 21-00-00-440-813

75. MMEL 21-51-2 (DDG) Restoration - Pack Flow Control/Shutoff Valves (FCV) Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Pack Flow Control/Shutoff Valves (FCV) Inoperative.

(2) 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Reactivation

SUBTASK 21-00-00-860-126

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-083

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-127

(3) Do these steps for the reactivation of the upper or lower flow control and shutoff valve for the left cooling pack:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	23	C21645	L ECV FCV POS SNSR
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

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SUBTASK 21-00-00-860-128

(4) Do these steps for the reactivation of the upper or lower flow control and shutoff valve for the right cooling pack:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
H	4	C21646	R ECV/FCV POS SNSR

SUBTASK 21-00-00-010-084

(5) To get access to the upper or lower flow control and shutoff valve for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-010-085

(6) To get access to the upper or lower flow control and shutoff valve for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

F. Flow Control Valve and Shutoff Valve (FCV) Reactivation

SUBTASK 21-00-00-020-005

(1) Remove the locking plug from the hole in the manual lock.

SUBTASK 21-00-00-420-002

(2) Install the locking plug in the actuator boss.

(a) Tighten the locking plug.

SUBTASK 21-00-00-860-129

(3) If you reactivated the upper or lower flow control and shutoff valve for the left cooling pack, then do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	23	C21645	L ECV FCV POS SNSR
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-130

(4) If you reactivated the upper or lower flow control and shutoff valve for the right cooling pack, then do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
H	4	C21646	R ECV/FCV POS SNSR

SUBTASK 21-00-00-010-086

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

G. Flow Control and Shutoff Valve Check

SUBTASK 21-00-00-860-131

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

SUBTASK 21-00-00-740-027

(2) 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 21-00-00-810-043

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-044

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-850

76. MMEL 21-52-1 (DDG) Preparation - Air Cycle Machines (ACMs) Inoperative

(Figure 907)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Air Cycle Machines (ACMs) Inoperative.

(2) EICAS Status Messages:

(a) PACK ACM L

(b) PACK ACM R

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

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C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Associated Second Stage Turbine Bypass Valve Deactivation (Locked Open)

SUBTASK 21-00-00-860-133

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-087

(2) To get access to the second stage turbine bypass valve, V21531 for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-010-088

(3) To get access to the second stage turbine bypass valve, V21541 for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-020-006

(4) Disconnect the electrical connector from the second stage turbine bypass valve.

SUBTASK 21-00-00-020-007

(5) Cap and stow the electrical connector.

SUBTASK 21-00-00-980-004

(6) If the position indicator on the second stage turbine bypass valve does not show open (O), then do this step:

(a) Turn the manual open/close knob until the position indicator shows that the second stage turbine bypass valve is in the open (O) position.

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SUBTASK 21-00-00-410-009

(7) If the second stage turbine bypass valve for the left cooling pack was deactivated, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-410-010

(8) If the second stage turbine bypass valve for the right cooling pack was deactivated, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

F. Ram Air Inlet Door Deactivation (Secured Open)

SUBTASK 21-00-00-040-017

(1) If the ram air inlet door does not operate correctly, do this task: MMEL 21-52-5A (DDG) Preparation - Ram Air Inlet Door Systems Inoperative (Pack Remains Operative), TASK 21-00-00-040-854

G. Ram Air Exit Door Deactivation (Secured Open)

NOTE: This step is not necessary if SB 777-21-0011 has been incorporated.

SUBTASK 21-00-00-040-018

(1) If the ram air exit door does not operate correctly, do this task: MMEL 21-52-6 (DDG) Preparation - Ram Air Exit Door Systems Inoperative, TASK 21-00-00-040-855

——— END OF TASK ———

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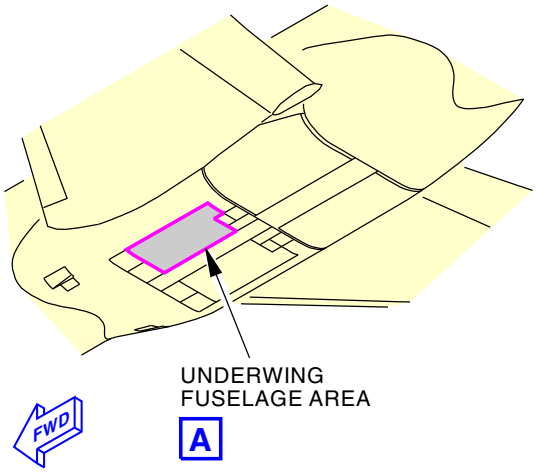

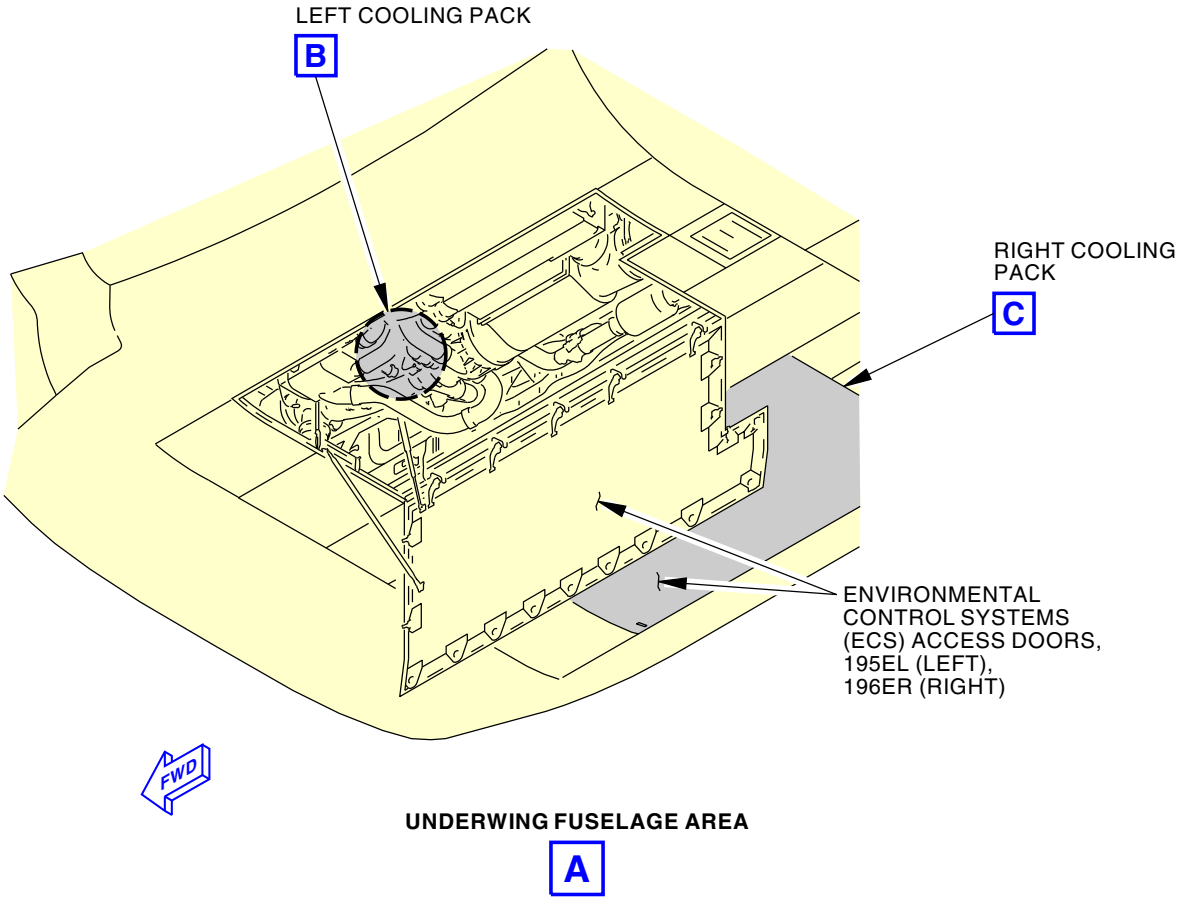

E33052 S0006402914_V2

Second Stage Turbine Bypass Valve Deactivation
Figure 907/21-00-00-990-806 (Sheet 1 of 3)

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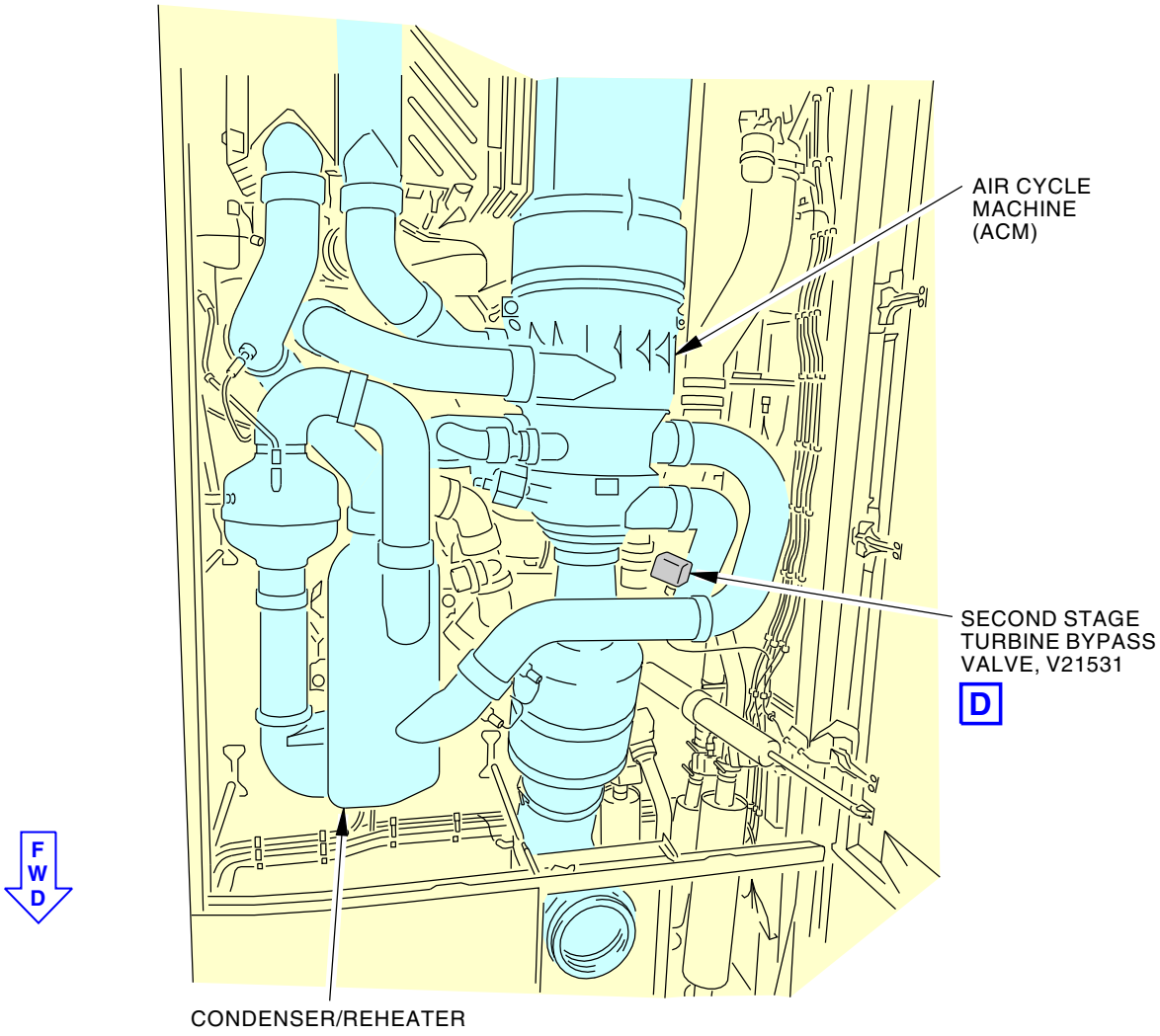

LEFT COOLING PACK
(BOTTOM VIEW)

B

E33075 S0006402915_V2

Second Stage Turbine Bypass Valve Deactivation
Figure 907/21-00-00-990-806 (Sheet 2 of 3)

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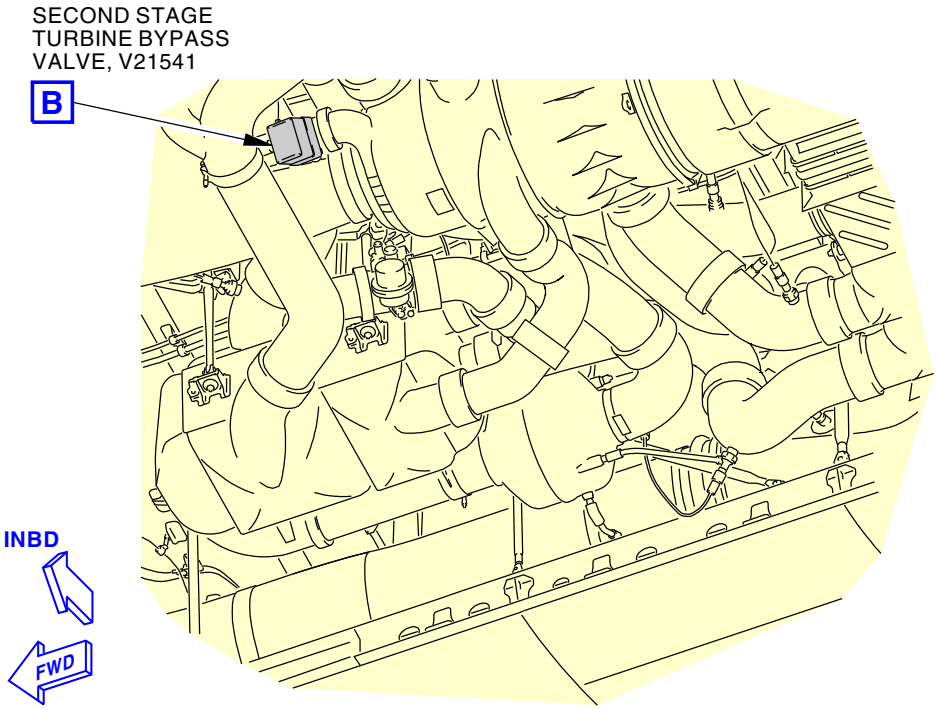

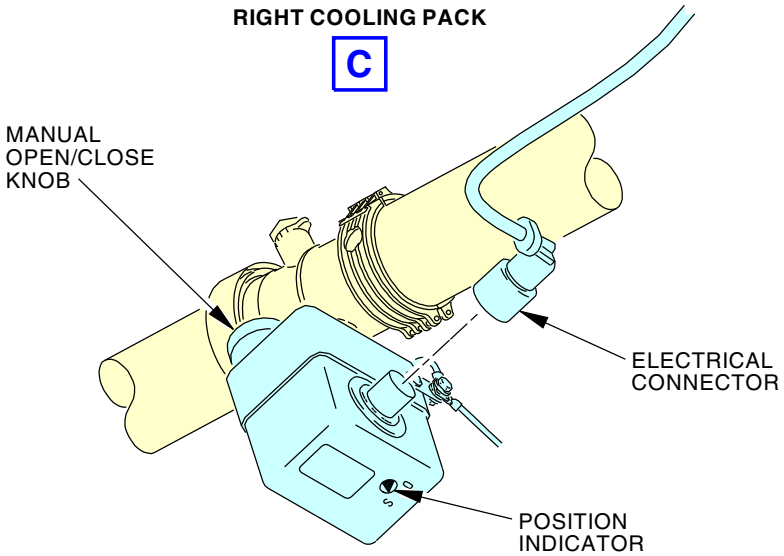

SECOND STAGE TURBINE BYPASS VALVE (EXAMPLE)

D

E33082 S0006402916_V2

Second Stage Turbine Bypass Valve Deactivation
Figure 907/21-00-00-990-806 (Sheet 3 of 3)

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TASK 21-00-00-440-814

77. MMEL 21-52-1 (DDG) Restoration - Air Cycle Machines (ACMs) Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Air Cycle Machines (ACMs) Inoperative.

(2) 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Second Stage Turbine Bypass Valve Reactivation

SUBTASK 21-00-00-860-134

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-089

(2) To get access to the second stage turbine bypass valve for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-010-090

(3) To get access to the second stage turbine bypass valve for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-420-003

(4) Connect the electrical connector to the second stage turbine bypass valve.

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SUBTASK 21-00-00-410-011

(5) If the second stage turbine bypass valve for the left cooling pack was deactivated, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-410-012

(6) If the second stage turbine bypass valve for the right cooling pack was deactivated, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

F. Ram Air Inlet Door Reactivation

SUBTASK 21-00-00-440-006

(1) To reactivate the ram air inlet door, do this task: MMEL 21-52-5A (DDG) Restoration - Ram Air Inlet Door Systems Inoperative (Pack Remains Operative), TASK 21-00-00-440-818

G. Ram Air Exit Door Reactivation

NOTE: This step is not necessary if SB 777-21-0011 has been incorporated.

SUBTASK 21-00-00-440-007

(1) To reactivate the ram air exit door, do this task: MMEL 21-52-6 (DDG) Restoration - Ram Air Exit Door Systems Inoperative, TASK 21-00-00-440-819

H. Pack Flow Control/Pack Cooling and Mix Manifold Temperature Control Systems Check

SUBTASK 21-00-00-860-135

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

SUBTASK 21-00-00-740-028

(2) 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 21-00-00-810-045

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-046

(4) Go to the task in the FIM and do the steps in the task.

END OF TASK

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TASK 21-00-00-040-851

78. MMEL 21-52-2 (DDG) Preparation - Economy Cooling Valves Inoperative

(Figure 908)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Economy Cooling Valves Inoperative.

(2) EICAS Status Messages:

(a) ECON COOL VALVE L

(b) ECON COOL VALVE R

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Economy Cooling Valve (ECV) Deactivation (Locked Closed)

SUBTASK 21-00-00-860-137

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-091

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-138

(3) Do these steps for the economy cooling valve for the left cooling pack:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	23	C21645	L ECV FCV POS SNSR

SUBTASK 21-00-00-860-139

(4) Do these steps for the economy cooling valve for the right cooling pack:

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

Right Power Management Panel, P210

Row	Col	Number	Name
H	4	C21646	R ECV/FCV POS SNSR

SUBTASK 21-00-00-010-092

(5) To get access to the economy cooling valve for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-010-093

(6) To get access to the economy cooling valve for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-020-008

(7) Remove the locking plug from the ECV actuator boss.

SUBTASK 21-00-00-980-005

(8) If the manual lock is not in the closed position, then do this step:

(a) Turn the manual wrench until the manual lock is in the closed (CL) position.

NOTE: Look at the position of the manual lock, in relation to the OP and CL marks on top of the actuator housing. The actuator arm will move from one mark to the other mark as the ECV opens and closes.

SUBTASK 21-00-00-420-004

(9) Install the locking plug in the hole in the manual lock.

CAUTION

DO NOT USE THE 20 POUND-FEET (27.1 NEWTON-METERS) OF TORQUE IDENTIFIED ON THE DECAL TO INSTALL THE LOCKING PLUG. THE 20 POUND-FEET OF TORQUE IS THE MAXIMUM TORQUE NECESSARY TO CLOSE THE VALVE. IF YOU USE THE 20 POUND-FEET OF TORQUE ON THE LOCKING PLUG, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(a) Tighten the locking plug.

NOTE: The usual running torque for the locking plug is 10-15 pound-inches (1.1-1.7 newton-meters). The locking plug is installed when there is an increase in the running torque.

SUBTASK 21-00-00-860-140

(10) If you deactivated the economy cooling valve for the left cooling pack, then do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	23	C21645	L ECV FCV POS SNSR

SUBTASK 21-00-00-860-141

(11) If you deactivated the economy cooling valve for the right cooling pack, then do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
H	4	C21646	R ECV/FCV POS SNSR

SUBTASK 21-00-00-410-013

(12) If the economy cooling valve for the left cooling pack was deactivated, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-410-014

(13) If the economy cooling valve for the right cooling pack was deactivated, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-010-094

(14) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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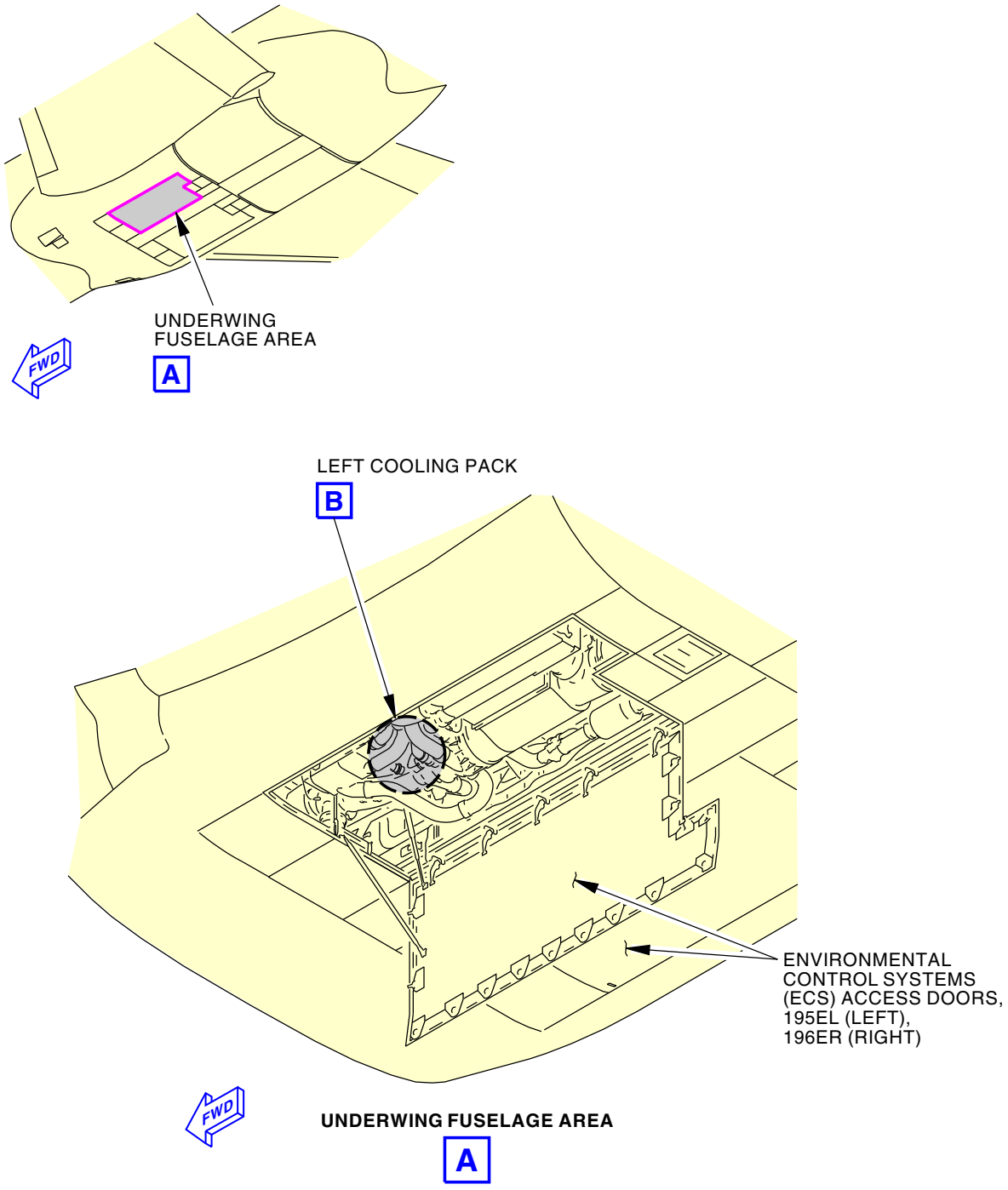

E33741 S0006402919_V2

Economy Cooling Valve Deactivation
Figure 908/21-00-00-990-807 (Sheet 1 of 3)

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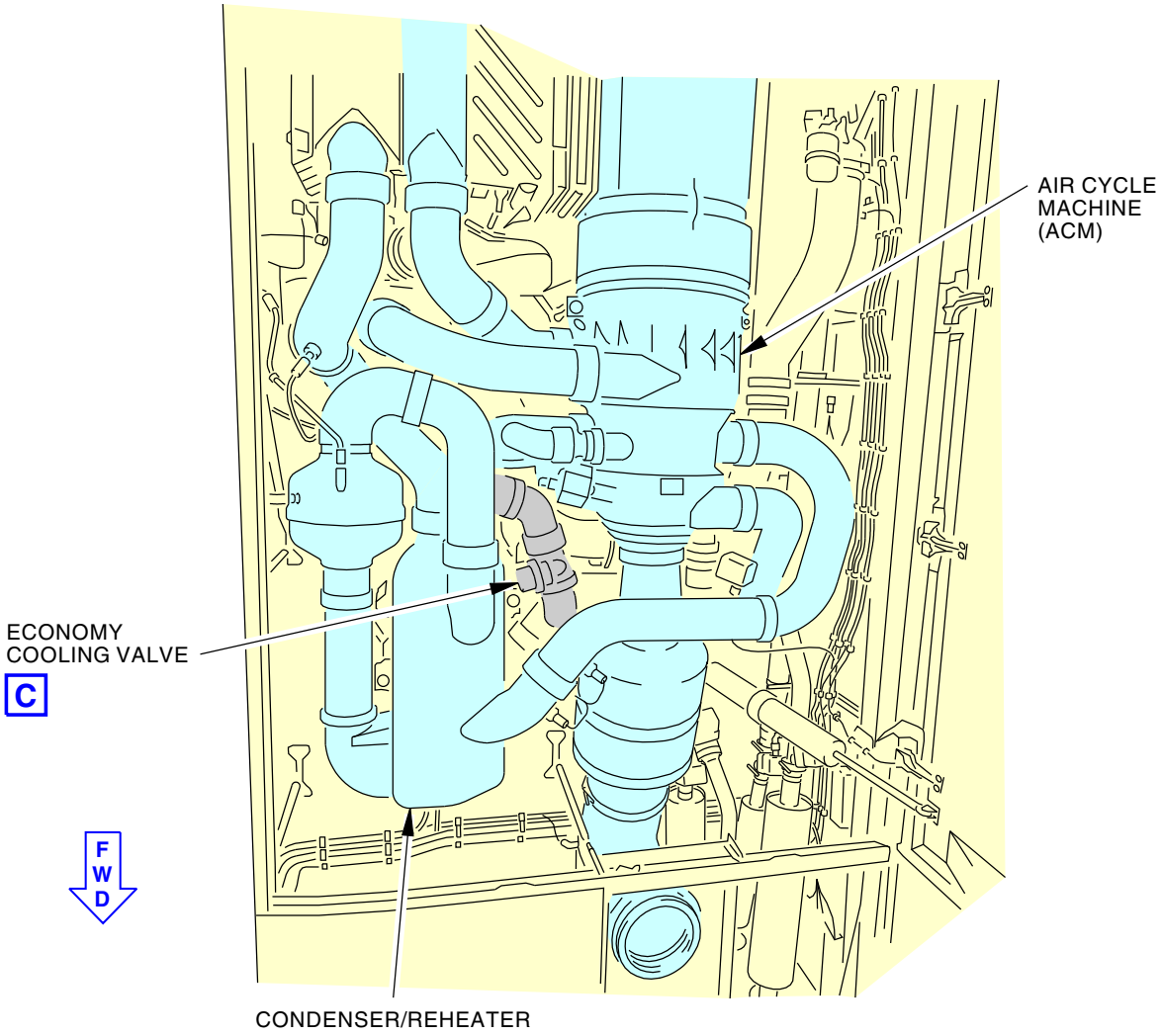

LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)
(BOTTOM VIEW)

B

E33744 S0006402920_V2

Economy Cooling Valve Deactivation
Figure 908/21-00-00-990-807 (Sheet 2 of 3)

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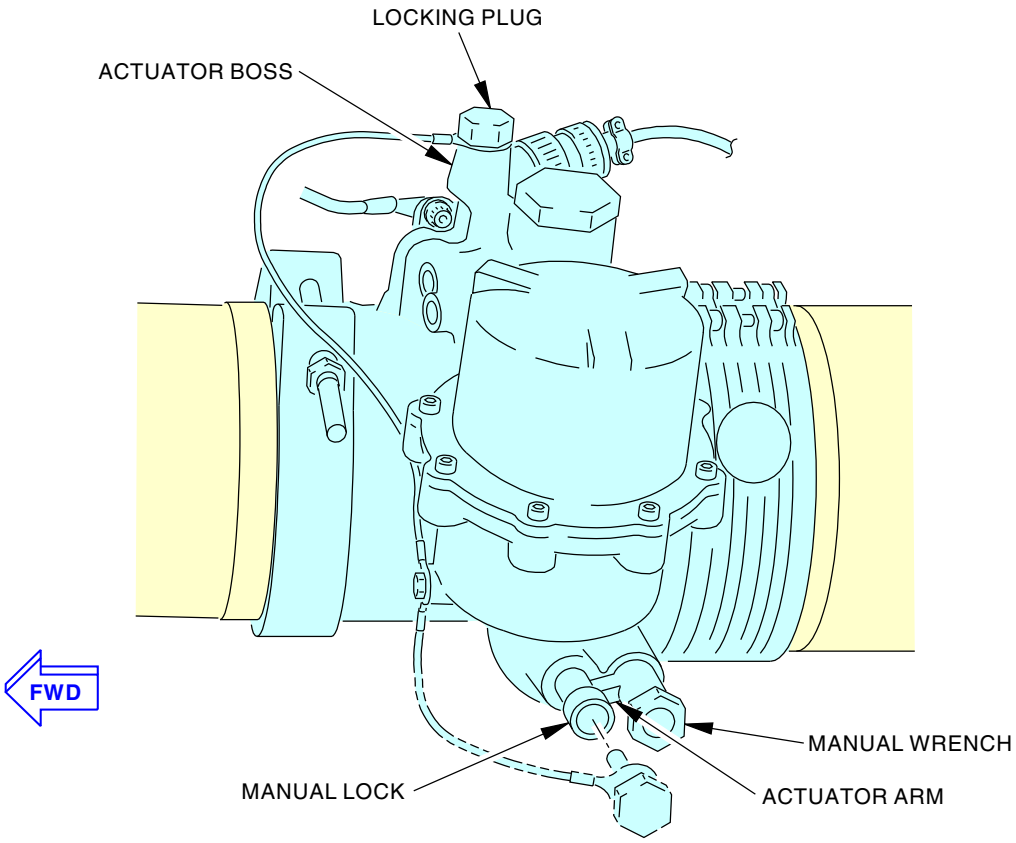

ECONOMY COOLING VALVE (EXAMPLE)

C

E33740 S0006402921_V2

Economy Cooling Valve Deactivation
Figure 908/21-00-00-990-807 (Sheet 3 of 3)

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TASK 21-00-00-440-815

79. MMEL 21-52-2 (DDG) Restoration - Economy Cooling Valves Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Economy Cooling Valves Inoperative.

(2) 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Economy Cooling Valve (ECV) Reactivation

SUBTASK 21-00-00-860-142

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-095

(2) To get access to the economy cooling valve for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-010-096

(3) To get access to the economy cooling valve for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-020-009

(4) Remove the locking plug from the hole in the manual lock.

SUBTASK 21-00-00-420-005

(5) Install the locking plug in the actuator boss.

(a) Tighten the locking plug.

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SUBTASK 21-00-00-410-015

(6) If the economy cooling valve for the left cooling pack was reactivated, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-410-016

(7) If the economy cooling valve for the right cooling pack was reactivated, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

F. Economy Cooling Valve Check

SUBTASK 21-00-00-860-143

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

SUBTASK 21-00-00-740-029

(2) 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 21-00-00-810-047

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-048

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-852

80. MMEL 21-52-3 (DDG) Preparation - Compressor Discharge Temperature Sensing Systems Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Compressor Discharge Temperature Sensing Systems Inoperative.

(2) EICAS Status Messages:

(a) CMPRSR TEMP SENSOR L

(b) CMPRSR TEMP SENSOR R

(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)
31-61-00-800-804	Showing a Maintenance Page (P/B 201)

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C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Compressor Discharge Temperature Sensor for the Left (or Right as appropriate) Cooling Pack Operational Check

SUBTASK 21-00-00-860-145

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

SUBTASK 21-00-00-860-242

(2) To get access to the 21 AIR CONDITIONING Maintenance Page, do this task: Showing a Maintenance Page, TASK 31-61-00-800-804.

NOTE: You can find this page on one of the three control display units on the center aisle stand between the Pilot and First Officer.

You will use this page to monitor the compressor discharge temperature sensor indication.

(a) Make sure the CPRSR OUT TEMP indication shows on the maintenance page.

——— END OF TASK ———

TASK 21-00-00-440-816

81. MMEL 21-52-3 (DDG) Restoration - Compressor Discharge Temperature Sensing Systems Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Compressor Discharge Temperature Sensing Systems Inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. CTC Compressor Discharge Temperature Sensor for the Left (or Right as appropriate) Cooling Pack Check

SUBTASK 21-00-00-860-147

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

SUBTASK 21-00-00-740-031

(2) 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 21-00-00-810-049

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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.

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SUBTASK 21-00-00-810-050

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-853

82. MMEL 21-52-4 (DDG) Preparation - Pack Outlet Temperature Sensing Systems Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Pack Outlet Temperature Sensing Systems Inoperative.

(2) EICAS Status Messages:

(a) PACK OUT TEMP SNSR L

(b) PACK OUT TEMP SNSR R

(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)
31-61-00-800-804	Showing a Maintenance Page (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Pack Outlet Temperature Sensor for the Left (or Right as appropriate) Cooling Pack Operational Check

SUBTASK 21-00-00-860-149

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

SUBTASK 21-00-00-860-243

(2) To get access to the 21 AIR CONDITIONING Maintenance Page, do this task: Showing a Maintenance Page, TASK 31-61-00-800-804.

NOTE: You can find this page on one of the three control display units on the center aisle stand between the Pilot and First Officer.

You will use this page to monitor the compressor discharge temperature sensor indication.

(a) Make sure the PACK OUT TEMP indication shows on the maintenance page.

——— END OF TASK ———

TASK 21-00-00-440-817

83. MMEL 21-52-4 (DDG) Restoration - Pack Outlet Temperature Sensing Systems Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Pack Outlet Temperature Sensing Systems Inoperative.

(2) A maintenance access terminal is necessary for this procedure.

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B. References

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

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. CTC Pack Outlet temperature Sensor for the Left (or Right as appropriate) Cooling Pack Check

SUBTASK 21-00-00-860-151

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

SUBTASK 21-00-00-740-033

(2) 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 21-00-00-810-051

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-052

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-854

84. MMEL 21-52-5A (DDG) Preparation - Ram Air Inlet Door Systems Inoperative (Pack Remains Operative)

(Figure 909)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Ram Air Inlet Door Systems Inoperative.

(2) EICAS Status Messages:

(a) RAM AIR INLET DOOR L

(b) RAM AIR INLET DOOR R

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left

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(Continued)

Zone	Area
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191LL	Ram Air Inlet Actuator Door
192LR	Ram Air Inlet Actuator Door

E. Ram Air Inlet Door Deactivation (Secured Open)

SUBTASK 21-00-00-860-153

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-097

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-098

(3) For the ram air inlet door for the left cooling pack, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-010-099

(4) For the ram air inlet door for the right cooling pack, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-100

(5) To get access to the ram air inlet door actuator for the right cooling pack, open this access panel:

Number	Name/Location
192LR	Ram Air Inlet Actuator Door

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

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SUBTASK 21-00-00-010-101

(6) To get access to the ram air inlet door actuator for the left cooling pack, open this access panel:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door

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

SUBTASK 21-00-00-020-010

(7) Disconnect the electrical connector from the actuator.

SUBTASK 21-00-00-020-011

(8) Cap and stow the electrical connector.

SUBTASK 21-00-00-020-012

(9) Disconnect the actuator rod end from the bellcrank.

SUBTASK 21-00-00-020-013

(10) Loosen the screws on the fixed link.

SUBTASK 21-00-00-820-001

(11) Rotate the fixed link 180 degrees.

SUBTASK 21-00-00-980-006

(12) Put the door in the fully open position.

SUBTASK 21-00-00-420-006

(13) Connect the fixed link to the bellcrank.

SUBTASK 21-00-00-420-007

(14) Tighten the screws on the fixed link to 18-28 pound-inches.

SUBTASK 21-00-00-860-154

(15) If you deactivated the ram air inlet door for the left cooling pack, then close this access panel:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door

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

SUBTASK 21-00-00-860-155

(16) If you deactivated the ram air inlet door for the right cooling pack, then close this access panel:

Number	Name/Location
192LR	Ram Air Inlet Actuator Door

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

SUBTASK 21-00-00-860-156

(17) If you deactivated the ram air inlet door for the left cooling pack, then do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

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SUBTASK 21-00-00-860-157

(18) If you deactivated the ram air inlet door for the right cooling pack, then do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-102

(19) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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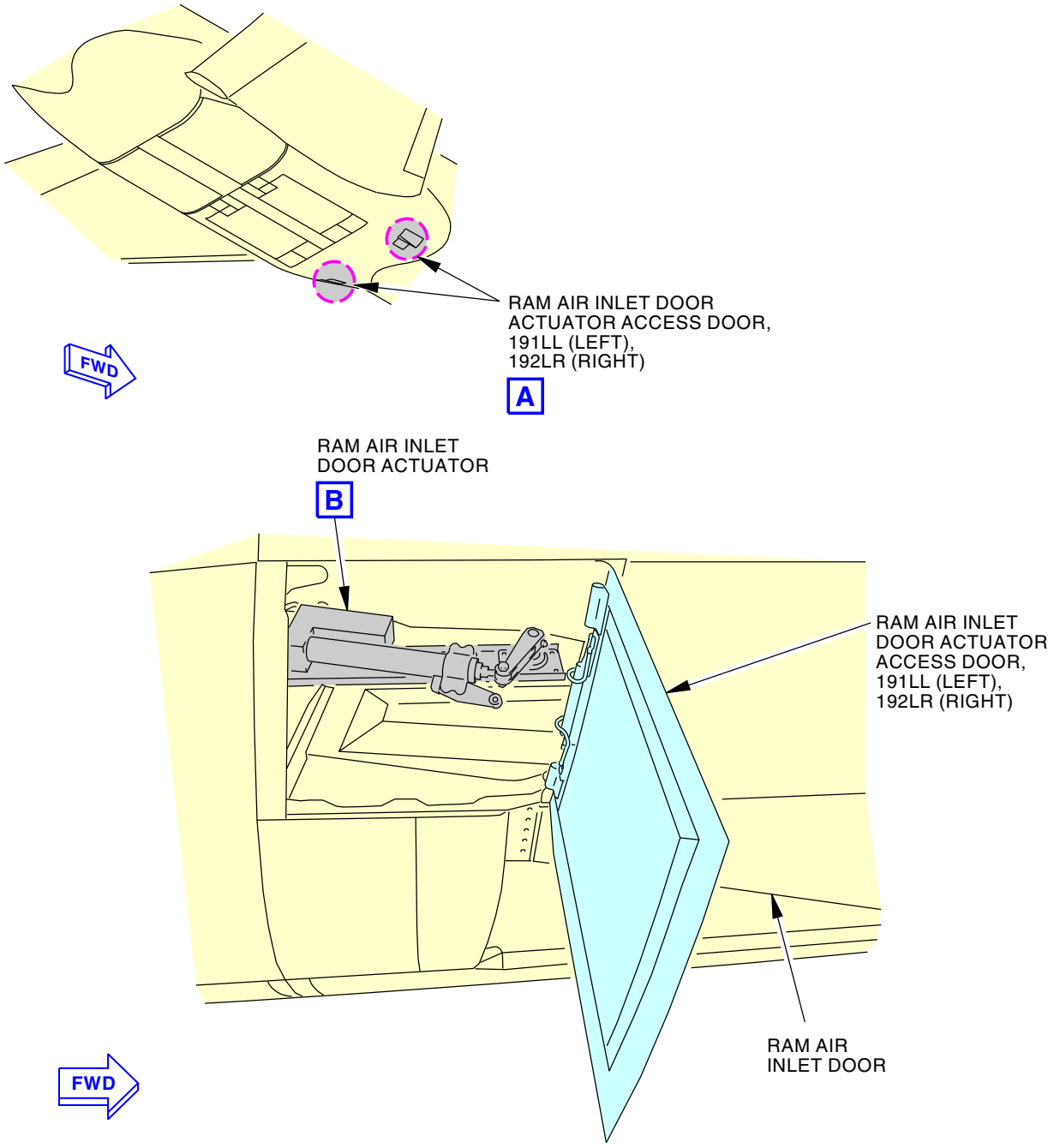

LEFT RAM AIR INLET DOOR AND ACTUATOR
(RIGHT RAM AIR INLET DOOR AND ACTUATOR ARE EQUIVALENT)

A

E33049 S0006402928_V2

Ram Air Inlet Door Deactivation
Figure 909/21-00-00-990-808 (Sheet 1 of 2)

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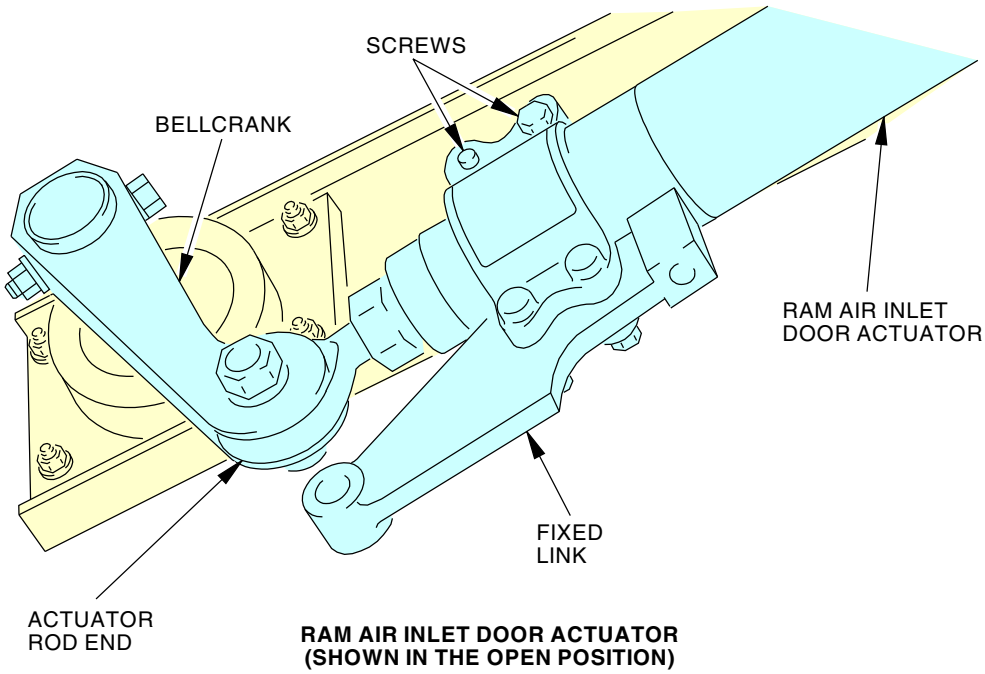
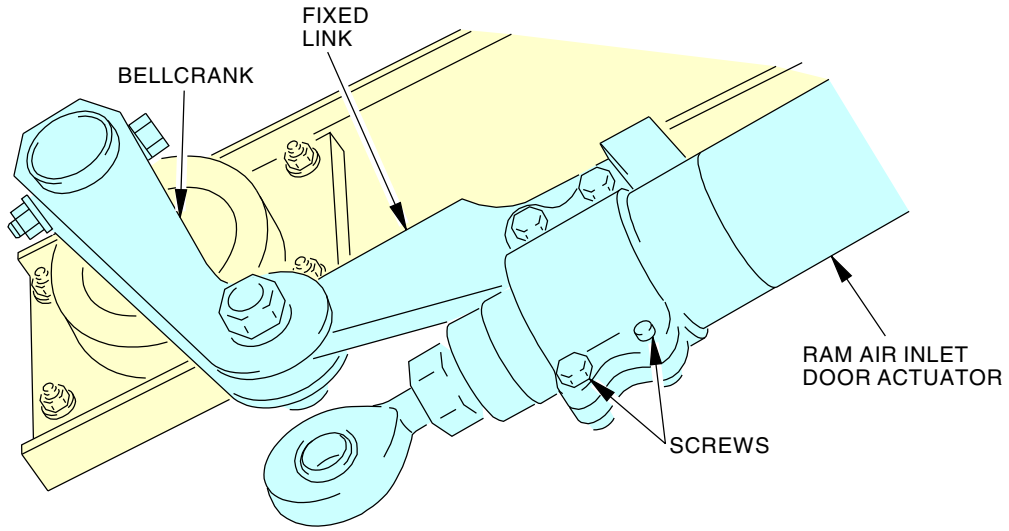


RAM AIR INLET DOOR ACTUATOR
(SHOWN IN THE OPEN POSITION)

B



RAM AIR INLET DOOR ACTUATOR
(SHOWN IN THE SECURED OPEN POSITION)

B

E30843 S0006402929_V2

Ram Air Inlet Door Deactivation
Figure 909/21-00-00-990-808 (Sheet 2 of 2)

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TASK 21-00-00-440-818

85. MMEL 21-52-5A (DDG) Restoration - Ram Air Inlet Door Systems Inoperative (Pack Remains Operative)

A. General

(1) This task puts the airplane back to its usual condition after operation with the Ram Air Inlet Door System Inoperative.

(2) 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191LL	Ram Air Inlet Actuator Door
192LR	Ram Air Inlet Actuator Door

E. Ram Air Inlet Door Reactivation

SUBTASK 21-00-00-860-158

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-103

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-104

(3) For the ram air inlet door for the left cooling pack, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-010-105

(4) For the ram air inlet door for the right cooling pack, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-106

(5) To get access to the ram air inlet door actuator for the right cooling pack, open this access panel:

Number	Name/Location
192LR	Ram Air Inlet Actuator Door

SUBTASK 21-00-00-010-107

(6) To get access to the ram air inlet door actuator for the left cooling pack, open this access panel:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door

SUBTASK 21-00-00-020-014

(7) Disconnect the fixed link from the bellcrank.

SUBTASK 21-00-00-020-015

(8) Loosen the screws on the fixed link.

SUBTASK 21-00-00-820-002

CAUTION

THE FIXED LINK FOR THE RAM AIR INLET DOOR INSTALLATION MUST BE IN THE DOWN POSITION. DAMAGE TO THE LINKAGE WILL OCCUR IF THE FIXED LINK IS IN THE INCORRECT POSITION.

(9) Rotate the fixed link 180 degrees.

SUBTASK 21-00-00-420-008

(10) Tighten the screws on the fixed link to 18-28 pound-inches.

SUBTASK 21-00-00-420-009

(11) Connect the actuator rod end to the bellcrank.

SUBTASK 21-00-00-420-010

(12) Connect the electrical connector to the actuator.

SUBTASK 21-00-00-860-159

(13) If you reactivated the ram air inlet door for the left cooling pack, then close this access panel:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door

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

SUBTASK 21-00-00-860-160

(14) If you reactivated the ram air inlet door for the right cooling pack, then close this access panel:

Number	Name/Location
192LR	Ram Air Inlet Actuator Door

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

SUBTASK 21-00-00-860-161

(15) If you reactivated the ram air inlet door for the left cooling pack, then do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-162

(16) If you reactivated the ram air inlet door for the right cooling pack, then do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-108

(17) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Ram Air Inlet Door Systems Check

SUBTASK 21-00-00-860-163

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

SUBTASK 21-00-00-740-034

(2) 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 21-00-00-810-053

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-054

(4) Go to the task in the FIM and do the steps in the task.

END OF TASK

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TASK 21-00-00-040-885

86. MMEL 21-52-5B (DDG) Preparation - Ram Air Inlet Door Systems Inoperative (Pack Made Inoperative)

(Figure 910)

A. General

(1) This procedure gives the maintenance steps which prepare the airplane for flight with the Ram Air Inlet Door Systems Inoperative.

(2) EICAS Status Messages:

(a) RAM AIR INLET DOOR L

(b) RAM AIR INLET DOOR R

(3) This procedure installs a cover plate on the opening for the ram air inlet. The related pack must be turned off when you do this task. The (TASK 21-00-00-040-854) task will deactivate the doors of the ram air inlet and keep the cooling pack operational.

(4) This procedure has these tasks:

(a) Ram Air Inlet Door Deactivation - Duct Not Damaged (Cover Plate Installed)

(b) Ram Air Inlet Door Deactivation - Duct Damaged (Cover Plate Installed)

B. References

Reference	Title
21-52-20-000-803	Ram Air Inlet Door Removal (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic 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
SPL-1609	Dispatch Eqpt - Cover Plate, Ram Air Inlet Part #: J21008-7 Supplier: 81205
SPL-14948	Dispatch Eqpt - Cover Plate, Ram Air Inlet, Left side Part #: J21011-1 Supplier: 81205
SPL-14949	Dispatch Eqpt - Cover Plate, Ram Air Inlet, Right Side Part #: J21011-2 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
A00027	Adhesive - Silicone Rubber, 1 Part, RTV	BAC5010 Type 60
G02329	Tape - Aluminum Foil, Pressure Sensitive - Vibration Damping Tape 434	

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

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F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191BL	Forward Wing To Body Fairing Panel
191DL	Forward Wing To Body Fairing Panel
191GL	Forward Wing To Body Fairing Panel
191HL	Forward Wing To Body Fairing Panel
192BR	Forward Wing To Body Fairing Panel
192DR	Forward Wing To Body Fairing Panel
192GR	Forward Wing To Body Fairing Panel
192HR	Forward Wing To Body Fairing Panel

G. Ram Air Inlet Door Deactivation - Duct Not Damaged (Cover Plate Installed)

SUBTASK 21-00-00-860-310

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-255

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-256

(3) To deactivate the ram air inlet door for the left cooling pack, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-010-257

(4) To deactivate the ram air inlet door for the right cooling pack, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-259

(5) Remove the aft section of the ram air inlet door. To remove the aft section of the ram air inlet door, do this task: Ram Air Inlet Door Removal, TASK 21-52-20-000-803.

(a) Remove the two links, bolts, washers, and nuts which connect the ram air inlet door to the torque shaft (TASK 21-52-20-000-803).

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SUBTASK 21-00-00-320-001

(6) Repair all damage that is on the forward section of the ram air inlet door.

NOTE: If the forward door section can not be repaired, then do the task, Ram Air Inlet Door Deactivation - Duct Damaged (Cover Plate Installed).

SUBTASK 21-00-00-320-002

(7) Repair all damage that is 2.00 inch (50.8 mm) or less from the lower flange of the ram air inlet duct.

NOTE: The fairing panels are attached to the lower flange.

SUBTASK 21-00-00-320-012

(8) Repair all holes in the ram air inlet duct with Vibration Damping Tape 434 tape, G02329.

SUBTASK 21-00-00-320-003

(9) Install the ram air inlet cover plate, SPL-1609.

SUBTASK 21-00-00-980-016

(10) Install Vibration Damping Tape 434 tape, G02329 around the cover plate and fasteners to make an aerodynamic seal.

SUBTASK 21-00-00-860-311

(11) If you deactivated the ram air inlet door for the left cooling pack, then do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-312

(12) If you deactivated the ram air inlet door for the right cooling pack, then do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-260

(13) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-261

(14) Push the applicable L PACK switch or R PACK switch on the Pilot's Overhead Panel, P5, until the OFF light comes on.

SUBTASK 21-00-00-010-262

(15) Placard the applicable L or R PACK switch INOP OFF.

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SUBTASK 21-00-00-010-263

(16) Push the applicable L TRIM AIR or R TRIM AIR switch on the Pilot's Overhead Panel, P5, until the ON light goes off.

H. Ram Air Inlet Door Deactivation - Duct Damaged (Cover Plate Installed)

SUBTASK 21-00-00-860-347

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-301

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-302

(3) To deactivate the ram air inlet door for the left cooling pack, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-010-303

(4) To deactivate the ram air inlet door for the right cooling pack, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-305

(5) Remove the ram air inlet door. To remove the ram air inlet door, do this task: Ram Air Inlet Door Removal, TASK 21-52-20-000-803.

(a) Remove the two links, bolts, washers, and nuts which connect the ram air inlet door to the torque shaft (TASK 21-52-20-000-803).

SUBTASK 21-00-00-320-008

(6) Repair all damage that is 2.00 inch (50.8 mm) or less from the lower flange of the ram air inlet duct.

NOTE: The fairing panels are attached to the lower flange.

SUBTASK 21-00-00-320-009

(7) Repair all holes in the ram air inlet duct with Vibration Damping Tape 434 tape, G02329.

SUBTASK 21-00-00-320-010

(8) Make the fastener locations to the applicable cover plate(Figure 910):

- cover plate, SPL-14948 for left side
- cover plate, SPL-14949 for right side

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(a) Install the back markers, included in the cover plate kit, in the fastener locations (Figure 910).

NOTE: Do not install back markers in the fastener locations that align with the holes in the cover plate.

NOTE: The left side will have NGS fasteners (Figure 910).

(b) Put the cover plate in its position on the ram air inlet using the cleco fasteners included in cover plate kit.

NOTE: Install the fasteners through the holes in the cover plate and into the fastener locations that do not have back markers.

(c) Tap the cover plate, with a rubber mallet, to mark the location of the back markers onto the applicable cover plate.

(d) Remove the applicable cover plate.

(e) Remove the back markers.

(9) Drill 0.2235 ±0.0055 in. (5.677 ±0.140 mm) holes in the applicable cover plate at the center of each mark previously made by back markers.

SUBTASK 21-00-00-980-022

(10) Install Vibration Damping Tape 434 tape, G02329 around the ram air inlet fairing surface to prevent damage from the applicable cover plate.

SUBTASK 21-00-00-420-027

(11) Do these steps to install the applicable cover plate.

- cover plate, SPL-14948 for left side
- cover plate, SPL-14949 for right side

(a) Remove these panels to install the cover plate on the left ram air inlet:

Number	Name/Location
191BL	Forward Wing To Body Fairing Panel
191DL	Forward Wing To Body Fairing Panel
191GL	Forward Wing To Body Fairing Panel
191HL	Forward Wing To Body Fairing Panel

(b) Remove these panels to install the cover plate on the right ram air inlet:

Number	Name/Location
192BR	Forward Wing To Body Fairing Panel
192DR	Forward Wing To Body Fairing Panel
192GR	Forward Wing To Body Fairing Panel
192HR	Forward Wing To Body Fairing Panel

(c) Install the spacers, in the existing fastener locations, with a small quantity of adhesive, A00027 or an equivalent temporary adhesive.

NOTE: There are 59 spacer locations for left side and 44 spacer locations for right side.

(d) Attach the applicable cover plate to the ram air inlet structure with BACB30NM3 or equivalent bolts.

NOTE: There are 59 bolt locations for the left side and 44 bolt locations for right side.

(e) Apply 35 ±1 in-lb (4 ±0 N·m) torque to the BACB30NM3 bolts.

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SUBTASK 21-00-00-420-031

(12) Do these steps to make the new fastener locations in the lamination of the fairing panels and applicable cover plate.

- cover plate, SPL-14948 for left side
- cover plate, SPL-14949 for right side

CAUTION HOLES THROUGH THE LAMINATION OF THE FAIRING PANELS ONLY. IF YOU DRILL HOLES THROUGH THE FAIRING SUPPORT STRUCTURE OR THE HONEYCOMB OF THE FAIRING PANELS YOU WILL DAMAGE THE AIRPLANE STRUCTURE.

CAUTION DO NOT DRILL MORE FASTENER HOLES IN THE NGS (NITROGEN GENERATION SYSTEM) PANEL AFTER NGS INSTALLATION. THIS CAN CAUSE DAMAGE TO THE NGS.

(a) Drill 0.2515 ±0.0015 in. (6.3881 ±0.0381 mm) holes for the new fastener locations in the fairing panels and applicable cover plate (Figure 910).

NOTE: Start from the inner side of the fairing panels to avoid the structure and honeycomb of the fairing panels.

NOTE: Make sure that the nut can sit flush on the inner-side surface.

NOTE: Use dimensions and edge requirements for the new fastener locations (Figure 910).

(13) Install the BACB30NM4 or equivalent bolts and BACN10JC4C or equivalent nuts to the holes you drilled in the fairing panels and applicable cover plate.

NOTE: There are 16 locations for left side and 21 locations for right side.

(14) Apply 85 ±3 in-lb (10 ±1 N·m) torque to the BACB30NM4 bolts.

(15) Install these panels on the left ram air inlet:

Number	Name/Location
191BL	Forward Wing To Body Fairing Panel
191DL	Forward Wing To Body Fairing Panel
191GL	Forward Wing To Body Fairing Panel
191HL	Forward Wing To Body Fairing Panel

(16) Install these panels on the right ram air inlet:

Number	Name/Location
192BR	Forward Wing To Body Fairing Panel
192DR	Forward Wing To Body Fairing Panel
192GR	Forward Wing To Body Fairing Panel
192HR	Forward Wing To Body Fairing Panel

SUBTASK 21-00-00-980-023

(17) Install Vibration Damping Tape 434 tape, G02329 around the cover plate and fasteners to make an aerodynamic seal.

SUBTASK 21-00-00-860-348

(18) If you deactivated the ram air inlet door for the left cooling pack, then do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-349

(19) If you deactivated the ram air inlet door for the right cooling pack, then do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-306

(20) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-307

(21) Push the applicable L PACK switch or R PACK switch on the Pilot's Overhead Panel, P5, until the OFF light comes on.

SUBTASK 21-00-00-010-308

(22) Placard the applicable L or R PACK switch INOP OFF.

SUBTASK 21-00-00-010-309

(23) Push the applicable L TRIM AIR or R TRIM AIR switch on the Pilot's Overhead Panel, P5, until the ON light goes off.

I. Ram Air Inlet Door Cover Plate Inspection - Forward Door Section Damaged

SUBTASK 21-00-00-010-264

(1) After five flights, remove the tape from the cover plate.

SUBTASK 21-00-00-010-265

(2) Make an inspection of the cover plate, fasteners and the fairing panels for damage.

SUBTASK 21-00-00-010-266

(3) No dispatch is permitted if damage is found.

SUBTASK 21-00-00-010-267

(4) If no damage is found, install new Vibration Damping Tape 434 tape, G02329 around the cover plate to make an aerodynamic seal.

END OF TASK

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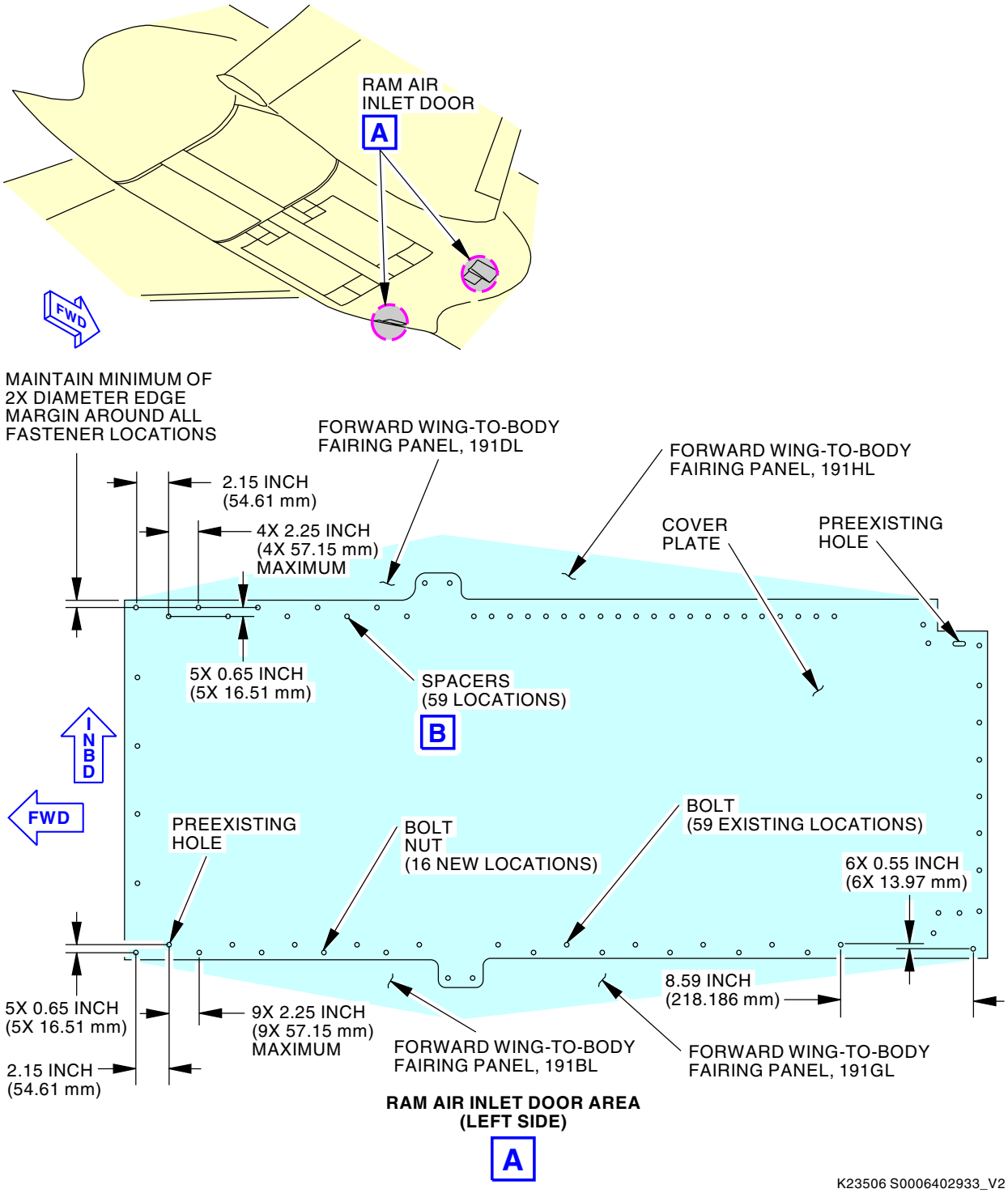

Ram Air Inlet Door Deactivation (Cover Plate Installed)
Figure 910/21-00-00-990-816 (Sheet 1 of 2)

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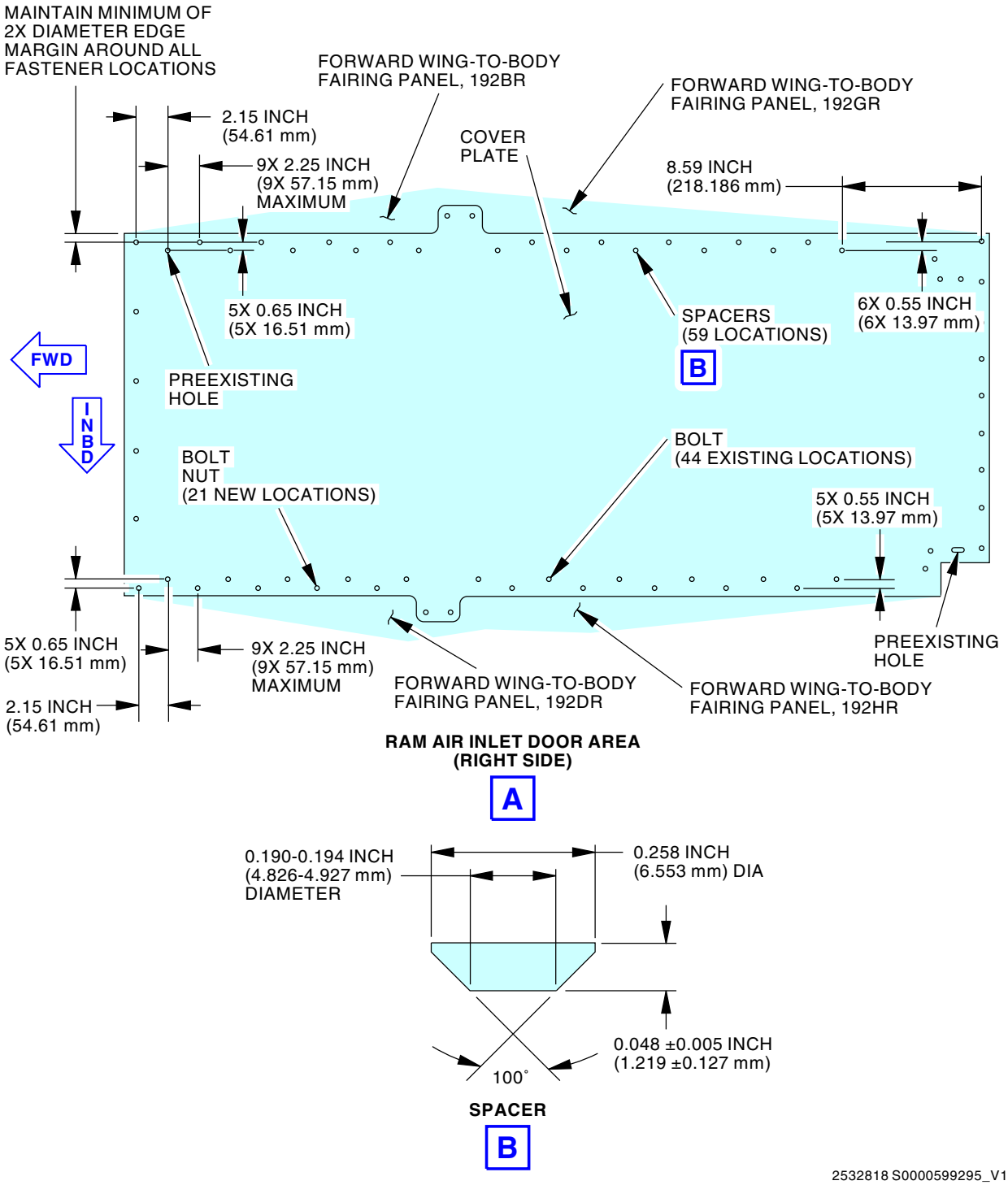

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Ram Air Inlet Door Deactivation (Cover Plate Installed)
Figure 910/21-00-00-990-816 (Sheet 2 of 2)

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TASK 21-00-00-440-832

87. MMEL 21-52-5B (DDG) Restoration - Ram Air Inlet Door Systems Inoperative (Pack Made Inoperative)

A. General

(1) This task puts the airplane back to its usual condition after operation with the Ram Air Inlet Door System Inoperative.

(2) A maintenance access terminal is necessary for this procedure.

(3) This procedure has these tasks:

(a) Ram Air Inlet Door Reactivation - Duct Not Damaged (Cover Plate Installed)

(b) Ram Air Inlet Door Reactivation - Duct Damaged (Cover Plate Installed)

B. References

Reference	Title
21-52-20-400-803	Ram Air Inlet Door Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic 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
SPL-1609	Dispatch Eqpt - Cover Plate, Ram Air Inlet Part #: J21008-7 Supplier: 81205
SPL-14948	Dispatch Eqpt - Cover Plate, Ram Air Inlet, Left side Part #: J21011-1 Supplier: 81205
SPL-14949	Dispatch Eqpt - Cover Plate, Ram Air Inlet, Right Side Part #: J21011-2 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G02329	Tape - Aluminum Foil, Pressure Sensitive - Vibration Damping Tape 434	

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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(Continued)

Number	Name/Location
191BL	Forward Wing To Body Fairing Panel
191DL	Forward Wing To Body Fairing Panel
191GL	Forward Wing To Body Fairing Panel
191HL	Forward Wing To Body Fairing Panel
192BR	Forward Wing To Body Fairing Panel
192DR	Forward Wing To Body Fairing Panel
192GR	Forward Wing To Body Fairing Panel
192HR	Forward Wing To Body Fairing Panel

G. Ram Air Inlet Door Reactivation - Duct Not Damaged (Cover Plate Installed)

SUBTASK 21-00-00-860-313

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-268

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-269

(3) To put the ram air inlet door for the left cooling pack in its usual condition, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-010-270

(4) To put the ram air inlet door for the right cooling pack in its usual condition, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-420-025

(5) Do these steps to remove the cover plate:

(a) Remove the Vibration Damping Tape 434 tape, G02329 from the cover plate and fasteners.

(b) Remove the ram air inlet cover plate, SPL-1609.

SUBTASK 21-00-00-010-272

(6) Do these steps to install the ram air inlet door:

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(a) Install the two links, bolts, washers, and nuts which connect the ram air inlet door to the torque shaft (TASK 21-52-20-400-803).

(b) Install the ram air inlet door. To install the ram air inlet door, do this task: Ram Air Inlet Door Installation, TASK 21-52-20-400-803.

SUBTASK 21-00-00-860-314

(7) If you put the ram air inlet door for the left cooling pack back to its usual condition, then do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-315

(8) If you put the ram air inlet door for the right cooling pack back to its usual condition, then do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-273

(9) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

H. Ram Air Inlet Door Reactivation - Duct Damaged (Cover plate Installed)

SUBTASK 21-00-00-860-350

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-310

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-311

(3) To put the ram air inlet door for the left cooling pack in its usual condition, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-010-312

(4) To put the ram air inlet door for the right cooling pack in its usual condition, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-420-028

(5) Do these steps to remove the applicable Cover Plate:

- cover plate, SPL-14948 for the left side
- cover plate, SPL-14949 for the right side

(a) It will be necessary to remove and re-install these panels to remove the cover plate from the left ram air inlet:

Number	Name/Location
191BL	Forward Wing To Body Fairing Panel
191DL	Forward Wing To Body Fairing Panel
191GL	Forward Wing To Body Fairing Panel
191HL	Forward Wing To Body Fairing Panel

(b) It will be necessary to remove and re-install these panels to remove the cover plate from the right ram air inlet:

Number	Name/Location
192BR	Forward Wing To Body Fairing Panel
192DR	Forward Wing To Body Fairing Panel
192GR	Forward Wing To Body Fairing Panel
192HR	Forward Wing To Body Fairing Panel

(c) Remove the bolts and nuts which attach the applicable Cover Plate to the fairing panels.

(d) Remove the bolts which attach the applicable Cover Plate to the ram air inlet structure.

(e) Remove the applicable Cover Plate.

(f) Remove the spacers.

(g) Clean the ram air inlet with solvent, B00083 to remove all the adhesive.

(h) Make sure you re-install all the bolts which attach the fairing panels to the ram air inlet structure.

NOTE: Be sure to torque the bolts to aircraft specification.

SUBTASK 21-00-00-330-002

(6) Install soft 1100-F aluminum rivets in the holes drilled in the fairing panels (SRM 51-40-02).

SUBTASK 21-00-00-010-314

(7) Do these steps to install the ram air inlet door:

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(a) Install the two links, bolts, washers, and nuts which connect the ram air inlet door to the torque shaft (TASK 21-52-20-400-803).

(b) Install the ram air inlet door. To install the ram air inlet door, do this task: Ram Air Inlet Door Installation, TASK 21-52-20-400-803.

SUBTASK 21-00-00-860-351

(8) If you put the ram air inlet door for the left cooling pack back to its usual condition, then do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-352

(9) If you put the ram air inlet door for the right cooling pack back to its usual condition, then do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-315

(10) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

I. Ram Air Inlet Door Systems Check

SUBTASK 21-00-00-860-316

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

SUBTASK 21-00-00-740-063

(2) 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 21-00-00-810-083

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-084

(4) Go to the task in the FIM and do the steps in the task.

END OF TASK

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TASK 21-00-00-040-855

88. MMEL 21-52-6 (DDG) Preparation - Ram Air Exit Door Systems Inoperative

(Figure 911)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Ram Air Exit Door Systems Inoperative.

(2) EICAS Status Messages:

(a) RAM AIR EXIT DOOR L

(b) RAM AIR EXIT DOOR R

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195QL	Blowout Door
196QR	Blowout Door

E. Ram Air Exit Door Deactivation (Secured Open)

SUBTASK 21-00-00-860-165

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-109

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-110

(3) For the ram air exit door for the left cooling pack, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

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SUBTASK 21-00-00-010-111

(4) For the ram air exit door for the right cooling pack, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-860-166

(5) To get access to the ram air exit actuator for the left cooling pack, open this access panel:

Number	Name/Location
195QL	Blowout Door

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

SUBTASK 21-00-00-860-167

(6) To get access to the ram air exit actuator for the right cooling pack, open this access panel:

Number	Name/Location
196QR	Blowout Door

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

SUBTASK 21-00-00-020-016

(7) Disconnect the electrical connector from the actuator.

SUBTASK 21-00-00-020-017

(8) Cap and stow the electrical connector.

SUBTASK 21-00-00-020-018

(9) Disconnect the actuator rod end from the actuator arm assembly.

SUBTASK 21-00-00-020-019

(10) Loosen the screws on the fixed link.

SUBTASK 21-00-00-820-003

(11) Rotate the fixed link 180 degrees.

SUBTASK 21-00-00-980-007

(12) Put the door in the fully open position.

SUBTASK 21-00-00-420-011

(13) Connect the fixed link to the actuator arm assembly.

SUBTASK 21-00-00-420-012

(14) Tighten the screws on the fixed link to 18-28 pound-inches.

SUBTASK 21-00-00-860-168

(15) If you deactivated the ram air exit door for the left cooling pack, then close this access panel:

Number	Name/Location
195QL	Blowout Door

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

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SUBTASK 21-00-00-860-169

(16) If you deactivated the ram air exit door for the right cooling pack, then close this access panel:

Number	Name/Location
196QR	Blowout Door

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

SUBTASK 21-00-00-860-170

(17) If you deactivated the ram air exit door for the left cooling pack, then do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-171

(18) If you deactivated the ram air exit door for the right cooling pack, then do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-112

(19) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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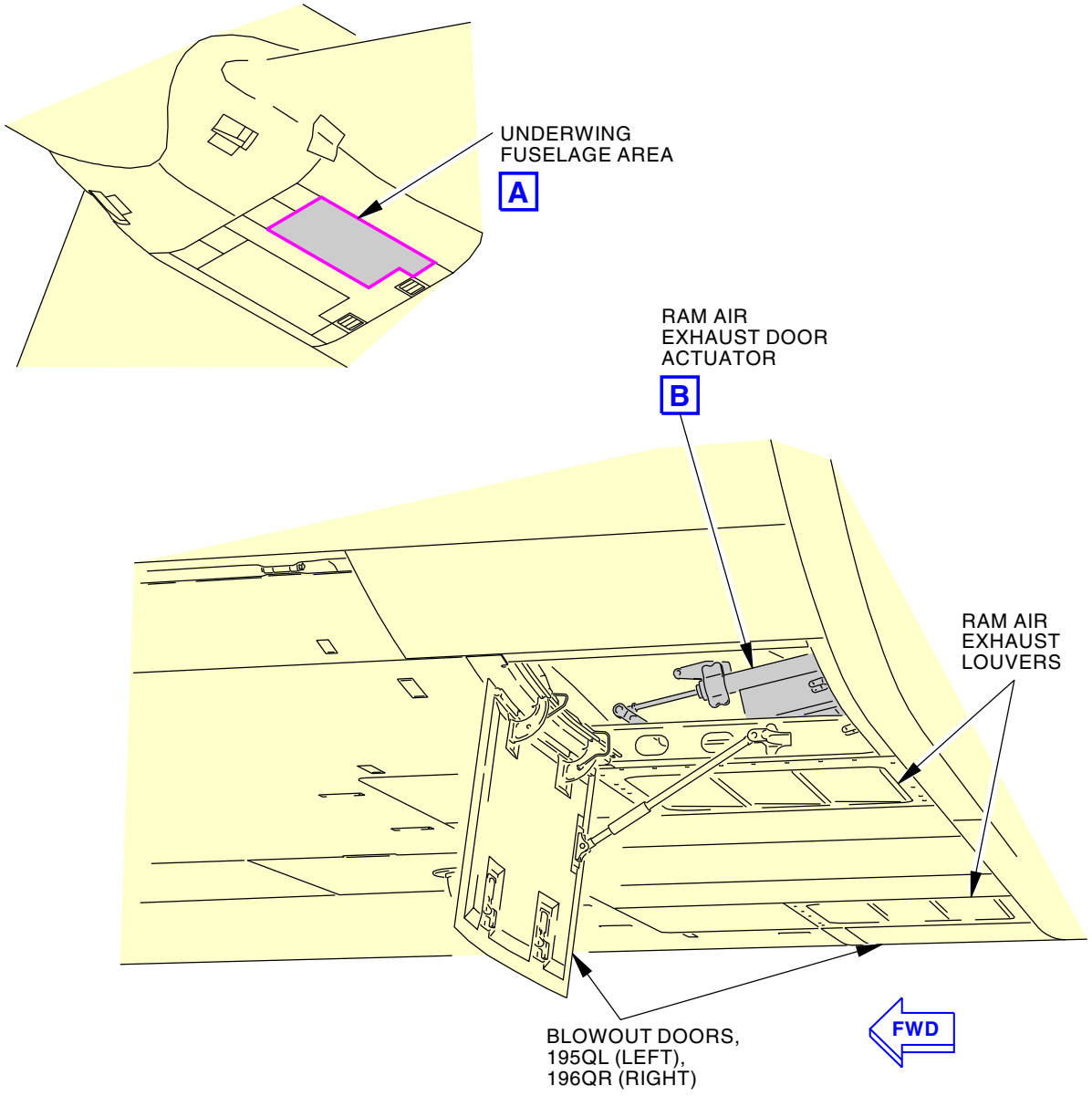

UNDERWING FUSELAGE AREA
(THE RAM AIR EXHAUST ACTUATOR FOR THE LEFT COOLING PACK IS SHOWN, THE RAM AIR EXHAUST ACTUATOR FOR THE RIGHT COOLING PACK IS EQUIVALENT).

A

E32747 S0006402937_V2

Ram Air Exit Door Deactivation
Figure 911/21-00-00-990-817 (Sheet 1 of 2)

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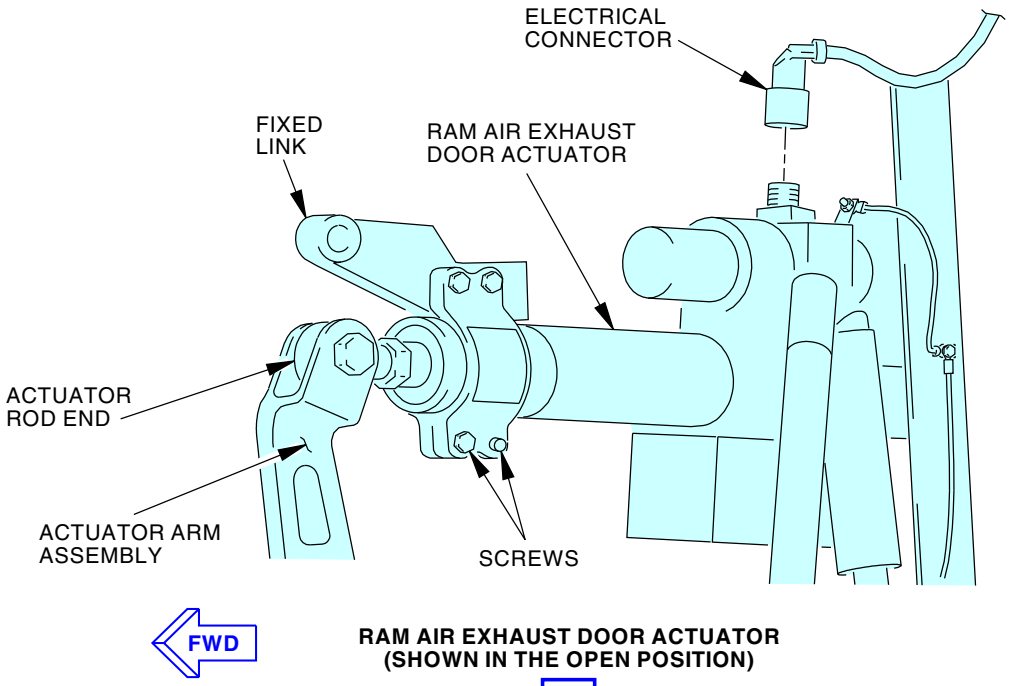
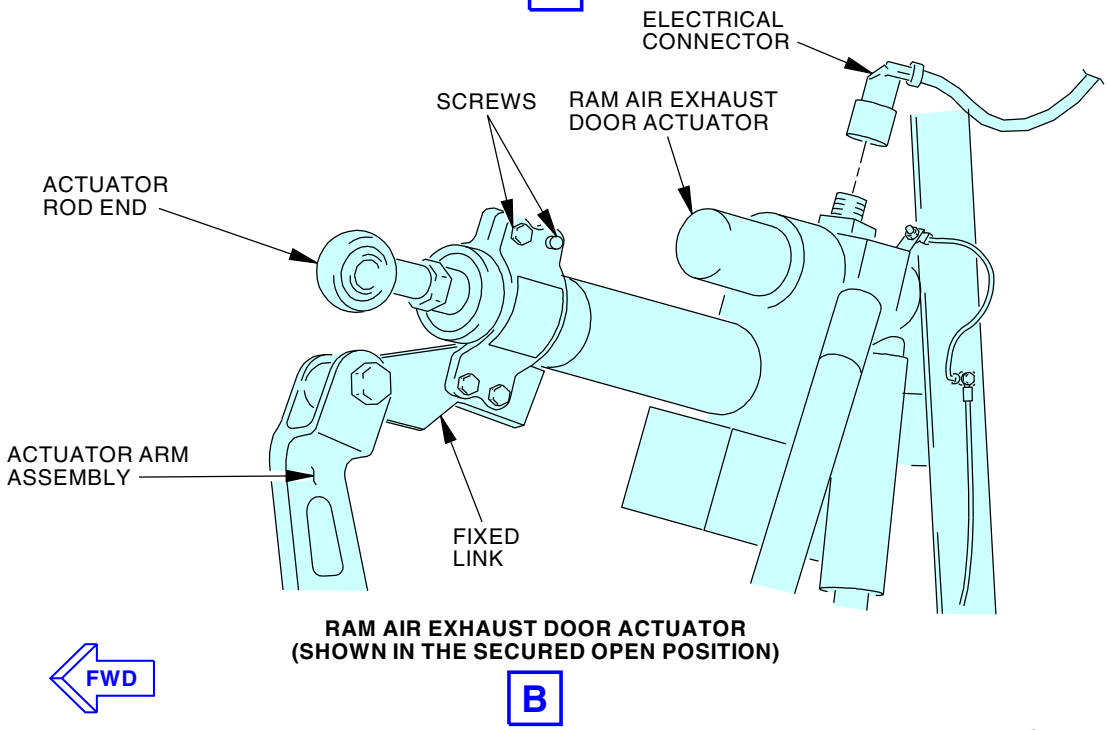


RAM AIR EXHAUST DOOR ACTUATOR (SHOWN IN THE OPEN POSITION)

B



RAM AIR EXHAUST DOOR ACTUATOR (SHOWN IN THE SECURED OPEN POSITION)

B

E32762 S0006402938_V2

Ram Air Exit Door Deactivation
Figure 911/21-00-00-990-817 (Sheet 2 of 2)

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TASK 21-00-00-440-819

89. MMEL 21-52-6 (DDG) Restoration - Ram Air Exit Door Systems Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Ram Air Exit Door Systems Inoperative.

(2) 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195QL	Blowout Door
196QR	Blowout Door

E. Ram Air Exit Doors Reactivation

SUBTASK 21-00-00-860-172

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-113

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-114

(3) For the ram air exit doors for the left cooling pack, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-010-115

(4) For the ram air exit doors for the right cooling pack, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-860-173

(5) To get access to the ram air exit actuator for the left cooling pack, open this access panel:

Number	Name/Location
195QL	Blowout Door

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

SUBTASK 21-00-00-860-174

(6) To get access to the ram air exit actuator for the right cooling pack, open this access panel:

Number	Name/Location
196QR	Blowout Door

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

SUBTASK 21-00-00-020-020

(7) Disconnect the fixed link from the actuator arm assembly.

SUBTASK 21-00-00-020-021

(8) Loosen the screws on the fixed link.

SUBTASK 21-00-00-820-004

CAUTION

THE FIXED LINK MUST BE IN THE UP POSITION FOR THE RAM AIR EXIT DOOR INSTALLATION. DAMAGE TO THE LINKAGE WILL OCCUR IF THE FIXED LINK IS IN THE INCORRECT POSITION.

(9) Rotate the fixed link 180 degrees.

SUBTASK 21-00-00-420-013

(10) Tighten the screws on the fixed link to 18-28 pound-inches.

SUBTASK 21-00-00-420-014

(11) Connect the actuator rod end to the actuator arm assembly.

SUBTASK 21-00-00-420-015

(12) Connect the electrical connector to the actuator.

SUBTASK 21-00-00-860-175

(13) If you reactivated the ram air exit door for the left cooling pack, then close this access panel:

Number	Name/Location
195QL	Blowout Door

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

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SUBTASK 21-00-00-860-176

(14) If you reactivated the ram air exhaust door for the right cooling pack, then close this access panel:

Number	Name/Location
196QR	Blowout Door

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

SUBTASK 21-00-00-860-177

(15) If you reactivated the ram air exit door for the left cooling pack, then do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-178

(16) If you reactivated the ram air exit door for the right cooling pack, then do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-116

(17) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Ram Air Exit Door Systems Check

SUBTASK 21-00-00-860-179

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

SUBTASK 21-00-00-740-035

(2) 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 21-00-00-810-055

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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.

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SUBTASK 21-00-00-810-056

(4) Go to the task in the FIM and do the steps in the task.

END OF TASK

TASK 21-00-00-040-856

90. MMEL 21-52-7 (DDG) Preparation - Condenser Inlet Temperature Sensing Systems Inoperative

(Figure 912)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Condenser Inlet Temperature Sensing Systems Inoperative.

(2) EICAS Status Messages:

(a) COND TEMP SENSOR L

(b) COND TEMP SENSOR R

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
21-52-31-400-801	Economy Cooling Valve Installation (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Associated Low Limit Valve Deactivation (Locked Open)

SUBTASK 21-00-00-860-181

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-117

(2) To get access to the low limit valve for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-010-118

(3) To get access to the low limit valve for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

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SUBTASK 21-00-00-020-022

(4) Disconnect the electrical connectors from the low limit valve.

SUBTASK 21-00-00-020-023

(5) Cap and stow the electrical connector.

SUBTASK 21-00-00-980-008

(6) If the position indicator on the low limit valve does not show open (O), then do this step:

(a) Turn the manual open/close knob until the position indicator shows that the low limit valve is in the open (O) position.

NOTE: When the low limit valve is locked in the open position it may cause the ECON COOL VALVE L (R) status message to be displayed.

(b) When the ECON COOL VALVE L (R) message is displayed do the economy cooling valve installation test to clear the message. To do the installation test, do this task: Economy Cooling Valve Installation, TASK 21-52-31-400-801.

NOTE: The economy cooling valve must operate normally or be inoperative open for the pack to operate in standby cooling mode.

SUBTASK 21-00-00-410-017

(7) If the low limit valve for the left cooling pack was deactivated, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-410-018

(8) If the low limit valve for the right cooling pack was deactivated, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

END OF TASK

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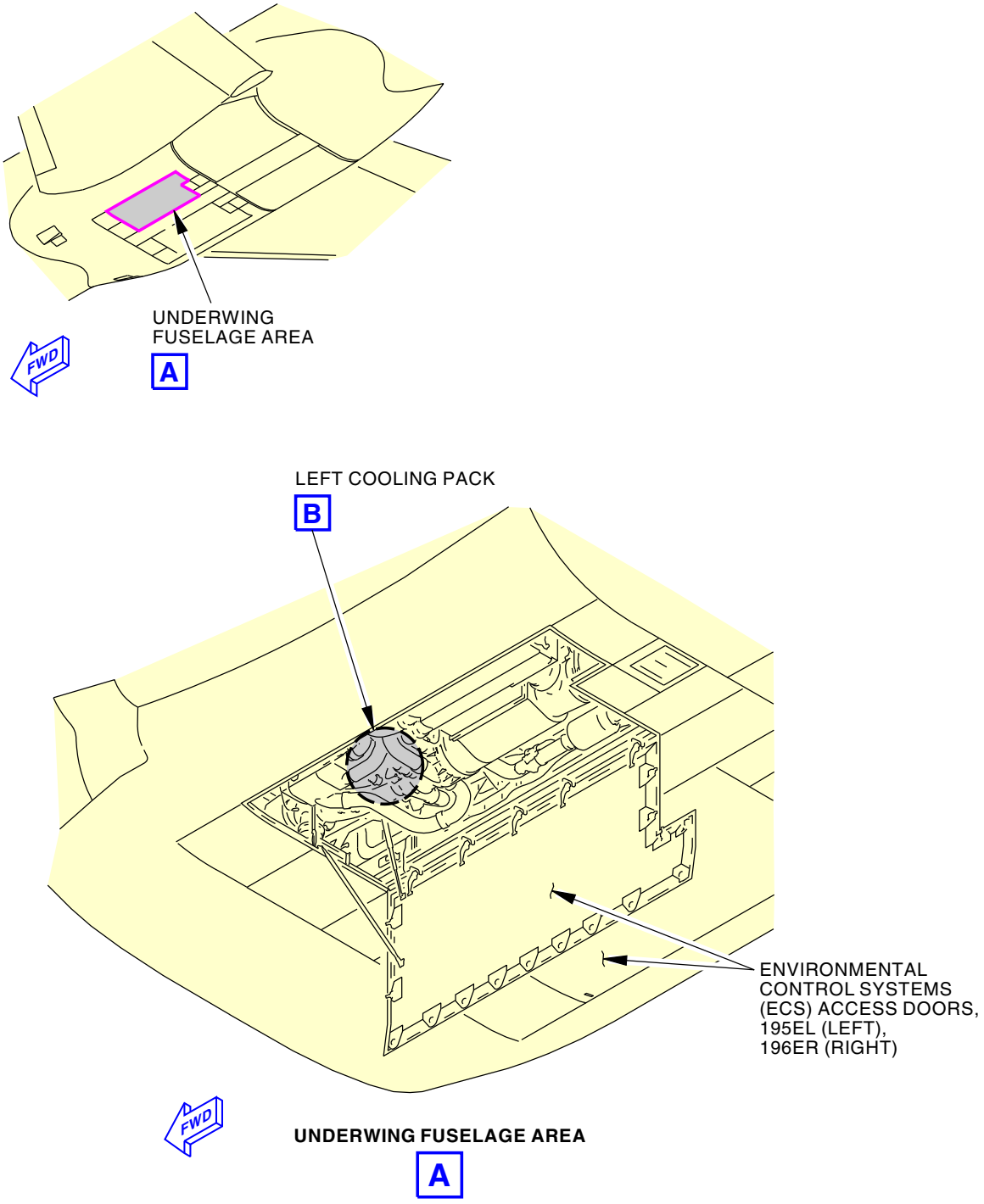

E32974 S0006402941_V2

Low Limit Valve Deactivation
Figure 912/21-00-00-990-810 (Sheet 1 of 3)

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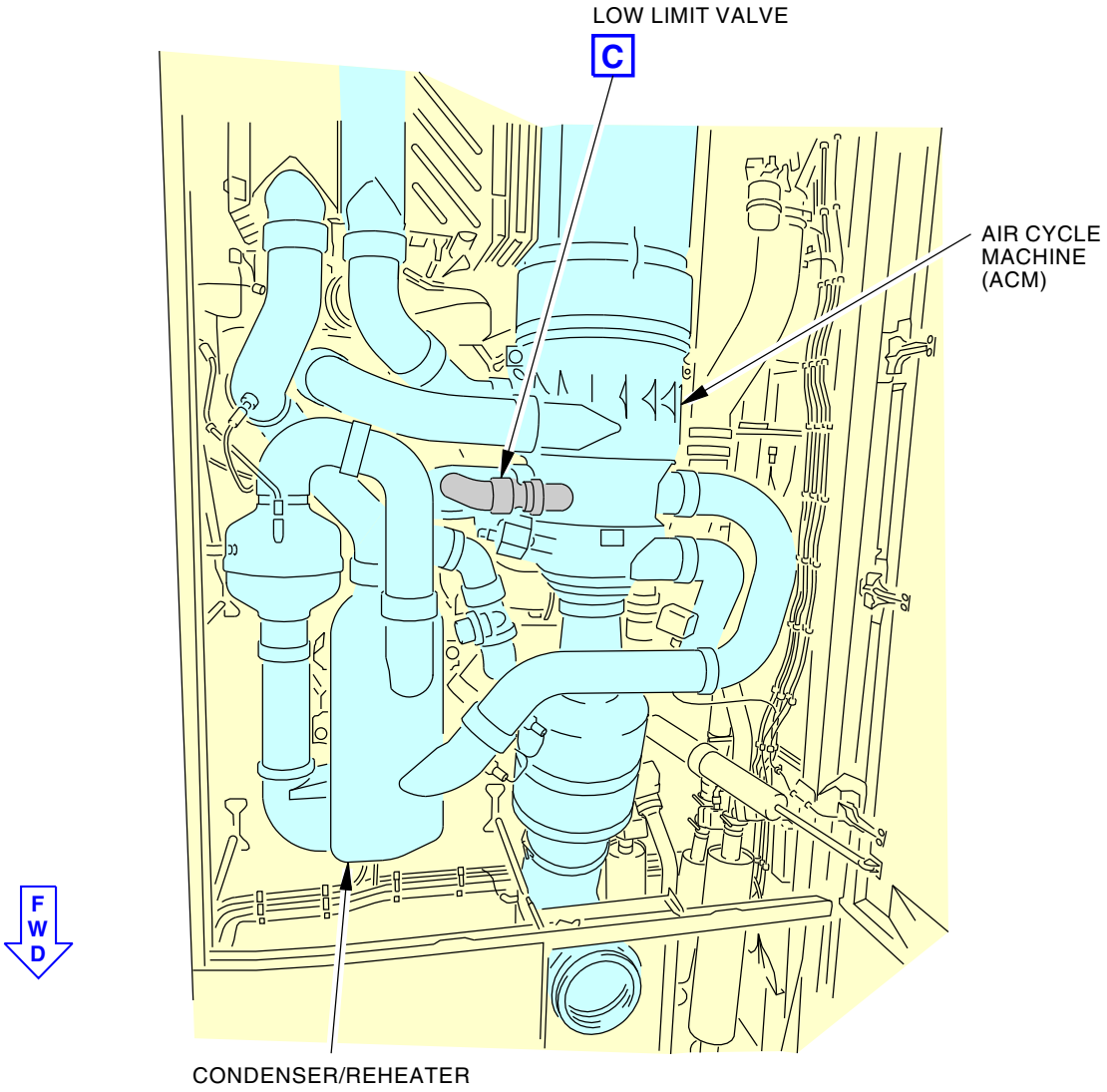

LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)
(BOTTOM VIEW)

B

E32976 S0006402942_V2

Low Limit Valve Deactivation
Figure 912/21-00-00-990-810 (Sheet 2 of 3)

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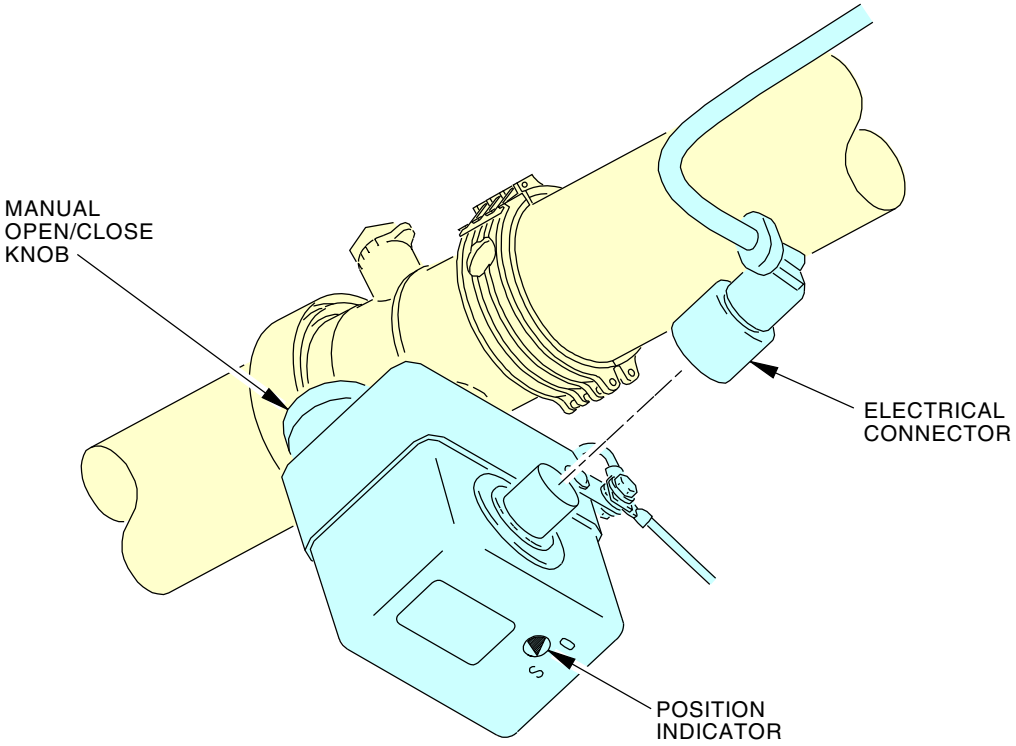

LOW LIMIT VALVE
(EXAMPLE)

C

E32969 S0006402943_V2

Low Limit Valve Deactivation
Figure 912/21-00-00-990-810 (Sheet 3 of 3)

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TASK 21-00-00-440-820

91. MMEL 21-52-7 (DDG) Restoration - Condenser Inlet Temperature Sensing Systems Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Condenser Inlet Temperature Sensing System Inoperative.

(2) 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Low Limit Valve Reactivation

SUBTASK 21-00-00-860-182

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-119

(2) To get access to the low limit valve for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-010-120

(3) To get access to the low limit valve for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

SUBTASK 21-00-00-420-016

(4) Connect the electrical connector to the low limit valve.

SUBTASK 21-00-00-410-019

(5) If the low limit valve for the left cooling pack was deactivated, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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

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SUBTASK 21-00-00-410-020

(6) If the low limit valve for the right cooling pack was deactivated, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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

F. Condenser Inlet Temperature Sensor Systems Check

SUBTASK 21-00-00-860-185

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

SUBTASK 21-00-00-740-037

(2) 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 21-00-00-810-057

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-058

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-857

92. MMEL 21-61-1 (DDG) Preparation - Cabin Temperature Controllers (CTC) Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the left and the right cabin temperature controllers (CTCs) inoperative.

(2) A maintenance access terminal is necessary for this procedure.

(3) EICAS Status Messages

(a) CABIN TEMP CTRL L

(b) CABIN TEMP CTRL R

B. References

Reference	Title
21-31-00-040-802-001	Preparation For Unpressurized Flight (P/B 201)

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

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E. Cabin Temperature Controllers Deactivation

SUBTASK 21-00-00-010-250

(1) Use the electrical maintenance page on the MAT to make sure the right AC transfer bus is powered. Make sure the status message for the R AC XFER reads ON.

NOTE: Display of the CABIN TEMP CTRL R status message may indicate an unpowered right AC transfer bus.

SUBTASK 21-00-00-010-121

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-187

(3) For the left CTC,

Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-188

(4) For the right CTC,

Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-290

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Pressurized Flight Preparation - One Pack Inoperative

SUBTASK 21-00-00-010-291

(1) If the right CTC was deactivated, put the FWD CARGO A/C selector to the OFF position.

G. Unpressurized Flight Preparation - Two Packs Inoperative

SUBTASK 21-00-00-040-019

(1) If both the left and right CTC's have been deactivated, do this task: Preparation For Unpressurized Flight, TASK 21-31-00-040-802-001.

END OF TASK

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TASK 21-00-00-040-858

93. MMEL 21-61-1 (DDG) Restoration - Cabin Temperature Controllers (CTC) Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the left and the right cabin temperature controllers (CTCs) inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-31-00-440-802-001	Restoration For Pressurized Flight (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Cabin Temperature Controllers Reactivation

SUBTASK 21-00-00-010-123

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-189

(2) For the left CTC,

Remove the safety locks and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-190

(3) For the right CTC,

Remove the safety locks and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

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SUBTASK 21-00-00-860-191

(4) Do this task: Restoration For Pressurized Flight, TASK 21-31-00-440-802-001.

SUBTASK 21-00-00-010-124

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Cabin Temperature Controllers Check

SUBTASK 21-00-00-860-192

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

SUBTASK 21-00-00-740-038

(2) 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 21-00-00-810-059

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-060

(4) Go to the task in the FIM and do the steps in the task.

SUBTASK 21-00-00-010-125

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-859

94. MMEL 21-61-2 (DDG) Preparation - Flight Deck Zone Temperature Control System Inoperative

(Figure 913)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the flight deck zone temperature control system inoperative.

(2) EICAS Status Messages

(a) F/D ZONE TEMP CNTRL

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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(Continued)

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

D. F/D Zone Temperature Control System Deactivation

SUBTASK 21-00-00-710-009

(1) Do these steps to verify that the F/D zone temperature control system operates in the MAN mode:

(a) Put the FLT DECK TEMP selector on the AIR CONDITIONING module in the MAN C position.

(b) Make sure the F/D TRIM VLV indication on the ECS maintenance page shows approximately 0.0.

(c) Put the FLT DECK TEMP selector on the AIR CONDITIONING module in the MAN W position.

(d) Make sure the F/D TRIM VLV indication on the ECS maintenance page moves to approximately 1.0.

(e) If the F/D TRIM VLV indication does not move from approximately 0.0 to 1.0, then continue.

SUBTASK 21-00-00-040-020

(2) If the F/D zone temperature control system does not operate in the MAN mode, and the left trim air PRSOV remains in the open position, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(c) Open these circuit breakers and install safety locks:

Left Power Management Panel, P110

Row	Col	Number	Name
G	1	C21443	F/D TRIM MOD VLV
H	19	C21655	F/D TRIM MOD VLV CTRL

(d) Open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

(e) Disconnect the electrical connector from the zone trim air modulating valve for the flight deck.

(f) Cap and stow the electrical connector.

(g) Turn the manual open/close knob until the valve position indicator shows that the valve is in the closed position.

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-010-141

(3) Close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-010-127

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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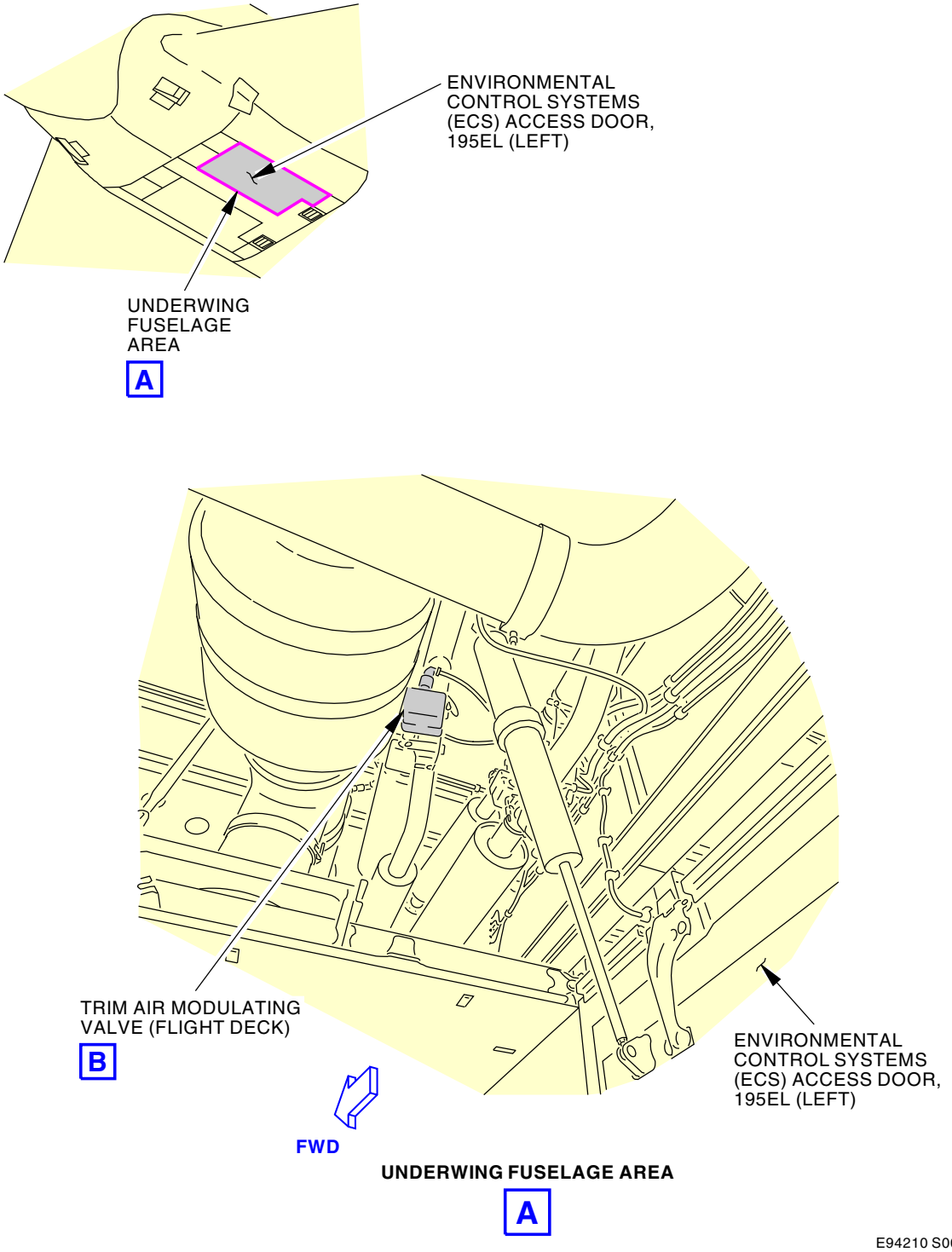

E94210 S0006402948_V4

Flight Deck Zone Trim Air Modulating Valve Deactivation
Figure 913/21-00-00-990-811 (Sheet 1 of 2)

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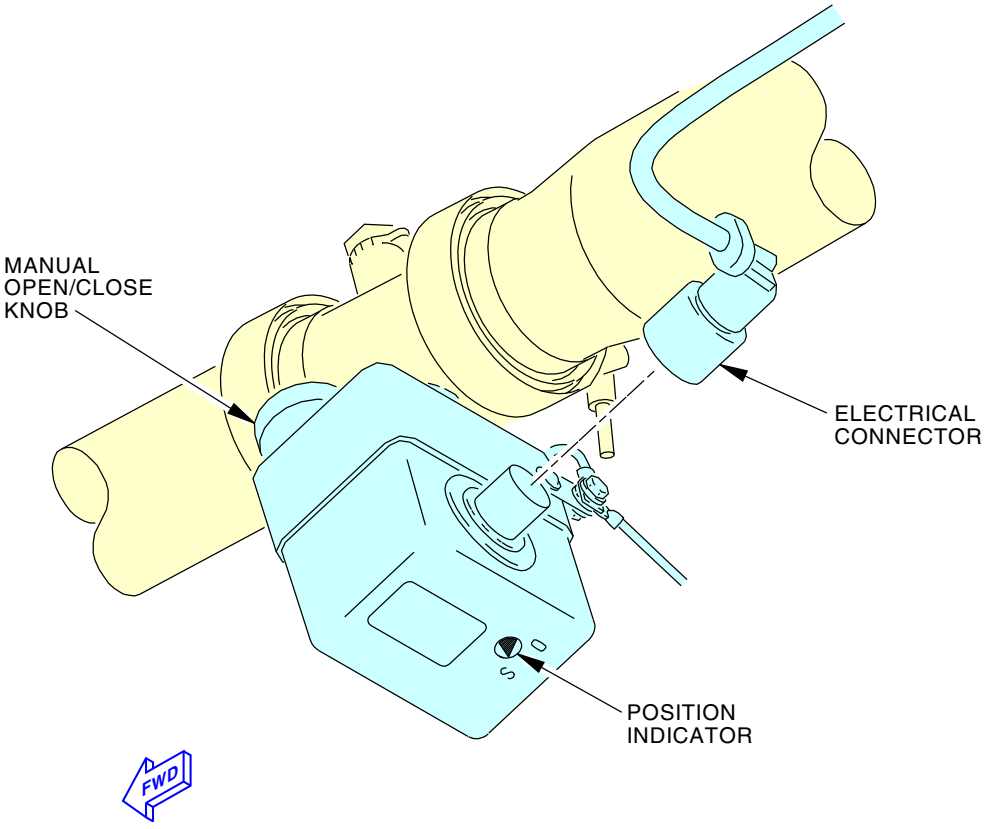

**TRIM AIR MODULATING VALVE
(FLIGHT DECK)**

B

E94212 S0006402949_V2

**Flight Deck Zone Trim Air Modulating Valve Deactivation
Figure 913/21-00-00-990-811 (Sheet 2 of 2)**

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TASK 21-00-00-040-860

95. MMEL 21-61-2 (DDG) Restoration - Flight Deck Zone Temperature Control System Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the flight deck zone temperature control system inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door

E. F/D Zone Temperature Control System Reactivation

SUBTASK 21-00-00-040-021

(1) If the zone trim air modulating valve for the flight deck was locked in the closed position, then do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(c) Open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

(d) Re-connect the electrical connector on the zone trim air modulating valve for the flight deck.

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(f) Remove the safety locks and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
G	1	C21443	F/D TRIM MOD VLV
H	19	C21655	F/D TRIM MOD VLV CTRL

F. F/D Zone Trim Air Modulating valve Check

SUBTASK 21-00-00-860-194

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

SUBTASK 21-00-00-740-039

(2) 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 21-00-00-810-061

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-062

(4) Go to the task in the FIM and do the steps in the task.

SUBTASK 21-00-00-410-028

(5) Close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-010-128

(6) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-00-00-040-861

96. MMEL 21-61-3 (DDG) Preparation - Cabin Zone Temperature Control System Inoperative

(Figure 914)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with any of the zone temperature control systems in the passenger compartment inoperative.

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B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Zone Temperature Control System Deactivation

SUBTASK 21-00-00-040-022

(1) If the zone A, zone C, or zone E temperature control system does not operate, and the left trim air PRSOV remains in the open position, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(c) Open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

(d) Disconnect the electrical connector from the applicable zone trim air modulating valve.

(e) Cap and stow the electrical connector.

(f) Turn the manual open/close knob until the applicable valve position indicator shows that the valve is in the closed position.

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(h) Close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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(i) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-040-023

(2) If the zone B, zone D, zone F, or Forward Cargo Compartment temperature control system does not operate, and the right trim air PRSOV remains in the open position, do these steps:

(3) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

(c) Disconnect the electrical connector from the applicable zone trim air modulating valve.

(d) Cap and stow the electrical connector.

(e) Turn the manual open/close knob until the applicable valve position indicator shows that the valve is in the closed position.

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(g) Close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

(h) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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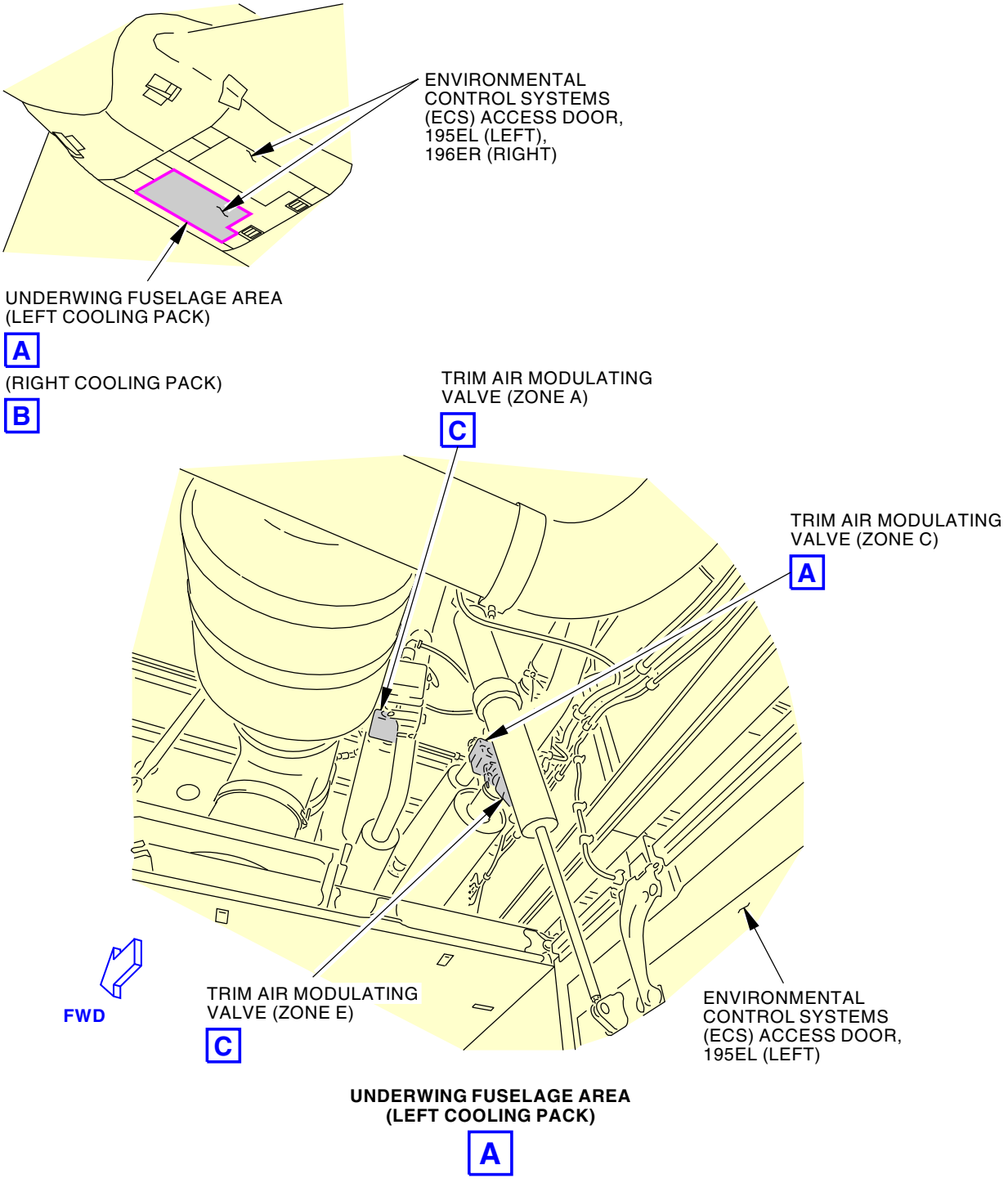

Zone Trim Air Modulating Valves Deactivation
Figure 914/21-00-00-990-812 (Sheet 1 of 2)

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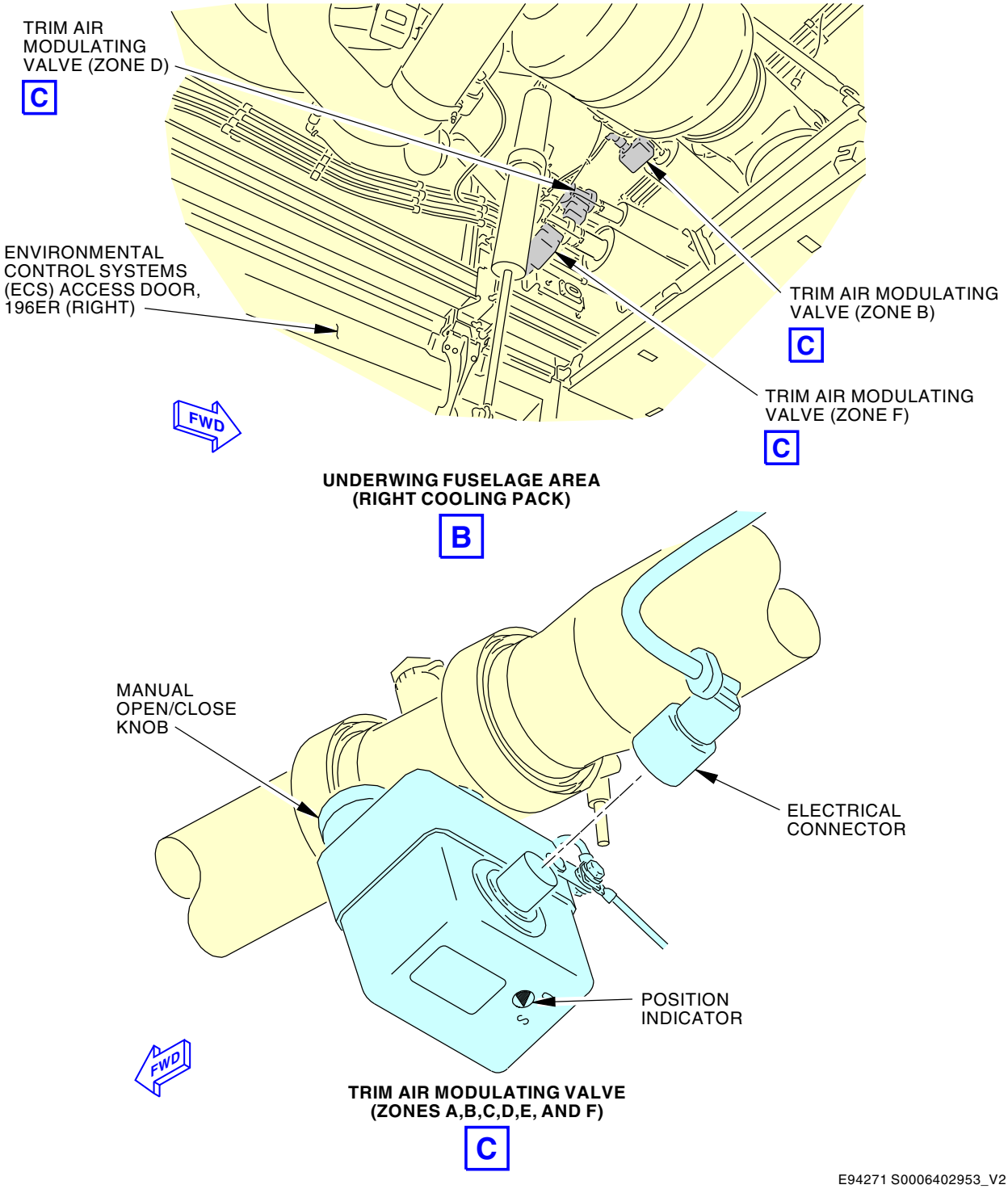

Zone Trim Air Modulating Valves Deactivation
Figure 914/21-00-00-990-812 (Sheet 2 of 2)

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TASK 21-00-00-040-862

97. MMEL 21-61-3 (DDG) Restoration - Cabin Zone Temperature Control System Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with any of the zone temperature control systems in the passenger compartment inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Zone Temperature Control System Reactivation

SUBTASK 21-00-00-040-024

(1) If the zone trim air modulating valve for zone A, zone C, or zone E was locked in the closed position, then do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(c) Open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

(d) Re-connect the electrical connector on the applicable zone trim air modulating valve.

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(f) Close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

(g) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-040-025

(2) If the zone trim air modulating valve for zone B, zone D, zone F or Forward Cargo Compartment was locked in the closed position, then do these steps:

(3) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

(c) Re-connect the electrical connector on the applicable zone trim air modulating valve.

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(e) Close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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(f) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Zone Trim Air Modulating valve Check

SUBTASK 21-00-00-860-196

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

SUBTASK 21-00-00-740-040

(2) 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 21-00-00-810-063

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-064

(4) Go to the task in the FIM and do the steps in the task.

——— END OF TASK ———

TASK 21-00-00-040-934

98. MMEL 21-61-05 (DDG) Preparation - Forward Cargo Air Conditioning Duct Temperature Sensing System Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Forward Cargo air conditioning (FCAC) Duct Temperature Sensing System inoperative.

(2) EICAS Status Messages:

(a) CARGO DUCT SNSRS FWD

(3) EICAS Advisory Messages:

(a) CARGO A/C FWD

B. Location Zones

Zone	Area
118	Main Equipment Center, Right
136	Environmental Control Systems Bay, Right

C. Deactivation

SUBTASK 21-00-00-040-112

(1) Do this task to deactivate the forward cargo zone trim air modulation valve closed:

MMEL 21-61-7 (DDG) Preparation - Forward Cargo Air Conditioning Trim Air Valve Inoperative, TASK 21-00-00-040-899

SUBTASK 21-00-00-860-533

(2) Put the FWD CARGO A/C control on the overhead P5 panel to OFF.

——— END OF TASK ———

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TASK 21-00-00-440-864

99. MMEL 21-61-05 (DDG) Restoration - Forward Cargo Air Conditioning Duct Temperature Sensing System Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the Forward Cargo Air Conditioning Duct Temperature Sensing System inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. Location Zones

Zone	Area
118	Main Equipment Center, Right
136	Environmental Control Systems Bay, Right

C. Reactivation

SUBTASK 21-00-00-440-066

(1) Do this task to reactivate the Forward Cargo Air Conditioning Trim Air Valve:

MMEL 21-61-7 (DDG) Restoration - Forward Cargo Air Conditioning Trim Air Valve Inoperative, TASK 21-00-00-440-836

——— END OF TASK ———

TASK 21-00-00-040-899

100. MMEL 21-61-7 (DDG) Preparation - Forward Cargo Air Conditioning Trim Air Valve Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the forward cargo air conditioning (FCAC) trim air valve inoperative.

(2) EICAS Status Messages

(a) CARGO TRIM VALVE FWD

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
136	Environmental Control Systems Bay, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. FCAC Trim Air Valve Deactivation

SUBTASK 21-00-00-860-368

(1) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

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SUBTASK 21-00-00-010-344

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-369

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-345

(4) Open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-010-346

(5) Disconnect, cap, and stow the electrical connector from the FCAC trim air valve.

SUBTASK 21-00-00-010-347

(6) Turn the manual open/close knob until the FCAC trim air valve is fully closed.

SUBTASK 21-00-00-010-348

(7) Close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-860-370

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-040-109

(9) Position the FWD CARGO A/C control on the overheard P5 panel to OFF.

SUBTASK 21-00-00-010-349

(10) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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TASK 21-00-00-440-836

101. MMEL 21-61-7 (DDG) Restoration - Forward Cargo Air Conditioning Trim Air Valve Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the forward cargo air conditioning (FCAC) trim air valve inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. FCAC Trim Air Valve Reactivation

SUBTASK 21-00-00-860-371

(1) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-00-00-010-350

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-372

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-351

(4) Open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-010-352

(5) Reconnect the electrical connector to the FCAC trim air valve.

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SUBTASK 21-00-00-010-353

(6) Close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-860-373

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-354

(8) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. FCAC Trim Air Valve Check

SUBTASK 21-00-00-860-374

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

SUBTASK 21-00-00-860-375

(2) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-00-00-740-071

(3) Do this ground test on the MAT:

(a) 21 Environmental Control System, SYSTEM TEST, Forward Cargo Air Conditioning

1) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

2) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM to correct the fault.

——— END OF TASK ———

TASK 21-00-00-040-900

102. MMEL 21-61-8 (DDG) Preparation - Forward Cargo Air Conditioning Flight Deck Control Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the forward cargo air conditioning (FCAC) flight deck control inoperative.

(2) EICAS Status Messages

(a) CARGO A/C SELECT FWD

B. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)

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(Continued)

Reference	Title
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
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)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for Deactivation

SUBTASK 21-00-00-040-106

(1) Position the Overhead Panel (P5) FWD CARGO A/C control to OFF.

F. Forward Cargo Air Conditioning Shutoff Valve Deactivation

SUBTASK 21-00-00-010-355

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-376

(2) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
C	8	C21457	FWD CGO A/C SOV
H	12	C21682	FWD CGO A/C SOV CTRL

SUBTASK 21-00-00-010-356

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-357

(4) Open the forward cargo door (TASK 52-34-00-860-801).

SUBTASK 21-00-00-010-358

(5) Remove the aft end wall of the forward cargo compartment, (TASK 25-52-17-000-801).

SUBTASK 21-00-00-010-359

(6) Get access access to the forward cargo air conditioning shutoff valve in the right side of the mix bay, below the recirculation air filters.

SUBTASK 21-00-00-010-360

(7) Turn the manual open/close knob until the forward cargo air conditioning shutoff valve is fully closed.

SUBTASK 21-00-00-010-361

(8) Install the aft end wall of the forward cargo compartment, (TASK 25-52-17-400-801).

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SUBTASK 21-00-00-010-362

(9) Close the forward cargo door (TASK 52-34-00-860-803).

——— END OF TASK ———

TASK 21-00-00-440-837

103. MMEL 21-61-8 (DDG) Restoration - Forward Cargo Air Conditioning Flight Deck Control Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the forward cargo air conditioning (FCAC) flight deck control inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. FCAC SOV Reactivation

SUBTASK 21-00-00-010-363

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-377

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

Right Power Management Panel, P210

Row	Col	Number	Name
C	8	C21457	FWD CGO A/C SOV
H	12	C21682	FWD CGO A/C SOV CTRL

SUBTASK 21-00-00-010-364

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. FCAC Flight Deck Control Check

SUBTASK 21-00-00-860-378

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

SUBTASK 21-00-00-740-072

(2) Go to the MAT and find the EICAS status message.

(a) Find the fault code and the correlated maintenance message numbers on the MAT.

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(b) Do the procedures in the FIM to correct the fault.

——— END OF TASK ———

TASK 21-00-00-040-863

104. MMEL 21-62-2 (DDG) Preparation - Trim Air Pressure Regulating/Shutoff Valves (PRSOVs) Inoperative

(Figure 915)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with one or two trim air pressure regulation/shutoff valves inoperative.

(2) EICAS Status Messages:

(a) TRIM AIR PRSOV L

(b) TRIM AIR PRSOV R

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Deactivation

SUBTASK 21-00-00-860-198

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-00-00-010-131

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-199

(3) For the left trim air PRSOV,

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-200

(4) For the right trim air PRSOV,

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-132

(5) To get access to left trim air PRSOV, open this door:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-010-133

(6) To get access to the right trim air PRSOV, open this door:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

F. Trim Air PRSOV Deactivation

SUBTASK 21-00-00-020-024

(1) Remove the locking plug from the trim air PRSOV actuator boss.

SUBTASK 21-00-00-980-009

(2) If the manual lock is not in the closed (CL) position, then do this step:

(a) Turn the manual wrench until the manual lock is in the closed position.

NOTE: Look at the position of the manual lock, in relation to the OP and CL marks on top of the actuator housing. The actuator arm will move from one mark to the other mark as the trim air PRSOV opens and closes.

SUBTASK 21-00-00-420-017

(3) Install the locking plug in the hole in the manual lock.

CAUTION

DO NOT USE THE 20 POUND-FEET (27.1 NEWTON-METERS) OF TORQUE IDENTIFIED ON THE DECAL TO INSTALL THE LOCKING PLUG. THE 20 POUND-FEET OF TORQUE IS THE MAXIMUM TORQUE NECESSARY TO CLOSE THE VALVE. IF YOU USE THE 20 POUND-FEET OF TORQUE ON THE LOCKING PLUG, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(a) Tighten the locking plug.

NOTE: The usual running torque for the locking plug is 10-15 pound-inches (1.1-1.7 newton-meters). The locking plug is installed when there is an increase in the running torque.

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SUBTASK 21-00-00-860-201

(4) If you deactivated the left trim air PRSOV, then

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-202

(5) If you deactivated the right trim air PRSOV, then

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-410-023

(6) If you deactivated the left trim air PRSOV, close this door:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-410-024

(7) If you deactivated the right trim air PRSOV, close this door:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-010-134

(8) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-010-252

(9) If the right trim air PRSOV was deactivated, put the FWD CARGO A/C selector to the OFF position.

——— **END OF TASK** ———

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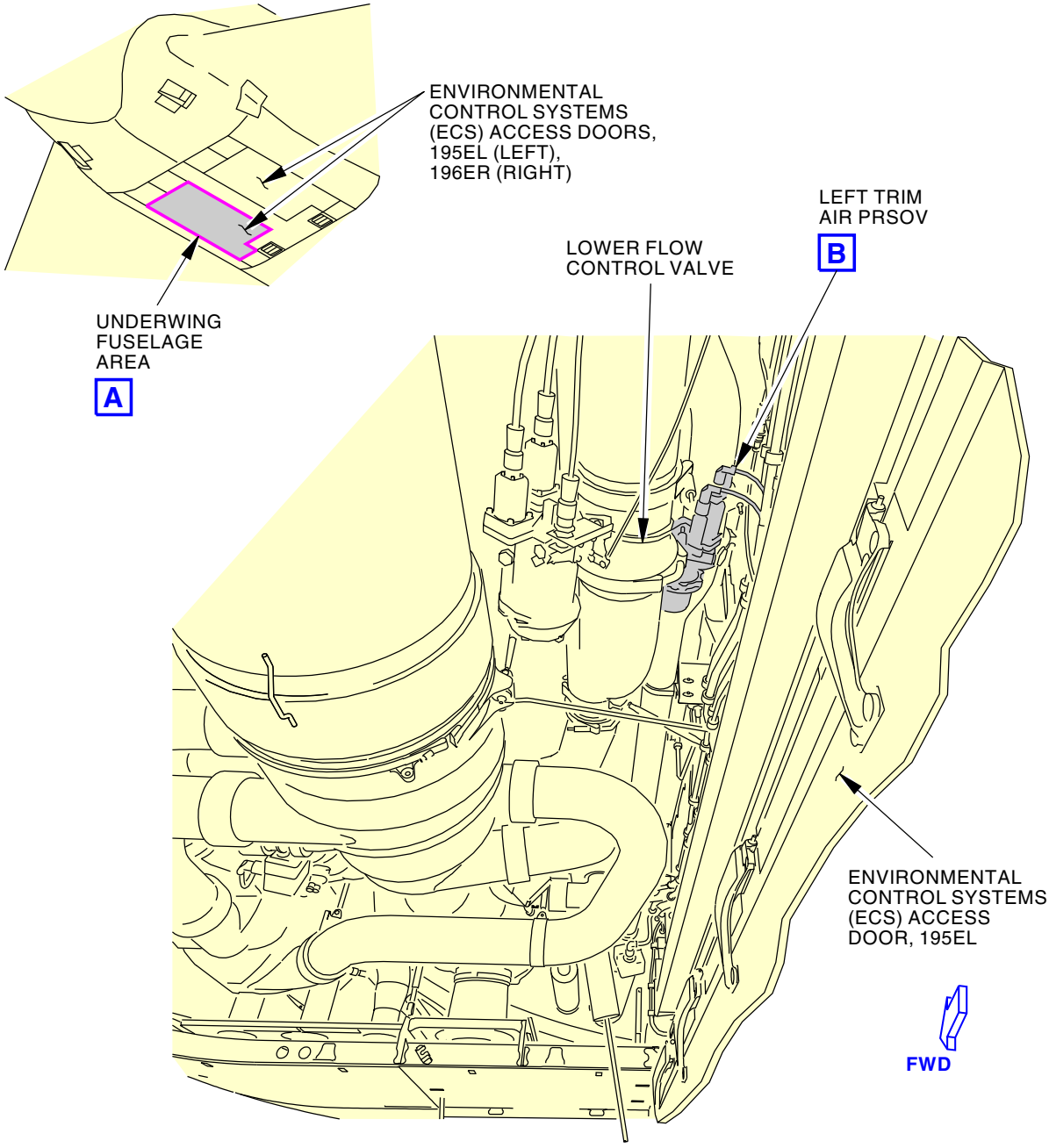

UNDERWING FUSELAGE AREA
(THE LEFT TRIM AIR PRSOV IS SHOWN,
THE RIGHT TRIM AIR PRSOV IS EQUIVALENT)

A

E94276 S0006402960_V3

Trim Air Pressure Regulating and Shutoff Valve Deactivation
Figure 915/21-00-00-990-813 (Sheet 1 of 2)

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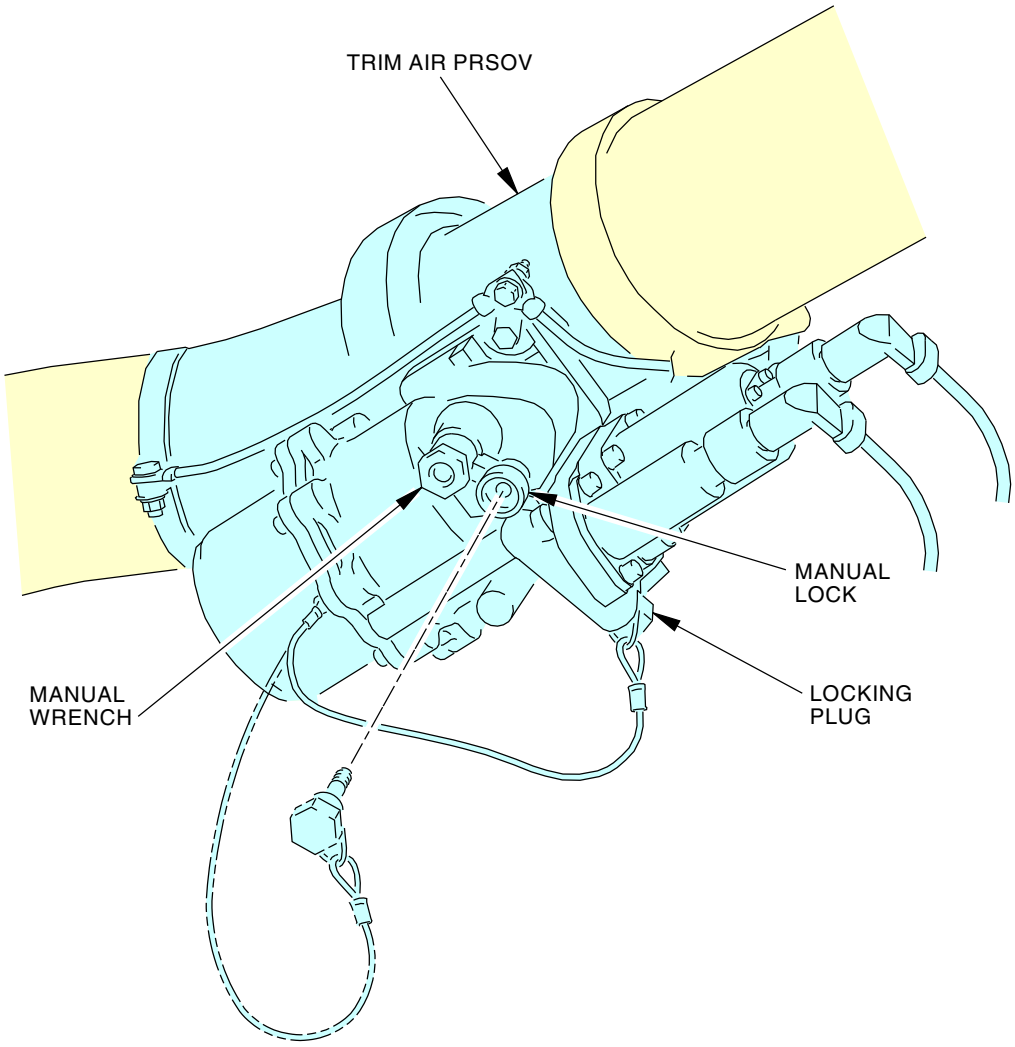

LEFT TRIM AIR PRSOV
(THE MANUAL LOCK IS SHOWN,
IN THE CLOSED (CL) POSITION)

B

E34105 S0006402961_V2

Trim Air Pressure Regulating and Shutoff Valve Deactivation
Figure 915/21-00-00-990-813 (Sheet 2 of 2)

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TASK 21-00-00-440-821

105. MMEL 21-62-2 (DDG) Restoration - Trim air Pressure Regulating/Shutoff Valves (PRSOVs) Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with the left and/or the right trim air PRSOVs inoperative.

(2) A maintenance access terminal is necessary for this procedure.

B. References

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

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Reactivation

SUBTASK 21-00-00-010-135

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-00-00-860-203

(2) For the left trim air PRSOV,

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-204

(3) For the right trim air PRSOV,

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)

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(Continued)

Right Power Management Panel, P210

Row	Col	Number	Name
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-136

(4) For the left trim air PRSOV, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-010-137

(5) For the right trim air PRSOV, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

F. Trim Air PRSOV Reactivation

SUBTASK 21-00-00-020-025

(1) Remove the locking plug from the hole in the manual lock.

SUBTASK 21-00-00-420-018

(2) Install the locking plug in the actuator boss.

(a) Tighten the locking plug.

SUBTASK 21-00-00-860-205

(3) If you reactivated the left trim air PRSOV,

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-00-00-860-206

(4) If you reactivated the right trim air PRSOV,

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-00-00-010-138

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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G. Trim Air PRSOV Check

SUBTASK 21-00-00-860-207

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

SUBTASK 21-00-00-740-041

(2) 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 21-00-00-810-065

(3) Go to the FAULT CODE INDEX in the FIM and find the fault code.

NOTE: 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 21-00-00-810-066

(4) Go to the task in the FIM and do the steps in the task.

SUBTASK 21-00-00-410-025

(5) For the left trim air PRSOV, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-00-410-026

(6) For the right trim air PRSOV, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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AIR CONDITIONING SYSTEM OIL CONTAMINATION REMOVAL - MAINTENANCE PRACTICES

1. General

A. The oil fumes and the smoke from an APU/engine failure can get into the airplane cabin and cause contamination of the conditioned air. This procedure gives instructions to remove the oil contamination from the air conditioning and pneumatic systems. You must first isolate the cause of the oil contamination and repair the problem before you do this procedure.

B. The APU is the most likely source of the smoke or odors in the airplane. The smoke or odors can be caused by either an internal APU failure which can release oil into the pneumatic and/or air conditioning systems. Another source of smoke or odor is oil, glycol or hydraulic fluid being ingested into the inlet of the APU or engines where it then can enter the pneumatic and/or air conditioning systems and vaporize at higher temperatures.

C. Additional sources of odors can be the recirculation fans, materials in the cargo compartments, ground carts, fuel leaks that have entered the ducts of the air conditioning system, and hydraulic fluid from the reservoir pressurization module passing through the check valve in the opposite direction.

D. Do not do this procedure with the crew and passengers on the airplane, since this procedure can generate smoke in the airplane.

TASK 21-00-01-100-801

2. Oil Contamination Removal from Air Conditioning and Pneumatic Systems

A. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (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)
49-11-00-860-804	APU Starting and Operation (P/B 201)
49-11-00-860-805	APU Usual Shutdown (P/B 201)
71-00-00-800-801-H01	Engine Ground Safety Precautions (P/B 201)
71-00-00-800-835-H00	Engine Start (Selection) (P/B 201)
71-00-00-800-837-H00	Usual Engine Stop (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-2462	Deactivator - Check Valve Part #: C21006-7 Supplier: 81205 Opt Part #: C21006-1 Supplier: 81205
SPL-14793	Coupling - Air Start Part #: M7950-54 Supplier: 86831 Opt Part #: M7950-93 Supplier: 86831

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C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

E. Procedure

NOTE: Continue to do the steps of this procedure until the conditioned air in the airplane has no smell of the oil contamination.

SUBTASK 21-00-01-860-001

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-00-01-010-001

(2) To get access to the cooling packs, do this task:

Open these access panels:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-01-160-001

(3) Clean the pneumatic ducts and the components where you can see the oil contamination.

SUBTASK 21-00-01-960-001

(4) Replace the components if they have too much contamination.

SUBTASK 21-00-01-860-002

(5) Do not operate the APU or the engines to supply electrical power to the airplane.

SUBTASK 21-00-01-860-003

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

SUBTASK 21-00-01-860-004

(7) Make sure these switches on the pilot's overhead panel, P5, which follow are set to the indicated positions:

(a) On the BLEED AIR module:

1) APU, L ENG, and R ENG switch-lights are set to OFF

2) L ISLN, C ISLN and R ISLN switch-lights are set to CLOSED

(b) On the AIR CONDITIONING module:

1) L PACK and R PACK switch-lights are set to OFF

2) L TRIM AIR and R TRIM AIR switch-lights are off

3) UPPER RECIRC FANS and LOWER RECIRC FANS switch-lights are set to OFF

(c) On the ANTI-ICE module:

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1) WING, L ENGINE, and R ENGINE switches are set to OFF

SUBTASK 21-00-01-860-005

(8) Make sure these selectors on the Maintenance Panel, P61, which follow are set to the indicated positions:

(a) On the CARGO TEMP SELECT module:

1) CARGO HEAT AFT and CARGO HEAT BULK selectors are set to OFF

SUBTASK 21-00-01-020-001

(9) Start the APU and let the APU operation become stable. To start and operate the APU, do this task: APU Starting and Operation, TASK 49-11-00-860-804.

SUBTASK 21-00-01-860-007

(10) Do these steps which follow to remove the oil contamination from the left engine pneumatic duct:

(a) Start the left engine using the APU and let the engine operate at ground idle speed. To start and operate the left engine, do this task: Engine Start (Selection), TASK 71-00-00-800-835-H00.

(b) Set the APU on the BLEED AIR module, to the OFF position.

(c) Set the R ISLN, C ISLN, and L ISLN switch-lights to the AUTO position, on the BLEED AIR module.

WARNING OBSERVE PROPER SAFETY PRECAUTIONS AROUND RUNNING ENGINE. WEAR EAR PROTECTORS AND STAY CLEAR OF ENGINE HAZARD AREAS. SEE "ENGINE GROUND SAFETY PRECAUTIONS" FOR ENGINE HAZARD DESCRIPTION.

(d) Make sure that you obey all safety precautions when you are near an engine that is in operation. To obey the safety precautions, comply with the directions in this task: Engine Ground Safety Precautions, TASK 71-00-00-800-801-H01.

WARNING PUT ON GLOVES FOR PROTECTION FROM HOT SURFACES WHEN YOU CONNECT OR DISCONNECT PNEUMATIC FITTINGS. PACK OPERATION CAN MAKE THE GROUND AIR CONNECTOR VERY HOT. A HOT GROUND AIR CONNECTOR WILL BURN YOUR BARE HANDS.

(e) Install the check valve deactivator, SPL-2462, in the ground air connector as follows:

1) Put the deactivator, SPL-2462, in the ground air connector so that the check valve flappers are open.

2) Install the Coupling, SPL-14793 on the supply hose from the ground air cart onto the nipple of the ground air connector check valve assembly so that the deactivator, SPL-2462, is held in place.

NOTE: The supply hose should not be connected to the ground cart as the exhaust from the hose should be vented to ambient.

(f) Set the R ISLN, C ISLN, and L ISLN switch-lights to the CLOSED position, on the BLEED AIR module.

(g) Set the L ENG switch-light on the BLEED AIR module to the ON position.

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WARNING OBSERVE PROPER SAFETY PRECAUTIONS AROUND RUNNING ENGINE. WEAR EAR PROTECTORS AND STAY CLEAR OF ENGINE HAZARD AREAS. SEE "ENGINE GROUND SAFETY PRECAUTIONS" FOR ENGINE HAZARD DESCRIPTION.

(h) Make sure that you obey all safety precautions when you are near an engine that is in operation. To obey the safety precautions, comply with the directions in this task: Engine Ground Safety Precautions, TASK 71-00-00-800-801-H01.

WARNING DO NOT PUT YOUR HAND OR BODY IN THE AIR THAT COMES OUT OF THE PNEUMATIC GROUND CONNECTOR. THE HOT AIR WILL CAUSE INJURIES.

(i) Let the left engine pneumatic air flow until the air that comes out of the pneumatic ground connector has no smell of the oil contamination.

(j) Set the L ENG switch-light on the BLEED AIR module to the OFF position.

(k) To stop the operation of the left engine, do this task: Usual Engine Stop, TASK 71-00-00-800-837-H00.

WARNING PUT ON GLOVES FOR PROTECTION FROM HOT SURFACES WHEN YOU CONNECT OR DISCONNECT PNEUMATIC FITTINGS. PACK OPERATION CAN MAKE THE GROUND AIR CONNECTOR VERY HOT. A HOT GROUND AIR CONNECTOR WILL BURN YOUR BARE HANDS.

(l) Remove the ground cart supply hose and deactivator, SPL-2462, from the pneumatic ground connector.

SUBTASK 21-00-01-860-015

(11) Do these steps which follow to remove the oil contamination from the right engine pneumatic duct:

(a) Start the right engine using the APU and let the engine operate at ground idle speed. To start and operate the right engine, do this task: Engine Start (Selection), TASK 71-00-00-800-835-H00.

(b) Make sure the APU on the BLEED AIR module is set to the OFF position.

(c) Set the R ISLN, C ISLN, and L ISLN switch-lights to the AUTO position, on the BLEED AIR module.

WARNING OBSERVE PROPER SAFETY PRECAUTIONS AROUND RUNNING ENGINE. WEAR EAR PROTECTORS AND STAY CLEAR OF ENGINE HAZARD AREAS. SEE "ENGINE GROUND SAFETY PRECAUTIONS" FOR ENGINE HAZARD DESCRIPTION.

(d) Make sure that you obey all safety precautions when you are near an engine that is in operation. To obey the safety precautions, comply with the directions in this task: Engine Ground Safety Precautions, TASK 71-00-00-800-801-H01.

WARNING PUT ON GLOVES FOR PROTECTION FROM HOT SURFACES WHEN YOU CONNECT OR DISCONNECT PNEUMATIC FITTINGS. PACK OPERATION CAN MAKE THE GROUND AIR CONNECTOR VERY HOT. A HOT GROUND AIR CONNECTOR WILL BURN YOUR BARE HANDS.

(e) Install the check valve deactivator, SPL-2462, in the ground air connector as follows:

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1) Put the deactivator, SPL-2462, in the ground air connector so that the check valve flappers are open.

2) Install the Coupling, SPL-14793 on the supply hose from the ground air cart onto the nipple of the ground air connector check valve assembly so that the deactivator, SPL-2462, is held in place.

NOTE: The supply hose should not be connected to the ground cart as the exhaust from the hose should be vented to ambient.

(f) Set the R ISLN, C ISLN, and L ISLN switch-lights to the CLOSED position, on the BLEED AIR module.

(g) Set the R ENG switch-light on the BLEED AIR module, to the ON position.

WARNING OBSERVE PROPER SAFETY PRECAUTIONS AROUND RUNNING ENGINE. WEAR EAR PROTECTORS AND STAY CLEAR OF ENGINE HAZARD AREAS. SEE "ENGINE GROUND SAFETY PRECAUTIONS" FOR ENGINE HAZARD DESCRIPTION.

(h) Make sure that you obey all safety precautions when you are near an engine that is in operation. To obey the safety precautions, comply with the directions in this task: Engine Ground Safety Precautions, TASK 71-00-00-800-801-H01.

WARNING DO NOT PUT YOUR HAND OR BODY IN THE AIR THAT COMES OUT OF THE PNEUMATIC GROUND CONNECTOR. THE HOT AIR WILL CAUSE INJURIES.

(i) Let the right engine pneumatic air flow until the air that comes out of the pneumatic ground connector has no smell of the oil contamination.

(j) Set the R ENG switch-light on the BLEED AIR module, to the OFF position.

(k) To stop the operation of the right engine, do this task: Usual Engine Stop, TASK 71-00-00-800-837-H00.

WARNING PUT ON GLOVES FOR PROTECTION FROM HOT SURFACES WHEN YOU CONNECT OR DISCONNECT PNEUMATIC FITTINGS. PACK OPERATION CAN MAKE THE GROUND AIR CONNECTOR VERY HOT. A HOT GROUND AIR CONNECTOR WILL BURN YOUR BARE HANDS.

(l) Remove the ground cart supply hose and deactivator, SPL-2462, from the pneumatic ground connector.

SUBTASK 21-00-01-860-008

WARNING DO NOT GO NEAR THE OPENING OF THE HIGH-PRESSURE GROUND CONNECTOR DUCT WHEN YOU PRESSURIZE THE PNEUMATIC DUCT. THE BLEED AIR FROM THE OPENING CAN CAUSE INJURIES TO PERSONNEL.

(12) Do the steps which follow to remove the oil contamination from the APU pneumatic duct:

NOTE: This procedure will remove the oil contamination from the APU bleed air. The APU bleed air will go out through the high pressure (HP) ground connector duct opening.

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(a) Set the APU switch-light and the L ISLN switch-light, on the BLEED AIR module, to the AUTO position.

NOTE: The APU bleed air shutoff valve and the left isolation valve will open which permits the APU bleed air to then go out through the high pressure (HP) ground connector duct opening.

(b) Let the APU operate until the APU bleed air has no smell of the oil contamination.

(c) Set the L ISLN switch-light to the CLOSED position and the APU switch-light to the OFF position.

(d) To stop the operation of the APU, do this task: APU Usual Shutdown, TASK 49-11-00-860-805.

SUBTASK 21-00-01-860-012

(13) Do these steps to send hot pneumatic air through the lower flow control valve and burn any oil contamination out of the ozone converter.

(a) Remove the locking plug from the Upper FCV actuator boss.

(b) If the manual lock is not in the closed (CL) position, then do this step:

(c) Turn the manual wrench until the manual lock is in the closed position.

NOTE: Look at the position of the manual lock, in relation to the OP and CL marks on top of the actuator housing. The actuator arm will move from one mark to the other mark as the FCV opens and closes.

(d) Install the locking plug in the hole in the manual lock.

CAUTION

DO NOT USE THE 20 POUND-FEET (27.1 NEWTON-METERS) OF TORQUE IDENTIFIED ON THE DECAL TO INSTALL THE LOCKING PLUG. THE 20 POUND-FEET OF TORQUE IS THE MAXIMUM TORQUE NECESSARY TO CLOSE THE VALVE. IF YOU USE THE 20 POUND-FEET OF TORQUE ON THE LOCKING PLUG, DAMAGE TO THE EQUIPMENT CAN OCCUR.

1) Tighten the locking plug.

NOTE: The usual running torque for the locking plug is 10-15 pound-inches (1.1-1.7 newton-meters). The locking plug is installed when there is an increase in the running torque.

SUBTASK 21-00-01-860-009

(14) Do these steps to remove the oil contamination from the conditioned air supplied by the left and right cooling packs with the APU as the pneumatic source:

(a) Start the APU and let the APU operation become stable. To start and operate the APU, do this task: APU Starting and Operation, TASK 49-11-00-860-804.

(b) Set the APU switch-light, on the BLEED AIR module, to the AUTO position.

(c) To supply conditioned air to the airplane with the left and right cooling packs, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

(d) Do a smell check at the left and right ground conditioned air connector check valves to determine which cooling pack is contaminated.

1) To access the air check valve for the left cooling pack, open the left ECS low pressure connection door, 195CL, do this task: Finding an Access Door or Panel on the Fuselage, TASK 06-41-00-800-801

a) Open the ground air check valve.

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b) Stand near the left ground conditioned air connector and smell if there is contaminated air.

2) To access the air check valve for the right cooling pack, open the right ECS low pressure connection door, 196CR, do this task: Finding an Access Door or Panel on the Fuselage, TASK 06-41-00-800-801

a) Open the ground air check valve.

b) Stand near the right ground conditioned air connector and smell if there is contaminated air.

(e) Use a MAT to do the test that follows:

NOTE: The test will operate all the valves in the air conditioning system. The test will make sure air flows through all the ducts in the air conditioning system.

1) Make these selections on the MAT:

a) ONBOARD MAINTENANCE

b) LINE MAINTENANCE

c) GROUND TESTS

d) 21 Cabin Temperature Control System

e) SYSTEM TEST

f) System Air On Test, L (or R as appropriate)

g) CONTINUE

2) Do the instructions that show on the MAT then make these selections:

a) CONTINUE

b) START TEST

3) When the test is completed, the MAT will show FAILED adjacent to TEST CONDITION.

NOTE: This is the expected condition because the Upper FCV is locked in the closed position.

4) After the test is completed put the MAT back to its initial condition, make these selections:

a) LINE MAINTENANCE

b) EXIT MAINTENANCE

(f) Let the left and right cooling packs operate until the conditioned air in the airplane has no smell of the oil contamination.

(g) To stop the supply of conditioned air from the left and right cooling packs, do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

(h) Set the APU switch-light to the OFF position.

(i) To stop the operation of the APU, do this task: APU Usual Shutdown, TASK 49-11-00-860-805.

SUBTASK 21-00-01-860-010

(15) Do these steps to remove the oil contamination from the conditioned air supplied by the left and right cooling packs with the engines as the pneumatic source:

(a) Start the left and right engines and let the engines operate at ground idle speed. To start and operate the engines, do this task: Engine Start (Selection), TASK 71-00-00-800-835-H00.

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(b) Set the L ENG and R ENG switch-lights, on the BLEED AIR module, to the ON position.

(c) To supply conditioned air to the airplane with the left and right cooling packs, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

(d) Do a smell check at the left and right ground conditioned air connector check valves to determine which cooling pack is contaminated.

1) To access the ground air check valve for the left cooling pack, open the left ECS low pressure connection door, 195CL, do this task: Finding an Access Door or Panel on the Fuselage, TASK 06-41-00-800-801

a) Open the ground air check valve.

b) Stand near the left ground conditioned air connector and smell if there is contaminated air.

2) To access the ground air check valve for the right cooling pack, open the right ECS low pressure connection door, 196CR, do this task: Finding an Access Door or Panel on the Fuselage, TASK 06-41-00-800-801

a) Open the ground air check valve.

b) Stand near the right ground conditioned air connector and smell if there is contaminated air.

(e) Use a MAT to do the test that follows:

NOTE: The test will operate all the valves in the air conditioning system. The test will make sure air flows through all the ducts in the air conditioning system.

1) Make these selections on the MAT:

a) ONBOARD MAINTENANCE

b) LINE MAINTENANCE

c) GROUND TESTS

d) 21 Cabin Temperature Control System

e) SYSTEM TEST

f) System Air On Test, L (or R as appropriate)

g) CONTINUE

2) Do the instructions that show on the MAT then make these selections:

a) CONTINUE

b) START TEST

3) When the test is completed, the MAT will show FAILED adjacent to TEST CONDITION.

NOTE: This is the expected condition because the Upper FCV is locked in the closed position.

4) To put the MAT back to its initial condition, make these selections:

a) LINE MAINTENANCE

b) EXIT MAINTENANCE

(f) Let the left and right cooling packs operate until the conditioned air in the airplane has no smell of the oil contamination.

(g) Operate the applicable heating systems, the trim air systems, and the individual gasper air system (if installed) in the airplane until the air has no smell of the oil contamination.

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(h) Increase engine power until the bleed system changes to low stage air.

(i) Decrease engine power.

NOTE: When you decrease engine power, the engine air supply temperature will momentarily increase to more than 400 °F (204 °C).

(j) Make sure the air has no smell of the oil contamination.

(k) To stop the supply of conditioned air from the left and right cooling packs, do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

(l) Set the L ENG and R ENG switch-lights to the OFF position.

SUBTASK 21-00-01-860-013

(16) Do these steps to reactivate the Upper Flow Control Valve and Shutoff Valve (FCV).

(a) Remove the locking plug from the hole in the manual lock.

(b) Turn the manual wrench until the manual lock is in the open position.

NOTE: Look at the position of the manual lock, in relation to the OP and CL marks on top of the actuator housing. The actuator arm will move from one mark to the other mark as the FCV opens and closes.

(c) Install the locking plug in the actuator boss.

CAUTION

DO NOT USE THE 20 POUND-FEET (27.1 NEWTON-METERS) OF TORQUE IDENTIFIED ON THE DECAL TO INSTALL THE LOCKING PLUG. THE 20 POUND-FEET OF TORQUE IS THE MAXIMUM TORQUE NECESSARY TO CLOSE THE VALVE. IF YOU USE THE 20 POUND-FEET OF TORQUE ON THE LOCKING PLUG, DAMAGE TO THE EQUIPMENT CAN OCCUR.

1) Tighten the locking plug.

NOTE: The typical running torque for the locking plug is 10-15 pound-inches (1.1-1.7 newton-meters). The locking plug is installed when there is an increase in the running torque.

SUBTASK 21-00-01-860-014

(17) Do these steps to remove the oil contamination from the remaining ducts in the left and right cooling packs:

(a) Set the L ENG and R ENG switch-lights, on the BLEED AIR module, to the ON position.

(b) To supply conditioned air to the airplane with the left and right cooling packs, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

(c) Let the left and right cooling packs operate until the conditioned air in the airplane has no smell of the oil contamination.

(d) Operate the applicable heating systems, the trim air systems, and the individual gasper air system (if installed) in the airplane until the air has no smell of the oil contamination.

(e) Increase engine power until the bleed system changes to low stage air.

(f) Decrease engine power.

NOTE: When you decrease engine power, the engine air supply temperature will momentarily increase to more than 400 °F (204 °C).

(g) Make sure the air has no smell of the oil contamination.

(h) To stop the supply of conditioned air from the left and right cooling packs, do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

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(i) Set the L ENG and R ENG switch-lights to the OFF position.

(j) To stop the operation of the engines, do this task: Usual Engine Stop, TASK 71-00-00-800-837-H00.

SUBTASK 21-00-01-210-002

(18) Examine the ozone converters for oil contamination and replace the ozone converter if it has contamination.

SUBTASK 21-00-01-210-001

(19) Examine the recirculation fan filters for contamination and replace the filters if they have contamination.

F. Put the Airplane Back to its Usual Condition

SUBTASK 21-00-01-010-002

(1) Close these access panels:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-00-01-010-003

(2) Close these access panels:

Number	Name/Location
195CL	ECS Low Pressure Connection Door
196CR	ECS Low Pressure Connection Door

——— END OF TASK ———

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ECS MISCELLANEOUS CARD (ECSMC) - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Software Configuration Check - ECS Miscellaneous Card (ECSMC)

(2) Software Installation - ECS Miscellaneous Card (ECSMC)

TASK 21-00-10-400-803

2. ECS Miscellaneous Card (ECSMC) Software Configuration Check

A. General

(1) The configuration check makes sure that the left or right ECS miscellaneous card (ECSMC) has the correct software installed in the ECSMC.

(2) The configuration check will show a failure if the operational program software (OPS) is not installed.

(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. Configuration Check

SUBTASK 21-00-10-860-012

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

SUBTASK 21-00-10-750-001

(2) Use a maintenance access terminal (MAT) to do a software configuration check of the left or right ECS miscellaneous card (ECSMC):

NOTE: Make sure you know the correct software part numbers for the left or right ECSMC when you look at the software part numbers on the display. For the left or right ECSMC 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) 21 Environmental Control System

5) CONTINUE

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(b) Find ECSMC (left), ECSMC (right) on the display and make sure that the software part number is correct.

NOTE: The configuration check will show a failure if the operational program software (OPS) is not installed. The ECSMC must also contain the operational program configuration (OPC).

(c) Select GO BACK to remove the configuration display.

(d) If the part numbers are incorrect, do this task: ECS Miscellaneous Cards (ECSMC) Software Installation, TASK 21-00-10-400-802.

——— END OF TASK ———

TASK 21-00-10-400-802

3. ECS Miscellaneous Cards (ECSMC) Software Installation

A. General

(1) This procedure tells you how to install software in the left or right ECS Miscellaneous Card (ECSMC). If you have problems with the software installation, refer to this task for further instructions, (TASK 45-10-00-420-801). The ECSMC must contain these pieces of software:

(a) ECSMC Operational Program Software (OPS)

REF: AIPC 46-00-00-21E.

(b) ECSMC Operational Program Configuration (OPC)

REF: AIPC 46-00-00-21C.

(2) You can install the pieces of software in any sequence, but it is best to install the OPS before you install the OPC. If you do not, the configuration check will show a failure if the OPS is not installed.

(3) A Maintenance Access Terminal (MAT) is necessary for this procedure. For instructions on how to use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(4) If you do not know if the ECSMC 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: ECS Miscellaneous Card (ECSMC) Software Configuration Check, TASK 21-00-10-400-803.

(5) 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.

(6) 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 ECSMC, the load process first erases the old software and then installs the new software. If you install software directly to the ECSMC 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 ECSMC.

(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.

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(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 off before you can install software.

(9) 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)
45-10-00-420-801	How to Install Software (P/B 201)
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)
AIPC 46-00-00-21C	Aircraft Illustrated Parts Catalog
AIPC 46-00-00-21E	Aircraft Illustrated Parts Catalog

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 21-00-10-860-010

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

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SUBTASK 21-00-10-420-003

(2) Use a MAT to install software in the applicable left or right ECSMC:

NOTE: Make sure you know the correct software part number for the left or right ECSMC before you select the software part number on the display. For the left and right ECSMC to be an approved installation, the correct software must be installed.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) DATA LOAD

(b) Select SELECT DESTINATION and then do these steps:

1) Select 21 Environmental Control System
2) Select ECSMC (left or right)
3) Select CONTINUE.

(c) If the software is on a disk, put the correct disk in the disk drive.

(d) Select SELECT SOURCE and then do these steps:

1) Select the location of the software (if Disk Drive is the only selection, it is automatically selected).
2) Select the correct software part number from the display.
3) Select CONTINUE.

(e) Select START to start the software installation.

(f) When the software installation is completed, make sure the correct part number shows on the display.

(g) Select CONTINUE to remove the configuration display.

SUBTASK 21-00-10-860-013

(3) Set the power switch for the applicable ECSMC to the OFF position.

NOTE: Use the power control decal on the front of the cardfile to find the appropriate switches.

(4) Set the power switch for the applicable ECSMC back to the ON position to restart the ECSMC with the new software.

——— END OF TASK ———

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ECS MISCELLANEOUS CARDS (ECSMC) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) ECS Miscellaneous Card (ECSMC) Removal.

(2) ECS Miscellaneous Card (ECSMC) Installation.

B. The ECS Miscellaneous Card (ESCMC) is a double-sided multi-layer printed circuit card. There are two ECS miscellaneous cards; the left ECS miscellaneous card and the right ECS miscellaneous card. The left ECS miscellaneous card is installed in the Left Systems Cardfile, P85. The right ECS miscellaneous card is installed in the Right Systems Cardfile, P84. The systems cardfiles are on the outboard sides of the nose gear wheel well forward of the main equipment center.

TASK 21-00-10-000-801

2. ECS Miscellaneous Card (ECSMC) Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-41-01-000-801	ESDS Handling for Printed Circuit Board Removal (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Procedure

SUBTASK 21-00-10-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

to get access to the systems cardfiles.

SUBTASK 21-00-10-860-002

(2) Set the power switch for the applicable ECS miscellaneous card [1] to the OFF position.

NOTE: Use the power control decal on the front of the cardfile to find the appropriate switches.

SUBTASK 21-00-10-020-001

CAUTION

YOU MUST CAREFULLY DO THE STEPS IN THE TASK BELOW TO REMOVE THE CARD. FAILURE TO DO THE STEPS CORRECTLY CAN CAUSE DAMAGE TO THE EQUIPMENT.

(3) Do this task: ESDS Handling for Printed Circuit Board Removal, TASK 20-41-01-000-801.

END OF TASK

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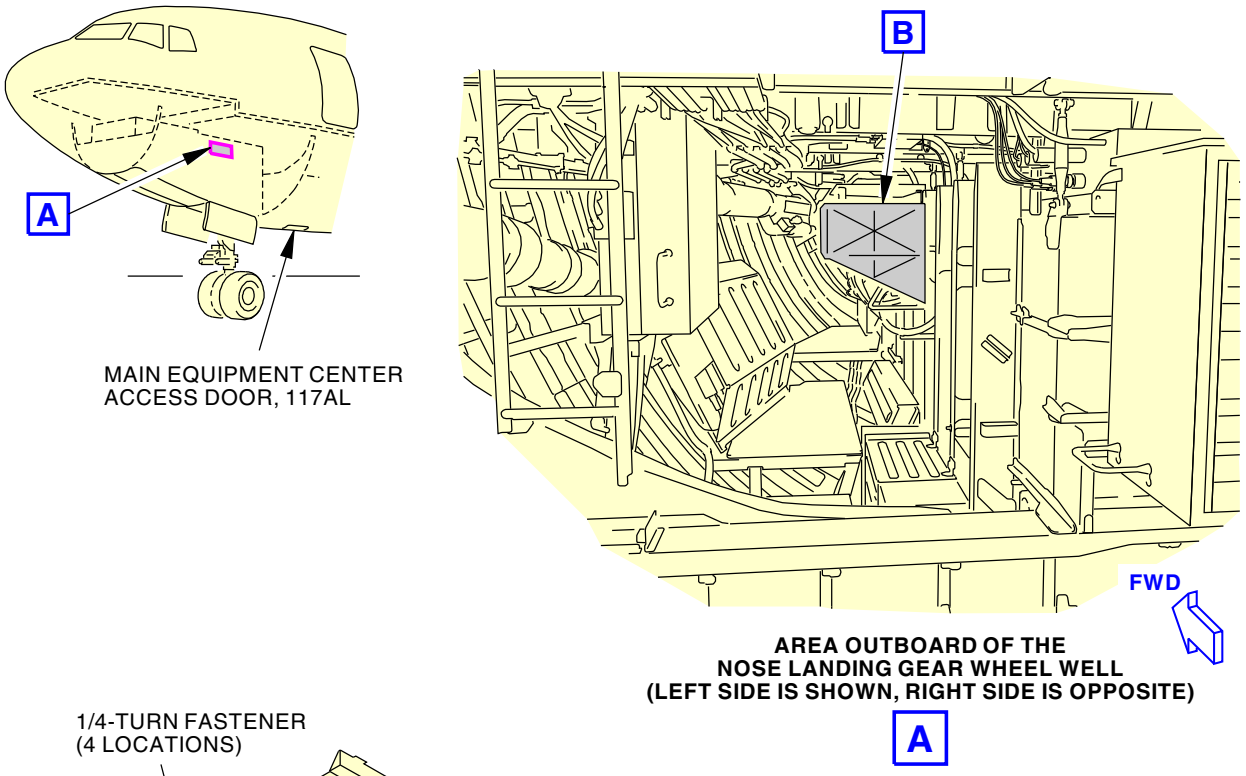

ECS Miscellaneous Cards (ECSMC) Installation
Figure 401/21-00-10-990-801

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TASK 21-00-10-400-801

3. ECS Miscellaneous Card (ECSMC) Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) The ECS miscellaneous card has a locking mechanism on the end opposite the electrical connectors to prevent incorrect installation. The cardfile front panel has a marker that shows the correct orientation of the card installation.

B. References

Reference	Title
20-41-01-400-801	ESDS Handling for Printed Circuit Board Installation (P/B 201)
21-00-10-400-802	ECS Miscellaneous Cards (ECSMC) Software Installation (P/B 201)
21-00-10-400-803	ECS Miscellaneous Card (ECSMC) Software Configuration Check (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)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. ECS Miscellaneous Card (ECSMC) Installation

SUBTASK 21-00-10-420-001

CAUTION

YOU MUST CAREFULLY DO THE STEPS IN THE TASK BELOW TO INSTALL THE CARD. FAILURE TO DO THE STEPS CORRECTLY CAN CAUSE DAMAGE TO THE EQUIPMENT.

(1) Do this task: ESDS Handling for Printed Circuit Board Installation, TASK 20-41-01-400-801.

SUBTASK 21-00-10-860-001

(2) Set the power switch for the applicable ECS miscellaneous card [1] to the ON position.

NOTE: Use the power control decal on the front of the cardfile to find the appropriate switches.

SUBTASK 21-00-10-860-003

(3) After approximately 3 minutes continue with the procedure.

NOTE: A change of Card-in-Control to the ECS miscellaneous card [1], starts a power on test for the applicable ECS miscellaneous card [1].

SUBTASK 21-00-10-420-004

(4) Make sure that the correct software is installed in the ECSMC:

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(a) Do this task: ECS Miscellaneous Card (ECSMC) Software Configuration Check, TASK 21-00-10-400-803.

(b) If a new ECSMC was installed, do this task: ECS Miscellaneous Cards (ECSMC) Software Installation, TASK 21-00-10-400-802.

NOTE: A new ECSMC card does not have the OPS and OPC software installed.

F. ECS Miscellaneous Card (ECSMC) Installation Test

NOTE: If you replaced the right ECS miscellaneous card [1], use the instructions in parentheses to do the test for the right ECS miscellaneous card [1].

SUBTASK 21-00-10-860-004

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

SUBTASK 21-00-10-860-005

(2) After approximately 3 minutes continue with the procedure.

SUBTASK 21-00-10-420-002

(3) If you did not install a new ECSMC card, do this task: ECS Miscellaneous Card (ECSMC) Software Configuration Check, TASK 21-00-10-400-803.

NOTE: To be an approved installation, the correct software part numbers must be installed.

SUBTASK 21-00-10-860-006

(4) Set the power switch for the right (left) ECS miscellaneous card [1] to the OFF position.

SUBTASK 21-00-10-860-007

(5) After approximately 3 minutes continue with the procedure.

SUBTASK 21-00-10-740-001

(6) Use a maintenance access terminal (MAT) to do a system test of the left (right) ECS miscellaneous card [1]. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) EQUIPMENT COOLING 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, refer to the applicable Maintenance Message Index in the FIM to find the fault isolation task for each maintenance message that shows on the MAT.

(e) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE
2) EXIT MAINTENANCE

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SUBTASK 21-00-10-860-008

(7) Set the power switch for the right (left) ECS miscellaneous card [1] to the ON position.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-00-10-410-001

(1) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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AIR SUPPLY FLOW CONTROL ORIFICE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of a flow control orifice.

(2) An installation of a flow control orifice.

B. There are many flow control orifices installed in the air conditioning ducts. Orifices control and balance the flow of conditioned air to the airplane compartments. Orifices can be found in all areas of the airplane. An orifice is usually found where a small duct is connected to a larger duct.

C. The orifice and the duct connection are sealed in a flexible sleeve. The orifice has identification tags that extend out of the sleeve. You can look for these orifice identification tags to determine if a duct has an orifice installed.

TASK 21-20-01-000-801

2. Flow Control Orifice Removal

(Figure 401)

A. Prepare for the Removal

SUBTASK 21-20-01-840-001

(1) Make sure that there is no air flow in the duct which contains the orifice. To do this, you can turn off one or more of the following systems:

CAUTION REMOVE ELECTRICAL POWER FROM THE AIRPLANE. THE ELECTRONIC EQUIPMENT CAN BECOME TOO HOT WHEN THE LAVATORY/GALLEY VENTILATION SYSTEM IS NOT IN OPERATION. THIS CAN CAUSE DAMAGE TO THE ELECTRONIC EQUIPMENT.

(a) The lavatory/galley ventilation system

CAUTION REMOVE ELECTRICAL POWER FROM THE AIRPLANE. WHILE THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THERE IS NO AIRFLOW. WITHOUT AIRFLOW, ELECTRICAL, AND ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(b) The equipment cooling system

(c) The supplemental heating systems

(d) The cooling packs

(e) The pneumatic air supply system.

SUBTASK 21-20-01-010-001

(2) Get access to the duct. To do this, you can open or remove:

(a) A ceiling panel

(b) A floor panel

(c) A sidewall panel.

B. Orifice Removal

SUBTASK 21-20-01-020-001

(1) If the flexible sleeve is attached to the duct with plastic straps, remove and discard the plastic straps.

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SUBTASK 21-20-01-020-002

(2) If the flexible sleeve is attached to the duct with clamps, do these steps:

(a) Loosen the clamps.

(b) Move the clamps away from the flexible sleeve.

SUBTASK 21-20-01-020-003

(3) Move the flexible sleeve away from the orifice identifier tags.

SUBTASK 21-20-01-020-004

(4) Remove the orifice from the end of the duct.

——— END OF TASK ———

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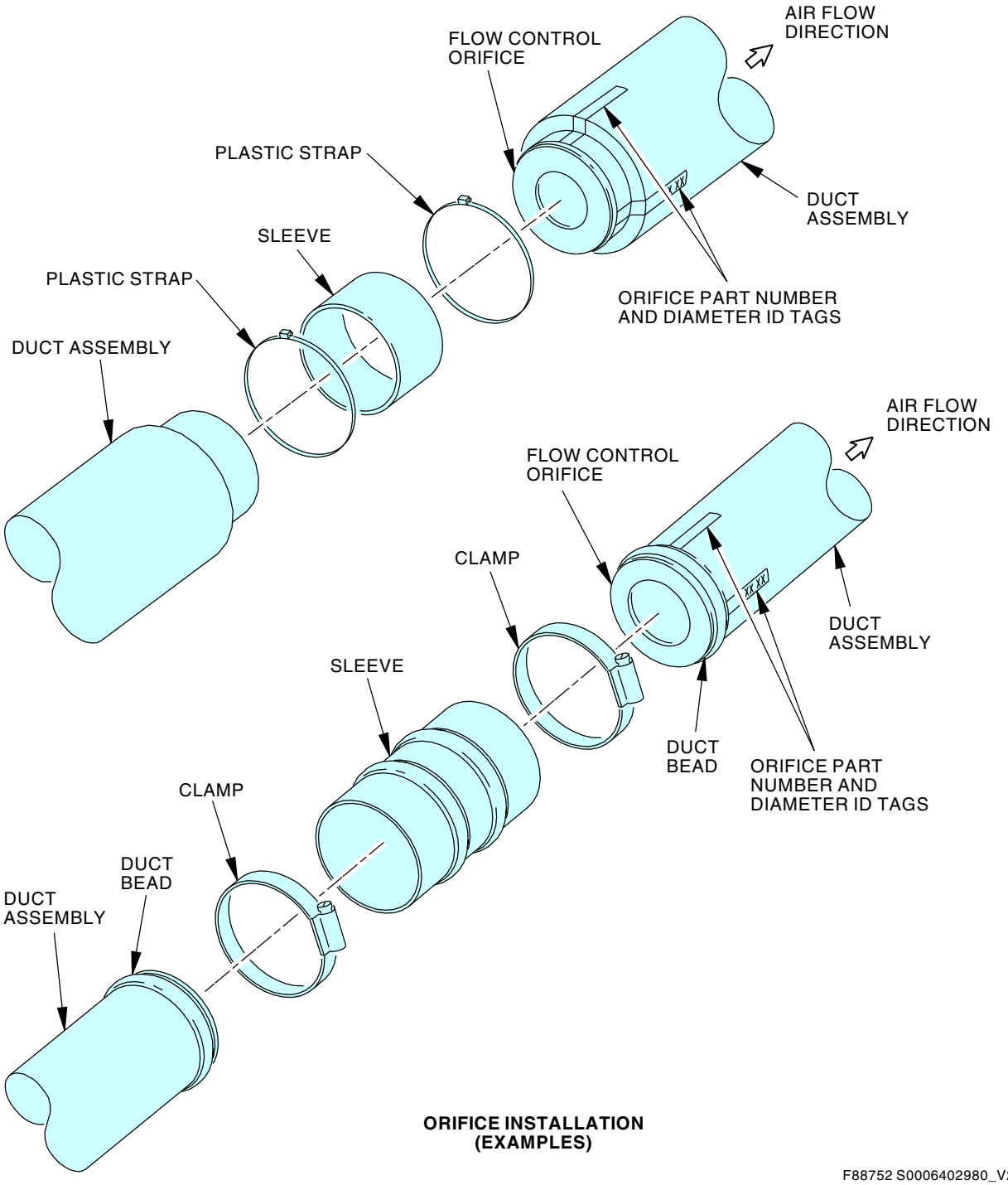

ORIFICE INSTALLATION (EXAMPLES)

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Air Supply Flow Control Orifice
Figure 401/21-20-01-990-801 (Sheet 1 of 2)

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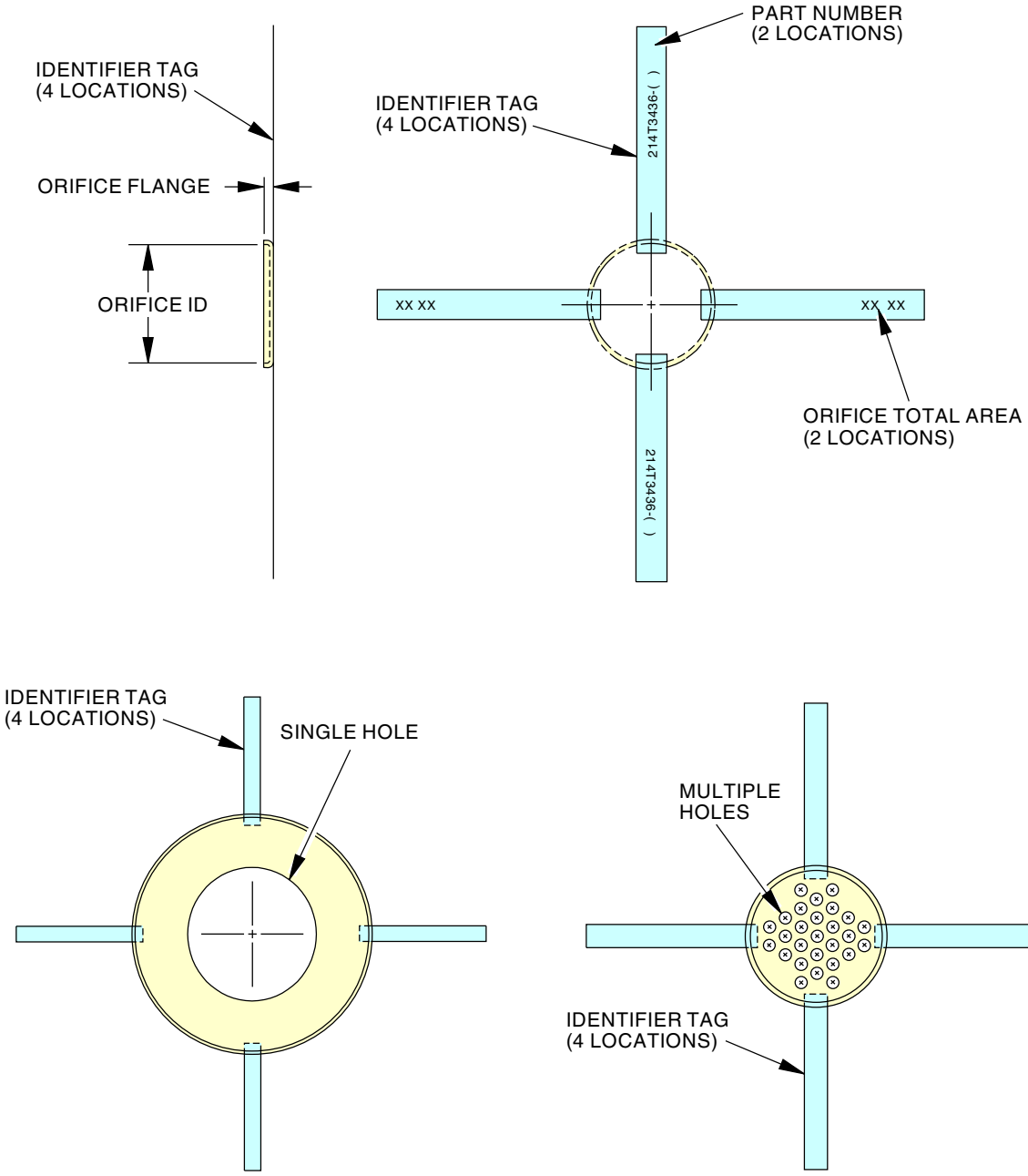

**ORIFICE ASSEMBLY
(EXAMPLES)**

F88785 S0006402981_V2

**Air Supply Flow Control Orifice
Figure 401/21-20-01-990-801 (Sheet 2 of 2)**

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TASK 21-20-01-400-801

3. Flow Control Orifice Installation

(Figure 401)

A. General

This procedure installs the flow control orifice.

B. Consumable Materials

Reference	Description	Specification
A00028	Adhesive - Modified Epoxy For Rigid PVC, Foam Cored Sandwiches	BAC5010 Type 70 (BMS5-92 Type 1)

C. Prepare for the Installation

SUBTASK 21-20-01-210-001

(1) Make sure that the new orifice is the same as the orifice that was removed.

SUBTASK 21-20-01-100-001

(2) Clean the mating surfaces of the orifice.

SUBTASK 21-20-01-100-002

(3) Clean the mating surfaces of the duct.

NOTE: The new adhesive will not make a good bond to the duct unless the used adhesive is removed.

D. Orifice Installation

SUBTASK 21-20-01-420-001

(1) Do these steps to install the orifice in the duct:

(a) Apply the adhesive, A00028 to the mating surfaces of the duct and the orifice.

(b) When the adhesive is tacky, put the orifice on the end of the duct.

1) Make sure that none of the holes in the orifice are blocked by the adhesive.

(c) Remove the unwanted adhesive from the outer side of the duct and the orifice.

1) The flexible sleeve can be bonded to the duct if the unwanted adhesive is not removed.

(d) Bend the identification tags to the same shape as the end of the duct.

1) If it is possible, bend the identification tags in the direction of the airflow through the duct.

(e) Make sure that all of the identification tags are on the outer side of the duct.

(f) Make sure that none of the identification tags are bonded to the duct.

(g) Make sure that the orifice is tightly attached to the duct.

SUBTASK 21-20-01-420-002

(2) Do these steps to install the flexible sleeve on the duct:

(a) Move the flexible sleeve onto the duct connection.

(b) Make sure that the flexible sleeve has the same overlap on each side of the duct connection.

(c) Make sure that you can see the part number on the orifice identification tags.

SUBTASK 21-20-01-420-003

(3) Do these steps to install the plastic straps or clamps on the sleeve:

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(a) If the flexible sleeve was attached to the duct with plastic straps, install new straps on the sleeve.

(b) If the flexible sleeve was attached to the duct with clamps, move the clamps onto the sleeve.

(c) Align the straps or the clamps with the duct wall.

NOTE: Do not align the straps or the clamps with the duct bead. The flexible sleeve will not make a good seal if it is tightened against the duct bead.

(d) Tighten the clamps or the straps.

E. Orifice Installation Test

SUBTASK 21-20-01-840-002

(1) Make sure that there is air flow in the duct which contains the orifice. To do this, you can operate one or more of these systems:

(a) The lavatory/galley ventilation system

(b) The equipment cooling system

(c) The supplemental heating systems

(d) The cooling packs

(e) The pneumatic air supply system.

SUBTASK 21-20-01-210-002

(2) Make sure that there is no air leakage from the duct connections.

SUBTASK 21-20-01-790-001

(3) Make sure that the conditioned air outlet does not have excessive noise or excessive airflow.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-01-410-001

(1) Install the applicable access panels that you removed.

——— END OF TASK ———

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AIR SUPPLY FLOW CONTROL ORIFICE - INSPECTION/CHECK

1. General

A. This procedure has one task. This task gives instructions to do a visual inspection of the condition of the flow control orifices installed in the airplane's air conditioning ducts.

TASK 21-20-01-200-801

2. Air Supply Flow Control Orifice - Inspection/Check

A. References

Reference	Title
21-20-01-000-801	Flow Control Orifice Removal (P/B 401)
21-20-01-400-801	Flow Control Orifice Installation (P/B 401)

B. Prepare for the Inspection

SUBTASK 21-20-01-020-005

(1) Remove the flow control orifice(s) that will be inspected. To remove a flow control orifice, do this task: Flow Control Orifice Removal, TASK 21-20-01-000-801

C. Orifice Inspection

SUBTASK 21-20-01-210-003

(1) Examine the flow control orifice and make sure the restrictor hole(s) are free from blockage and contamination.

(a) Remove all blockage from the restrictor hole(s) to restore proper airflow.

(2) Examine the duct and make sure it is free from blockage and contamination.

(a) Remove any blockage found.

(3) Install the flow control orifice(s). To install a flow control orifice, do this task: Flow Control Orifice Installation, TASK 21-20-01-400-801

END OF TASK

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AIR CONDITIONING SYSTEM DUCTS - REPAIRS

1. General

A. This procedure gives instructions for the repair of air conditioning ducts that are made of these materials:
   (1) Fiberglass
   (2) Kevlar
   (3) Polyurethane foam
   (4) Ducts wrapped with Foam Insulation
   (5) Ducts with Fiberglass Insulation/Flame-Resistant Covering.

B. This procedure has these tasks:
   (1) Fiberglass or Kevlar Duct
      (a) Taped Joint Repair
      (b) External Patch Repair
      (c) Structural Repair.
   (2) Polyurethane Foam Duct
      (a) Taped Joint Repair
      (b) Duct End Repair
      (c) External Patch Repair
      (d) Structural Repair
      (e) Inner Lining Repair
      (f) Duct Section Replacement
   (3) Ducts wrapped with Foam Insulation
      (a) Tape Replacement
      (b) Insulation Repair
      (c) Insulation Replacement
   (4) Ducts with Fiberglass Insulation/Flame-Resistant Covering
      (a) Tape Replacement
      (b) Insulation and Covering Repair
      (c) Insulation and Covering Replacement

C. This procedure also uses these materials
   (1) Tape - pressure sensitive glass cloth (Scotch No. 361)
   (2) Polyurethane foam - rigid (BMS8-131 Type I Grade 20 Form A)
   (3) Polyurethane foam duct (to match damaged duct)
   (4) Plastic sheet - polyethylene or vinyl (commercially available)
   (5) Potting compound - BMS 5-28, Type 19 (Epocast 1619A/B)
   (6) Sandpaper - 320 grit (commercially available)

D. Some ducts in the air distribution system are wrapped with insulation. CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

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(1) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(2) BMS8-385 is the preferred foam insulation material that meets the flame propagation requirement.

(3) BMS 8–385 Type 6 and BMS 8–300 type VIII insulation, are new qualified materials optional to BMS 8–385 Type 4.

(4) If BMS8-300 foam insulation material is used, it must be completely covered with tape, G50327 , BMS 5–157, Type 1 Class 1, Grade B, composition MPVF tape or tape, G51202, or tape, G50789, BMS 5–157, Type 1, Class 2, Grade C, composition MPEEK that meets the flame propagation requirement.

(5) Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(6) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

(a) Tape specifications tape, G50327 or tape, G51202, BMS 5–157, Type 1, Class 1, Grade B, composition MPVF and tape, G50789, BMS 5–157, Type 1, Class 2, Grade C, composition MPEEK are qualified tapes used to secure insulation ducts.

TASK 21-20-02-330-801

2. Taped Joint Repair - Fiberglass/Kevlar Duct

(Figure 801)

A. General

(1) This procedure is for the repair of a taped joint that connects two sections of Fiberglass or Kevlar air conditioning ducts.

(2) This procedure may also be used to make a temporary repair to a damaged Fiberglass or Kevlar air conditioning duct when time is not available to make a permanent repair or if the materials are not available to make a permanent repair. If a temporary repair is made, make the permanent repair as soon as possible.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00066	Sealant - RTV - Dow Corning 90-006	
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
C00580	Primer - Adhesive Bonding, RTV - PR-1200 (Formerly DC 1200)	
G00031	Fabric - Glass, Finished, For Resin Laminates (Type VIIIA)	SAE-AMS-C-9084 Type VIIIA (MIL-C-9084 canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

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D. Prepare for the Repair

SUBTASK 21-20-02-840-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-002

(2) Gain access to the damaged air conditioning duct joint.

SUBTASK 21-20-02-840-003

(3) If insulation is installed on the duct joint, then remove the insulation.

SUBTASK 21-20-02-840-004

(4) Do these steps to remove loose tape and unwanted adhesive from the duct joint.

WARNING

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

(a) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to clean the duct joint area.

(b) Sand the duct joint area to remove any adhesive that remains on the duct joint.

(c) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to clean the duct joint area.

SUBTASK 21-20-02-840-005

(5) Cut a piece of the glass fabric, G00031 that is 3 inches wide and is long enough to go around the duct a minimum of two times.

E. Repair the Taped Joint

SUBTASK 21-20-02-340-001

(1) Apply a thin, smooth layer of the PR-1200 primer, C00580 to the duct joint area and let it dry at room temperature for a minimum of 1 hour.

SUBTASK 21-20-02-340-002

(2) Apply the Dow Corning 90-006 sealant, A00066 to one side of the Fiberglass glass fabric, G00031.

SUBTASK 21-20-02-340-003

(3) Wrap the Fiberglass glass fabric, G00031 around the duct joint a minimum of two times.

(a) Make sure that the sealant on the Fiberglass glass fabric, G00031 touches the PR-1200 primer, C00580 on the duct.

SUBTASK 21-20-02-340-004

(4) Smooth the Fiberglass glass fabric, G00031 to remove any bubbles or any wrinkles.

SUBTASK 21-20-02-340-005

(5) Wrap the glass cloth tape around the two edges of the Fiberglass fabric repair. Make sure the tape lies flat with no wrinkles or gaps.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-006

(1) If insulation was removed from the duct joint, install new insulation.

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SUBTASK 21-20-02-840-007

(2) Replace the panels or other airplane structure removed to gain access to the duct joint.

——— END OF TASK ———

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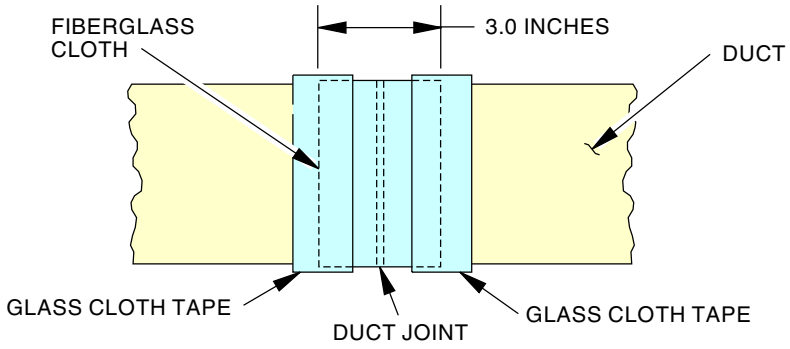
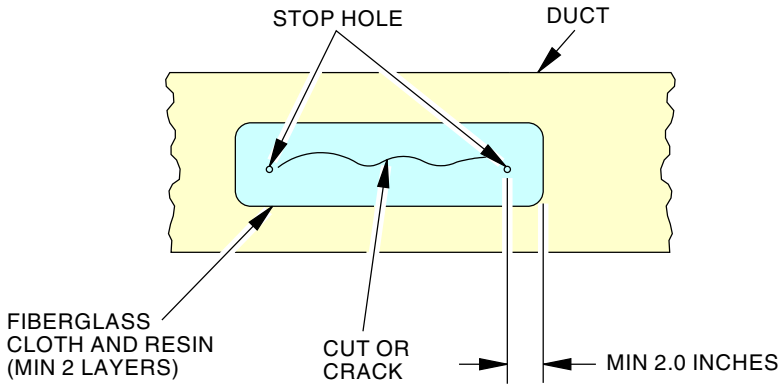


TAPED JOINT REPAIR - FIBERGLASS/KEVLAR DUCT



EXTERNAL PATCH - FIBERGLASS/KEVLAR DUCT

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Air Conditioning System Ducts Repair
Figure 801/21-20-02-990-801 (Sheet 1 of 3)

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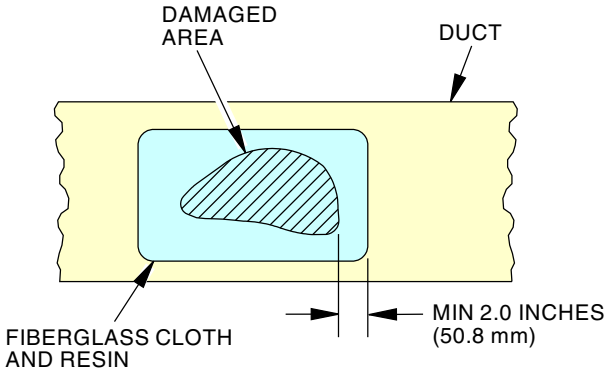
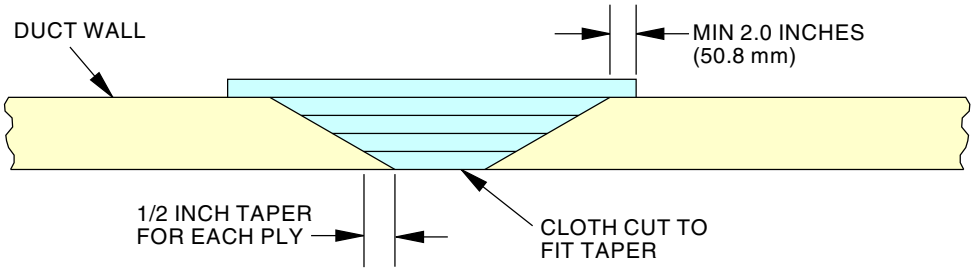


STRUCTURAL REPAIR - FIBERGLASS/KEVLAR DUCT - OVERHEAD VIEW



STRUCTURAL REPAIR - FIBERGLASS/KEVLAR DUCT - CROSS-SECTION VIEW

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Air Conditioning System Ducts Repair
Figure 801/21-20-02-990-801 (Sheet 2 of 3)

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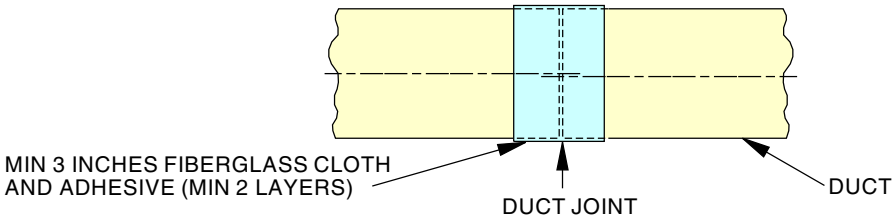
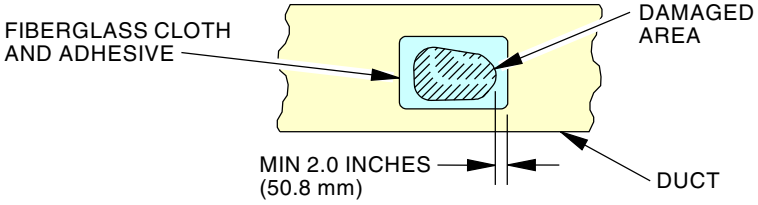
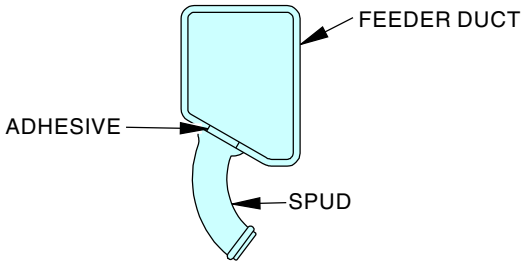


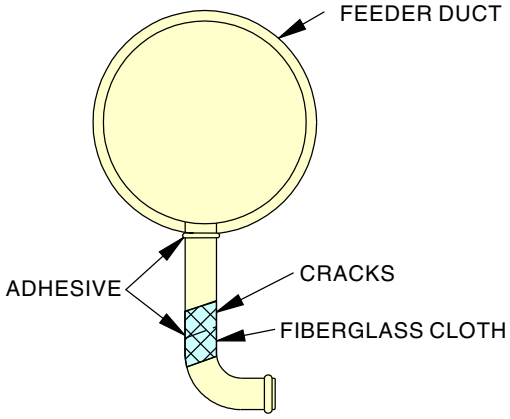
REPAIR FOR THE TAPE CONNECTION AT THE DUCT JOINT AREA



REPAIR OF A DUCT WITHOUT INNER LINING DAMAGE



FEEDER DUCT REPAIR



FEEDER DUCT REPAIR

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Air Conditioning System Ducts Repair
Figure 801/21-20-02-990-801 (Sheet 3 of 3)

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TASK 21-20-02-330-802

3. External Patch - Fiberglass/Kevlar Duct

(Figure 801)

A. General

(1) This procedure gives instructions for the repair of a crack or cut in a Fiberglass or Kevlar air conditioning duct with an external patch.

(2) An external patch is applicable when the cut or the crack is less than 1/4 inch wide and is less than 3 inches long.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G02135	Fabric, Woven Preimpregnated Kevlar	BMS8-264
G50078	Abrasive - Aluminum Oxide Paper, 320 grit or finer	
G50172	Fabric - Woven Glass Reinforcements for Laminating Plastics, Style 181	BMS9-3 Type H
G50399	Resin - Fiberglass Layup, Long Worklife, Non-Brominated	BMS8-201 Type III (Supersedes BMS8-201 Type I)
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

D. Prepare for the Repair

SUBTASK 21-20-02-840-008

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-009

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-840-010

(3) If insulation is installed on the duct, then remove the insulation.

SUBTASK 21-20-02-840-011

(4) Do these steps to prepare the damaged area of the duct:

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(a) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to clean the duct damaged area.

(b) Drill a hole at each end of the cut or crack to prevent the cut or crack from getting larger. The holes should be a maximum of 1/16 inch diameter.

(c) Sand the damaged area with 320 grit or finer abrasive paper, G50078 to remove any unwanted contamination from the duct.

(d) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to clean the damaged area of the duct.

SUBTASK 21-20-02-340-107

(5) If repairing a Kevlar duct, do these steps:

NOTE: As an option Fiberglass, fabric, G50172, may be substituted for the Kevlar fabric.

(a) Cut sufficient pieces of Kevlar fabric, G02135 to equal the thickness of the duct.

(b) Cut the Kevlar fabric, G02135 pieces 1/2-inch larger on all sides than the damaged area.

(c) Round the corners of the pieces of the Kevlar fabric, G02135.

SUBTASK 21-20-02-840-012

(6) If repairing a Fiberglass duct, do these steps:

(a) Cut sufficient pieces of Fiberglass fabric, G50172 to equal the thickness of the duct.

(b) Cut the Fiberglass fabric, G50172 pieces 1/2-inch larger on all sides than the damaged area.

(c) Round the corners of the pieces of the Fiberglass fabric, G50172.

SUBTASK 21-20-02-840-013

(7) Prepare resin, G50399 or resin, G50400.

E. Repair the Air Conditioning Duct

SUBTASK 21-20-02-340-006

(1) Apply a thin, smooth layer of the resin, G50399 or resin, G50400 to the duct where the Kevlar fabric or Fiberglass fabric will be applied:

(a) Make sure the area of the resin is at a minimum the size and shape of the Kevlar fabric or Fiberglass fabric pieces.

SUBTASK 21-20-02-340-106

(2) If repairing a Kevlar duct, place a piece of the Kevlar fabric, G02135 or Fiberglass fabric, G50172 on the resin so that it extends beyond the cut or crack a minimum of 1/2-inch on all sides.

SUBTASK 21-20-02-340-007

(3) If repairing a Fiberglass duct, place a piece of the Fiberglass fabric, G50172 on the resin so that it extends beyond the cut or crack a minimum of 1/2 inch on all sides.

SUBTASK 21-20-02-340-008

(4) As applicable, soak the Kevlar fabric or the Fiberglass fabric with the resin.

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SUBTASK 21-20-02-340-009

(5) Put a piece of plastic sheet on the Kevlar fabric or the Fiberglass fabric and press lightly to remove any bubbles or any wrinkles and to remove unwanted resin.

SUBTASK 21-20-02-340-010

(6) Remove the plastic sheet from the Kevlar fabric or Fiberglass fabric piece and remove any unwanted resin with a wiping cloth.

SUBTASK 21-20-02-340-104

(7) Place another piece of the Kevlar fabric or the Fiberglass fabric, as applicable, on the first piece, soak it with resin, and smooth it.

SUBTASK 21-20-02-340-105

(8) Continue using the same procedure until the thickness of the patch equals the thickness of the duct.

SUBTASK 21-20-02-340-012

(9) Allow the resin, G50399 to cure for 9 hours at 72 °F (22 °C).

SUBTASK 21-20-02-340-110

(10) Allow the resin, G50400 to cure for 8.5 hours at 72 °F (22 °C).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-014

(1) If insulation was removed from the damaged duct, install new insulation.

SUBTASK 21-20-02-840-015

(2) Replace the panels or other airplane structure removed to gain access to the duct.

——— END OF TASK ———

TASK 21-20-02-330-803

4. Structural Repair - Fiberglass/Kevlar Duct

(Figure 801)

A. General

(1) This procedure gives instructions for making a structural repair to a Fiberglass or Kevlar air conditioning duct.

(2) A structural repair is applicable when the damage to the air conditioning duct is a cut or a hole that is more than 1/4 inch wide and more than 3 inches long but less than 5 percent of the total surface area of the duct. If the damage is more than 5 percent of the total surface area of the duct, then replace the duct section.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G02135	Fabric, Woven Preimpregnated Kevlar	BMS8-264

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(Continued)

Reference	Description	Specification
G50172	Fabric - Woven Glass Reinforcements for Laminating Plastics, Style 181	BMS9-3 Type H
G50305	Sheeting - Plastic, Polyethylene	
G50399	Resin - Fiberglass Layup, Long Worklife, Non-Brominated	BMS8-201 Type III (Supersedes BMS8-201 Type I)
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

D. Prepare for the Repair

SUBTASK 21-20-02-840-016

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-017

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-840-018

(3) If insulation is installed on the duct, then remove the insulation.

SUBTASK 21-20-02-840-019

(4) Do these steps to prepare the damaged area of the duct.

(a) Cut away the damaged area to make a rounded opening with a smooth shape. Cut the sides of the opening at an angle to make a taper of 1/2 inch between each ply of material.

(b) Sand the edge of the opening to make a smooth surface.

(c) Sand the surface of the duct around the opening a distance of 1/2 inch for each ply in the duct. For example, if there are 6 plies, sand 3 inches from the opening on all sides (1/2 x 6 = 3 inches).

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(d) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to clean the edge of the opening and the sanded surface of the duct.

SUBTASK 21-20-02-840-020

(5) If repairing a Fiberglass duct, do these steps:

(a) Cut sufficient pieces of the Fiberglass fabric, G50172 to equal the thickness of the duct.

(b) Cut each piece of the Fiberglass fabric 1/2 inch larger to fit the taper of the opening.

(c) Cut one piece of the Fiberglass fabric a minimum of 2 inches larger on all sides than the opening in the duct.

SUBTASK 21-20-02-340-109

(6) If repairing a Kevlar duct, do these steps:

(a) Cut sufficient pieces of the Kevlar fabric, G02135 to equal the thickness of the duct.

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(b) Cut each piece of the Kevlar fabric 1/2 inch larger to fit the taper of the opening.

(c) Cut one piece of the Kevlar fabric a minimum of 2 inches larger on all sides than the opening in the duct.

SUBTASK 21-20-02-840-021

(7) Cut a piece of plastic sheeting, G50305 2 to 3 inches larger on all sides than the opening.

SUBTASK 21-20-02-480-001

(8) Cut a piece of cardboard or aluminum 2 to 3 inches larger than the opening on all sides

SUBTASK 21-20-02-840-022

(9) Attach the plastic sheeting, G50305 to the inside of the opening with adhesive tape so that it covers the opening.

SUBTASK 21-20-02-340-108

(10) Attach the cardboard or aluminum to the inside of the opening with adhesive tape so that it covers the opening and provides support for the plastic sheet.

SUBTASK 21-20-02-840-023

(11) Prepare the resin, G50399 or resin, G50400.

E. Repair the Air Conditioning Duct

SUBTASK 21-20-02-340-013

(1) Apply a thin, smooth layer of resin, G50399 or resin, G50400 to the plastic sheeting in the opening in the duct.

SUBTASK 21-20-02-340-014

(2) Place a piece of the Fiberglass fabric, G50172 or Kevlar fabric, G02135 in the opening over the plastic sheet so that it covers the opening completely.

SUBTASK 21-20-02-340-015

(3) Soak the Fiberglass fabric or Kevlar fabric with the resin.

SUBTASK 21-20-02-340-016

(4) Put a piece of plastic sheet on the Fiberglass fabric or Kevlar fabric and press lightly with a squeegee or with your hand. Smooth from the center to the edges of the fabric to remove bubbles or wrinkles and to remove unwanted resin.

SUBTASK 21-20-02-340-017

(5) Remove the plastic sheet from the patch and remove unwanted resin with a cotton wiper, G00034.

SUBTASK 21-20-02-340-018

(6) Place the next piece of the Fiberglass fabric or Kevlar fabric on the first piece so that it covers the opening. Trim the Fiberglass or Kevlar fabric if necessary. Soak the Fiberglass or Kevlar fabric with resin and smooth it. Continue using the same procedure until the thickness of the patch equals the thickness of the duct.

SUBTASK 21-20-02-340-019

(7) Place the last piece of the Fiberglass or Kevlar fabric on top of the patch so it extends beyond the opening a minimum of 2 inches on all sides. Smooth the fabric to remove bubbles or winkles.

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SUBTASK 21-20-02-340-020

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(8) Wipe the duct around the patch with a cotton wiper, G00034 and Series 91 solvent, B01011 to remove unwanted resin.

SUBTASK 21-20-02-340-111

(9) Allow the resin, G50399 to cure for 9 hours at 72 °F (22 °C).

SUBTASK 21-20-02-340-021

(10) Allow the resin, G50400 to cure for 8.5 hours at 72 °F (22 °C).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-024

(1) If insulation was removed from the duct, install new insulation.

SUBTASK 21-20-02-840-025

(2) Replace the panels or other airplane structure removed to gain access to the duct.

——— END OF TASK ———

TASK 21-20-02-330-804

5. Taped Joint Repair - Polyurethane Foam Duct

(Figure 802)

A. General

(1) This procedure gives instructions for the repair of the taped joint that connects sections of polyurethane foam air conditioning duct.

(2) This procedure may also be used to make a temporary repair to a damaged polyurethane foam air conditioning duct when time is not available to make a permanent repair or if the materials are not available to make a permanent repair. If a temporary repair is made, make the permanent repair as soon as possible.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00040	Resin - Self-Extinguishing Laminating - Epocast 50-A1 with Epocast 9816	BMS8-201 Type III (Long work life)
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G00031	Fabric - Glass, Finished, For Resin Laminates (Type VIIIA)	SAE-AMS-C-9084 Type VIIIA (MIL-C-9084 canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

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(Continued)

Reference	Description	Specification
G50078	Abrasive - Aluminum Oxide Paper, 320 grit or finer	
G50305	Sheeting - Plastic, Polyethylene	
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

D. Prepare for the Repair

SUBTASK 21-20-02-840-026

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-027

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-010-016

(3) As necessary, remove insulation installed on the duct.

SUBTASK 21-20-02-840-028

(4) Do these steps to remove loose tape and unwanted adhesive from the duct joint.

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(a) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to clean the duct joint area.

(b) Sand the duct joint area with 320 grit or finer abrasive paper, G50078 to remove any adhesive that remains on the duct joint.

(c) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to clean any dust from the duct joint area.

SUBTASK 21-20-02-840-029

(5) Examine the end of each air conditioning duct.

SUBTASK 21-20-02-840-030

(6) If the duct lining is damaged so that the foam core of the duct shows, then do the Duct End Repair - Polyurethane Foam Duct procedure below.

SUBTASK 21-20-02-840-031

(7) Cut a piece of the glass fabric, G00031 that is 3 inches wide and is long enough to go around the duct a minimum of two times.

SUBTASK 21-20-02-840-032

(8) Prepare the applicable resin, A00040 or resin, G50400 in accordance with the manufacturer's instruction.

E. Repair the Taped Joint

SUBTASK 21-20-02-340-022

(1) Apply resin resin, A00040 or resin, G50400 to the duct ends:

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(a) Allow the resin to partially dry until it is sticky.

(b) Press the duct ends together by aligning the installation checkmarks.

SUBTASK 21-20-02-340-023

(2) Apply a thin, smooth layer of resin, A00040 or resin, G50400 to the joint area a minimum of 2 inches wider than the duct joint.

SUBTASK 21-20-02-340-024

(3) Apply resin, A00040 or resin, G50400 to one side of the glass fabric, G00031.

SUBTASK 21-20-02-340-025

(4) Wrap the glass fabric around the duct joint a minimum of two times.

SUBTASK 21-20-02-340-098

(5) Make sure the resin on the glass fabric is in contact with the duct.

SUBTASK 21-20-02-340-026

(6) Put plastic sheeting, G50305 on the glass fabric:

(a) Smooth the glass fabric with your hand or a squeegee to remove bubbles or wrinkles.

(b) Make sure that the glass fabric is smooth from the center to the edges of the glass fabric to remove any bubbles, wrinkles and unwanted resin.

SUBTASK 21-20-02-340-027

(7) Allow the resin to cure for 24 hours at room temperature.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-410-011

(1) If insulation was removed from the duct joint, install new insulation.

SUBTASK 21-20-02-840-033

(2) Replace the panels or other airplane structure removed to gain access to the duct joint.

——— END OF TASK ———

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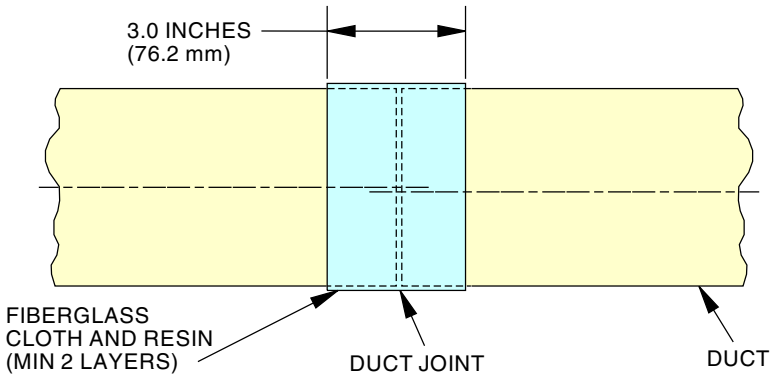
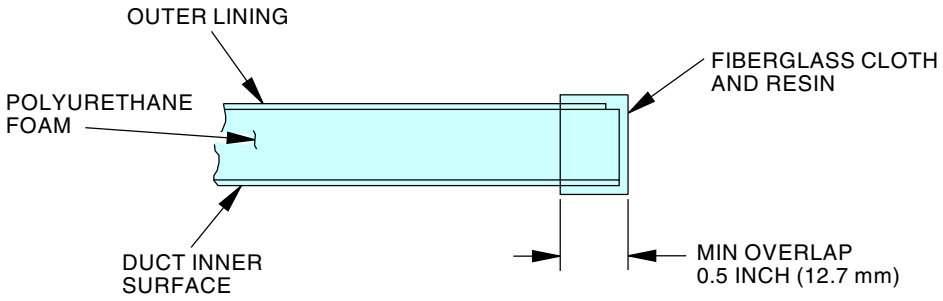
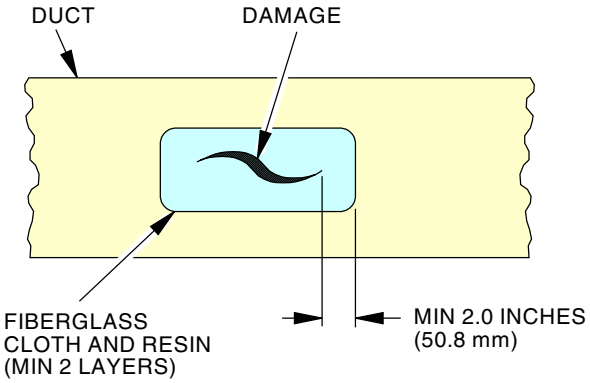


TAPED JOINT REPAIR - POLYURETHANE FOAM DUCT



DUCT END REPAIR - POLYURETHANE FOAM DUCT



EXTERNAL PATCH - POLYURETHANE FOAM DUCT

G45577 S0006402993_V2

Air Conditioning System Ducts Repair
Figure 802/21-20-02-990-802 (Sheet 1 of 2)

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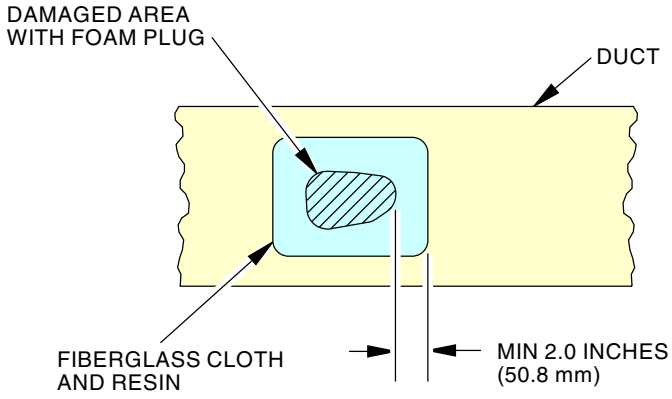
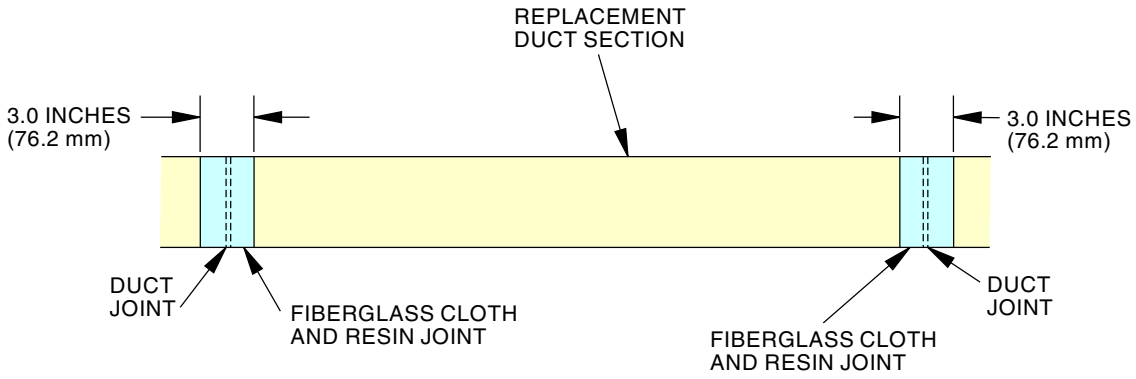


STRUCTURAL REPAIR - POLYURETHANE FOAM DUCT



DUCT SECTION REPLACEMENT - POLYURETHANE FOAM DUCT

G45578 S0006402994_V2

Air Conditioning System Ducts Repair
Figure 802/21-20-02-990-802 (Sheet 2 of 2)

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TASK 21-20-02-330-805

6. Duct End Repair - Polyurethane Foam Duct

(Figure 802)

A. General

(1) This procedure gives instructions for the repair of the end of a polyurethane foam air conditioning duct. This procedure is done if the lining that covers the polyurethane foam at the duct end is damaged and the polyurethane foam is exposed.

(2) This procedure may be required when doing the repair of a taped duct joint.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00040	Resin - Self-Extinguishing Laminating - Epocast 50-A1 with Epocast 9816	BMS8-201 Type III (Long work life)
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
B01027	Solvent - Butyl Carbitol (Dow Chemical - E-Series Glycol Ethers)	
G00031	Fabric - Glass, Finished, For Resin Laminates (Type VIIIA)	SAE-AMS-C-9084 Type VIIIA (MIL-C-9084 canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G00834	Cloth - Lint-free Cotton	
G50078	Abrasive - Aluminum Oxide Paper, 320 grit or finer	
G50305	Sheeting - Plastic, Polyethylene	
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

D. Prepare for the Repair

SUBTASK 21-20-02-840-034

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-035

(2) Gain access to the damaged air conditioning duct:

(a) Remove the applicable ceiling, sidewall or floor panels as necessary.

SUBTASK 21-20-02-340-101

(3) If insulation is installed on the duct joints, remove the insulation.

SUBTASK 21-20-02-840-036

(4) Do these steps to remove loose tape and unwanted adhesive from the duct end area.

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(a) Use Series 91 solvent, B01011 or Butyl Carbitol solvent, B01027and acotton wiper, G00034 to clean the duct end area.

(b) Use Butyl Carbitol solvent, B01027 or Series 91 solvent, B01011 and a cotton wiper, G00034 to clean the damaged duct end area and the inner and outer surface of the duct a minimum of 1 inch from the duct end.

(c) Sand the duct end area with 320 grit or finer abrasive paper, G50078 to remove any adhesive that remains.

(d) Use the Series 91 solvent, B01011 and a lint-free cloth, G00834 to clean any dust from the duct end area.

SUBTASK 21-20-02-840-037

(5) Prepare the glass fabric, G00031:

(a) Cut a piece of glass fabric, G00031 the length of the outside circumference of the duct.

(b) The glass fabric should have the width needed to overlap the duct end and the inside and outside of the duct a minimum of 1/2 inch.

SUBTASK 21-20-02-840-038

(6) Prepare the resin, A00040 or resin, G50400 in accordance with the manufacturer's instructions.

E. Repair the Duct End

SUBTASK 21-20-02-340-028

(1) Apply a thin, smooth layer of resin, A00040 or resin, G50400 on the duct end and on the surface of the duct a minimum of 1/2 inch from the duct end.

SUBTASK 21-20-02-340-029

(2) Wrap the glass fabric, G00031 around the duct end so that it overlaps a minimum of 1/2 inch on both sides of the end.

SUBTASK 21-20-02-340-030

(3) Soak the glass fabric, G00031 with resin, A00040 or resin, G50400.

SUBTASK 21-20-02-340-031

(4) Put a piece of plastic sheeting, G50305 on the glass fabric, G00031 and press lightly with your hand or squeegee to smooth the edges of the glass fabric and to remove bubbles or wrinkles.

SUBTASK 21-20-02-340-099

(5) Make the glass fabric, G00031 smooth from the center to the edges of the cloth to remove any bubbles, wrinkles or unwanted resin.

SUBTASK 21-20-02-340-032

(6) Allow the resin to cure for 24 hours at room temperature.

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SUBTASK 21-20-02-340-033

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(7) Clean the area with a cotton wiper, G00034 and Series 91 solvent, B01011 or Butyl Carbitol solvent, B01027 to remove unwanted resin.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-340-102

(1) If insulation was removed from the duct joint, install new insulation.

SUBTASK 21-20-02-840-039

(2) Replace the panels or other airplane structure removed to gain access to the duct joint.

——— END OF TASK ———

TASK 21-20-02-330-806

7. External Patch - Polyurethane Foam Duct

(Figure 802)

A. General

(1) This procedure gives instructions for the repair of a polyurethane foam air conditioning duct if the damage is less than 1/4 inch deep and less than 1 inch long and the inner lining is not damaged. If the damage is larger, do the Structural Repair - Polyurethane Foam Duct procedure below.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00040	Resin - Self-Extinguishing Laminating - Epocast 50-A1 with Epocast 9816	BMS8-201 Type III (Long work life)
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
B01027	Solvent - Butyl Carbitol (Dow Chemical - E-Series Glycol Ethers)	
G00031	Fabric - Glass, Finished, For Resin Laminates (Type VIIIA)	SAE-AMS-C-9084 Type VIIIA (MIL-C-9084 canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G02137	Resin - Polyester - Hetron 92	
G50078	Abrasive - Aluminum Oxide Paper, 320 grit or finer	
G50305	Sheeting - Plastic, Polyethylene	

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(Continued)

Reference	Description	Specification
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

D. Prepare for the Repair

SUBTASK 21-20-02-840-040

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-041

(2) Gain access to the damaged air conditioning duct:

(a) Remove the applicable ceiling, sidewall or floor panels as necessary.

SUBTASK 21-20-02-010-017

(3) If insulation is installed on the duct, removed the insulation.

SUBTASK 21-20-02-210-001

(4) Examine the inner surface of the duct.

SUBTASK 21-20-02-210-002

(5) If the inner lining is damaged, then do the Duct Section Replacement - Polyurethane Foam Duct procedure below.

SUBTASK 21-20-02-210-003

(6) Examine the damage to the duct:

(a) If the damage is more than 3 inches long or more than 5 square inches in area, then do the Duct Section Replacement - Polyurethane Foam Duct procedure below.

SUBTASK 21-20-02-840-042

(7) Do these steps to prepare the air conditioning duct:

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(a) Use the Series 91 solvent, B01011 or Butyl Carbitol solvent, B01027 and a cotton wiper, G00034 to clean the damaged area.

(b) Sand the damaged area with 320 grit or finer abrasive paper, G50078 to remove any unwanted contamination or adhesive.

(c) Use the Series 91 solvent, B01011 or Butyl Carbitol solvent, B01027 and a cotton wiper, G00034 to clean any dust from the damaged area.

SUBTASK 21-20-02-840-043

(8) Prepare the glass fabric, G00031:

(a) Cut two pieces of the glass fabric, G00031 2 inches larger on all sides than the damaged area.

(b) Round the corners of the Fiberglass fabric pieces.

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SUBTASK 21-20-02-840-044

(9) Prepare the applicable resin, A00040 or Hetron 92 resin, G02137 or resin, G50400 in accordance with the manufacturer's instructions.

E. Repair the Duct

SUBTASK 21-20-02-340-034

(1) Apply a thin, smooth layer of resin, A00040 or Hetron 92 resin, G02137 or resin, G50400 to the duct where the Fiberglass fabric will be applied:

(a) Make sure the area of the resin is larger than the size and shape of the glass fabric.

SUBTASK 21-20-02-340-035

(2) Place a piece of the glass fabric, G00031 on the resin so that it extends beyond the damaged area a minimum of 2 inches on all sides.

SUBTASK 21-20-02-340-036

(3) Soak the glass fabric, G00031 with resin, A00040 or Hetron 92 resin, G02137 or resin, G50400.

SUBTASK 21-20-02-340-037

(4) Put a piece of plastic sheeting, G50305 on the Fiberglass fabric and press lightly with a squeegee or with your hand.

SUBTASK 21-20-02-340-100

(5) Smooth from the center to the edges of the Fiberglass fabric to remove bubbles, wrinkles and unwanted resin.

SUBTASK 21-20-02-340-038

(6) Remove the plastic sheet from the Fiberglass fabric and remove unwanted resin with a cotton wiper, G00034.

SUBTASK 21-20-02-340-039

(7) Follow the same procedure to apply a second piece of the glass fabric, G00031.

SUBTASK 21-20-02-340-040

(8) Allow the resin, A00040 or Hetron 92 resin, G02137 or resin, G50400 to cure for 24 hours at room temperature.

SUBTASK 21-20-02-340-041

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(9) Remove unwanted resin from the edges of the Fiberglass fabric with a cotton wiper, G00034 soaked with Series 91 solvent, B01011 or Butyl Carbitol solvent, B01027.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-420-007

(1) If insulation was removed from the duct, install new insulation.

SUBTASK 21-20-02-840-045

(2) Replace the ceiling, sidewall or floor panels or other airplane structure removed to gain access to the duct joint.

END OF TASK

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TASK 21-20-02-330-807

8. Structural Repair - Polyurethane Foam Duct

(Figure 802)

A. General

(1) This procedure gives instructions for making a structural repair to a polyurethane foam air conditioning duct. A structural repair replaces the polyurethane foam in the surface of the duct if the damage or deterioration to the polyurethane foam is greater than 1/4 inch deep and 1 inch long but the inner lining is not damaged.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00040	Resin - Self-Extinguishing Laminating - Epocast 50-A1 with Epocast 9816	BMS8-201 Type III (Long work life)
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
B01027	Solvent - Butyl Carbitol (Dow Chemical - E-Series Glycol Ethers)	
G00031	Fabric - Glass, Finished, For Resin Laminates (Type VIIIA)	SAE-AMS-C-9084 Type VIIIA (MIL-C-9084 canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G00077	Foam - Flame Retardant Rigid Urethane	BMS8-133
G02137	Resin - Polyester - Hetron 92	
G50078	Abrasive - Aluminum Oxide Paper, 320 grit or finer	
G50305	Sheeting - Plastic, Polyethylene	
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

D. Prepare for the Repair

SUBTASK 21-20-02-840-046

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-047

(2) Gain access to the damaged air conditioning duct:

(a) Remove applicable ceiling, sidewall or floor panels as required.

SUBTASK 21-20-02-010-018

(3) If insulation is installed on the duct, remove the insulation.

SUBTASK 21-20-02-210-004

(4) Examine the inner surface of the duct.

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SUBTASK 21-20-02-210-005

(5) If the duct lining is damaged, then do the Duct Section Replacement - Polyurethane Foam Duct procedure below.

SUBTASK 21-20-02-210-006

(6) Examine the damage to the duct. If the damage is more than half the thickness of the foam duct material, then do the Duct Section Replacement - Polyurethane Foam Duct procedure below.

SUBTASK 21-20-02-840-048

(7) Do these steps to prepare the air conditioning duct:

(a) Remove the damaged portion of the outer lining and the damaged foam material.

WARNING

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(b) Use the Series 91 solvent, B01011 or Butyl Carbitol solvent, B01027 and a cotton wiper, G00034 to clean the damaged area.

(c) Use 320 grit or finer abrasive paper, G50078 to sand the duct outer surface a minimum of 2 inches from the edges of the damaged area to remove any remaining adhesive and contamination.

(d) Use Butyl Carbitol solvent, B01027 or Series 91 solvent, B01011 and a cotton wiper, G00034 to clean any dust from the damaged area.

SUBTASK 21-20-02-840-049

(8) Cut a piece of polyurethane foam, G00077 to fit the area where the damaged foam was removed.

(a) Place the foam in the opening where the damaged foam was removed to make sure it is the correct size and shape.

SUBTASK 21-20-02-840-050

(9) Prepare the glass fabric, G00031 as follows:

(a) Cut two pieces of the glass fabric, G00031 2 inches larger on all sides than the damaged area.

(b) Cut round corners on the pieces of glass fabric, G00031.

SUBTASK 21-20-02-840-051

(10) Prepare the resin, A00040 or resin, G50400 in accordance with the manufacturer's instructions.

NOTE: Resin G50400 is a slightly faster curing resin than resin A00040.

E. Repair the Duct

SUBTASK 21-20-02-340-042

(1) Apply the resin, A00040 or resin, G50400 to the area on the duct where the damaged polyurethane foam was removed:

(a) Apply enough resin so that all gaps and voids are filled.

SUBTASK 21-20-02-330-001

(2) Put the piece of foam that was cut for the repair into the damaged area on the foam duct.

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SUBTASK 21-20-02-340-103

(3) Put a piece of plastic sheeting, G50305 on the piece of polyurethane foam and press on it to align the surface of the repair piece of foam with the surface of the duct.

SUBTASK 21-20-02-340-043

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(4) Remove any unwanted resin from the edges of the piece of polyurethane foam with a cotton wiper, G00034 soaked with Butyl Carbitol solvent, B01027 or Series 91 solvent, B01011.

SUBTASK 21-20-02-340-044

(5) Leave the plastic sheet on the repair area and allow the resin to cure for 5 hours at 125 °F. Apply heat with a heat gun, heat lamp or heating blanket.

SUBTASK 21-20-02-340-045

(6) Remove the plastic sheet and smooth the surface of the foam with 320 grit or finer abrasive paper, G50078.

SUBTASK 21-20-02-340-046

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(7) Use the Series 91 solvent, B01011 or Butyl Carbitol solvent, B01027 and a cotton wiper, G00034 to remove any dust from the duct.

SUBTASK 21-20-02-340-047

(8) Prepare the resin, A00040 or resin, G50400 or Hetron 92 resin, G02137 in accordance with the manufacturer's instructions.

SUBTASK 21-20-02-340-048

(9) Place a piece of the glass fabric, G00031 on the resin, A00040 or resin, G50400 or Hetron 92 resin, G02137 so that it extends beyond the damaged area a minimum of 2 inches on all sides.

SUBTASK 21-20-02-340-049

(10) Soak the glass fabric, G00031 with resin, A00040 or resin, G50400 or Hetron 92 resin, G02137.

SUBTASK 21-20-02-340-050

(11) Put a piece of plastic sheeting, G50305 on the glass fabric, G00031 and press lightly with a squeegee or with your hand. Smooth from the center to the edges of the Fiberglass fabric to remove bubbles, wrinkles and unwanted resin.

SUBTASK 21-20-02-340-051

(12) Remove the plastic sheet from the patch and remove unwanted resin, A00040 or resin, G50400 or Hetron 92 resin, G02137 with a cotton wiper, G00034.

SUBTASK 21-20-02-340-052

(13) Follow the same procedure to apply the second piece of the Fiberglass fabric.

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SUBTASK 21-20-02-340-053

(14) Allow the resin to cure for 24 hours at room temperature.

SUBTASK 21-20-02-340-054

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(15) Remove unwanted resin from the edges of the repaired area with a cotton wiper, G00034 soaked with Series 91 solvent, B01011 or Butyl Carbitol solvent, B01027.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-420-008

(1) If insulation was removed from the duct, install new installation.

SUBTASK 21-20-02-840-052

(2) Replace the panels or other airplane structure removed to gain access to the duct joint.

——— END OF TASK ———

TASK 21-20-02-330-808

9. Inner Lining Repair - Polyurethane Foam Duct

A. General

(1) This procedure gives instructions for the repair of the inner lining on a polyurethane foam air conditioning duct. Use this procedure if the inner lining has peeled away from the duct but the polyurethane foam is not damaged.

(2) If the polyurethane foam is damaged, do the procedure to replace a section of polyurethane foam air conditioning duct.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G00031	Fabric - Glass, Finished, For Resin Laminates (Type VIIIA)	SAE-AMS-C-9084 Type VIIIA (MIL-C-9084 canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

D. Prepare for the Repair

SUBTASK 21-20-02-840-053

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-054

(2) Gain access to the damaged air conditioning duct.

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SUBTASK 21-20-02-840-055

(3) Do these steps to prepare the air conditioning duct.

(a) Cut away the inner lining that has peeled away from the foam. Do not damage the polyurethane foam.

(b) Examine the polyurethane foam. If the foam is damaged, do the Duct Section Replacement - Polyurethane Foam Duct procedure below.

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(c) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to clean the damaged area.

(d) Sand the duct joint area to remove any unwanted contamination on the duct.

(e) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to remove any dust from the damaged area.

SUBTASK 21-20-02-840-056

(4) Cut two pieces of the Fiberglass glass fabric, G00031 1/2 inch larger on all sides than the damaged area. Round the corners of the Fiberglass fabric pieces.

SUBTASK 21-20-02-840-057

(5) Prepare the applicable resin.

E. Repair the Inner Lining

SUBTASK 21-20-02-340-055

(1) Apply a thin, smooth layer of the applicable resin to the damaged area of the duct. Make sure the area of the resin is a minimum of the size and shape of the Fiberglass fabric.

SUBTASK 21-20-02-340-056

(2) Place a piece of the Fiberglass fabric on the resin so that it extends beyond the damaged area a minimum of 1/2 inch on all sides.

SUBTASK 21-20-02-340-057

(3) Soak the Fiberglass fabric with the applicable resin.

SUBTASK 21-20-02-340-058

(4) Put a piece of the plastic sheet on the Fiberglass fabric and press lightly with a squeegee or with your hand. Smooth from the center to the edges of the Fiberglass fabric to remove any bubbles or any wrinkles.

SUBTASK 21-20-02-340-059

(5) Remove the plastic sheet from the patch and remove unwanted resin with a cotton wiper, G00034.

SUBTASK 21-20-02-340-060

(6) Follow the same procedure to apply the second piece of Fiberglass fabric.

SUBTASK 21-20-02-340-061

(7) Allow the resin to cure for 24 hours at room temperature.

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SUBTASK 21-20-02-340-062

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(8) Remove unwanted resin from the edges of the repaired area with a cotton wiper, G00034 soaked with Series 91 solvent, B01011.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-058

(1) Use the applicable procedure to return the duct to its usual condition.

SUBTASK 21-20-02-840-059

(2) Replace the panels or other airplane structure removed to gain access to the duct.

——— END OF TASK ———

TASK 21-20-02-330-809

10. Duct Section Replacement - Polyurethane Foam Duct

(Figure 802)

A. General

(1) This procedure gives instructions to replace a section of polyurethane foam air conditioning duct.

(2) If time or materials are not available to do this procedure, use the procedure to repair a taped duct joint to make a temporary repair. If a temporary repair is made, do this procedure as soon as possible to make a permanent repair.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G00031	Fabric - Glass, Finished, For Resin Laminates (Type VIIIA)	SAE-AMS-C-9084 Type VIIIA (MIL-C-9084 canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

D. Prepare for the Repair

SUBTASK 21-20-02-840-060

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-061

(2) Gain access to the damaged air conditioning duct.

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SUBTASK 21-20-02-840-062

(3) Cut and remove the damaged section of polyurethane foam air conditioning duct. Cut the duct so the edges are straight and perpendicular to the circumference of the duct.

SUBTASK 21-20-02-840-063

(4) Do these steps to prepare the air conditioning duct.

WARNING

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(a) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to clean the duct ends.

(b) Sand the duct ends to remove any contamination from the duct ends.

(c) Use the Series 91 solvent, B01011 and a cotton wiper, G00034 to remove any dust from the duct ends.

SUBTASK 21-20-02-840-064

(5) Prepare a piece of the polyurethane foam duct that matches the damaged duct and is the correct length to replace the damaged section of the duct.

NOTE: Cut the replacement section with clearance for the material that will be added by the duct end repair procedure.

SUBTASK 21-20-02-840-065

(6) Do the Duct End Repair - Polyurethane Foam Duct procedure above for each end of the replacement duct section and for each end of the damaged duct.

SUBTASK 21-20-02-840-066

(7) Cut two pieces of the Fiberglass glass fabric, G00031 3 inches wide and long enough to go around the duct a minimum of four times.

SUBTASK 21-20-02-840-067

(8) Prepare the applicable resin.

E. Repair the Taped Joint

SUBTASK 21-20-02-340-063

(1) Apply the applicable resin to the duct ends. Allow the resin to partially dry until it is sticky. Press the duct ends together by aligning the installation checkmarks.

SUBTASK 21-20-02-340-064

(2) Apply the applicable resin to each joint area a minimum of 2 inches on both sides of the joint.

SUBTASK 21-20-02-340-065

(3) Apply the applicable resin to one side of the two pieces of the Fiberglass fabric.

SUBTASK 21-20-02-340-066

(4) Wrap one piece of the Fiberglass fabric around each duct joint a minimum of four times. Make sure the resin on the Fiberglass fabric is in contact with the duct.

SUBTASK 21-20-02-340-067

(5) Put a piece of plastic sheet on the joint and press on it to smooth the Fiberglass fabric to remove any bubbles or any wrinkles.

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SUBTASK 21-20-02-340-068

(6) Allow the resin to cure for 24 hours at room temperature.

SUBTASK 21-20-02-340-069

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(7) Clean any unwanted resin from the joint areas with a cotton wiper, G00034 and Series 91 solvent, B01011.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-068

(1) Replace the panels or other airplane structure removed to gain access to the duct joint.

——— END OF TASK ———

TASK 21-20-02-330-810

11. Tape Replacement - Foam Wrapped Insulated Duct

(Figure 803)

A. General

(1) This procedure gives instructions to replace the adhesive tape on air conditioning ducts insulated with foam insulation. The foam insulation is wrapped around the duct and held in place with an adhesive tape.

(2) CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

(a) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement.

(c) BMS 8–385 type 6 and BMS 8–300 type VIII insulation, are new qualified materials optional to foam insulation, G50449, BMS 8–385 type 4.

(d) Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(e) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

1) Tape specifications tape, G50327 , BMS 5–157, Type 1, Class ,1 Grade B, composition MPVF or tape, G51202 and tape, G50789, BMS 5–157, Type 1, Class 2, Grade C, composition MPEEK are qualified tapes used to secure insulation to ducts.

(f) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327 or tape, G51202, or tape, G50789 to meet the flammability/flame propagation requirement. Wrap the tape, G50327 or tape, G51202, or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

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B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

D. Prepare for the Repair

SUBTASK 21-20-02-840-069

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-010-015

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-010-014

(3) If necessary, remove the air conditioning duct.

E. Replace the Tape

SUBTASK 21-20-02-020-003

(1) Do these steps to remove loose tape and unwanted adhesive from the repair area:

(a) Carefully remove loose tape from the repair area.

WARNING

DO NOT GET THE SOLVENT IN YOUR MOUTH OR EYES OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENT. 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) Use the Series 91 solvent, B01011 and a wiping fabric to clean the repair area.

SUBTASK 21-20-02-420-006

(2) Install strips of 2 inch wide (50.8 mm) tape, G50327 or tape, G51202, or tape, G50789 to the edges and seams of the foam insulation (Figure 803).

(a) Make sure the tape has an overlap of all the edges and seams of the insulation by a minimum of 1.00 inch (25.4 mm).

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F. Rework Ducts insulated with BMS8-300 Polyimide Foam Insulation

SUBTASK 21-20-02-420-005

(1) Install the tape, G50327 or tape, G51202, or tape, G50789 to completely cover all exposed surfaces of the foam insulation, G02470 as shown in (Figure 803).

NOTE: The BMS8-300 polyimide foam insulation material must be covered with the BMS5-157 tape to meet the CFR 14 Part 25.856 flame propagation requirement.

(a) Cut the tape, G50327 or tape, G51202, or tape, G50789 as required to fit around the air outlets, branches and insulation vent holes.

(b) Apply the tape, G50327 or tape, G51202, or tape, G50789 in any configuration as long as complete coverage of the foam insulation, G02470 is obtained and there is a 1/8 inch (3.2 mm) overlap. The tape may be installed spiral wrapped or lengthwise down the duct as desired.

(c) Wrinkles in the tape are acceptable if pinched together without voids and the foam insulation, G02470 is not compressed.

(d) The tape, G50327 or tape, G51202, or tape, G50789 can be applied to the outer surface of the foam insulation, G02470 prior to installation on the duct if desired.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-410-009

(1) If necessary, re-install the air conditioning duct.

SUBTASK 21-20-02-410-010

(2) Replace the panels or other airplane structure removed to gain access to the duct.

——— END OF TASK ———

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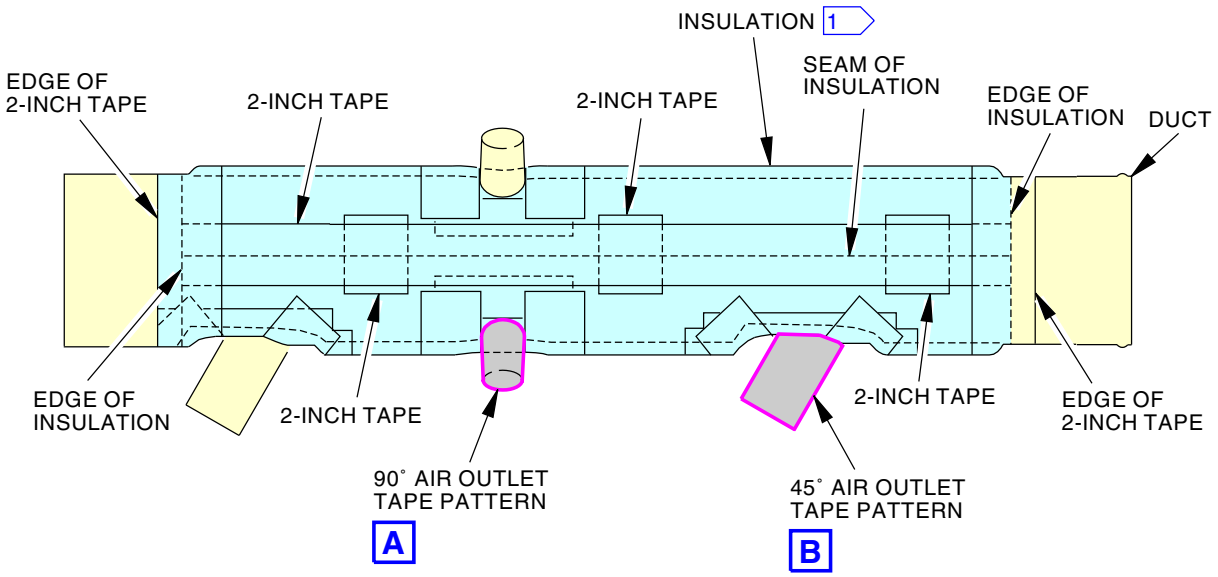
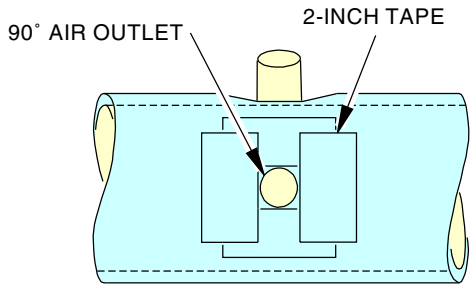
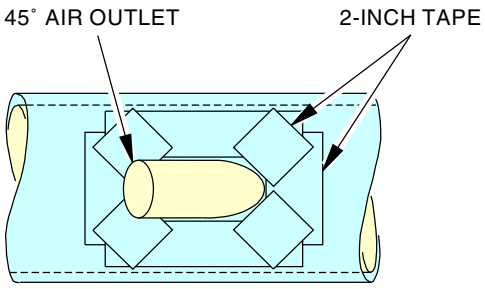


FOAM WRAPPED INSULATED DUCT (EXAMPLE)



90˚ AIR OUTLET TAPE PATTERN

A



45˚ AIR OUTLET TAPE PATTERN

B

1 FOR INSULATION DAMAGE APPLY A MINIMUM 2-INCH PATCH OF PRESSURE SENSITIVE ADHESIVE TAPE TO THE DAMAGED AREA. MAKE SURE YOU HAVE FULL COVERAGE OF THE DAMAGED OR TORN AREA WITH NO LESS THAN 1/2-INCH OVERLAP.

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Air Conditioning System Insulated Duct Repair (Foam Wrapped)
Figure 803/21-20-02-990-803 (Sheet 1 of 2)

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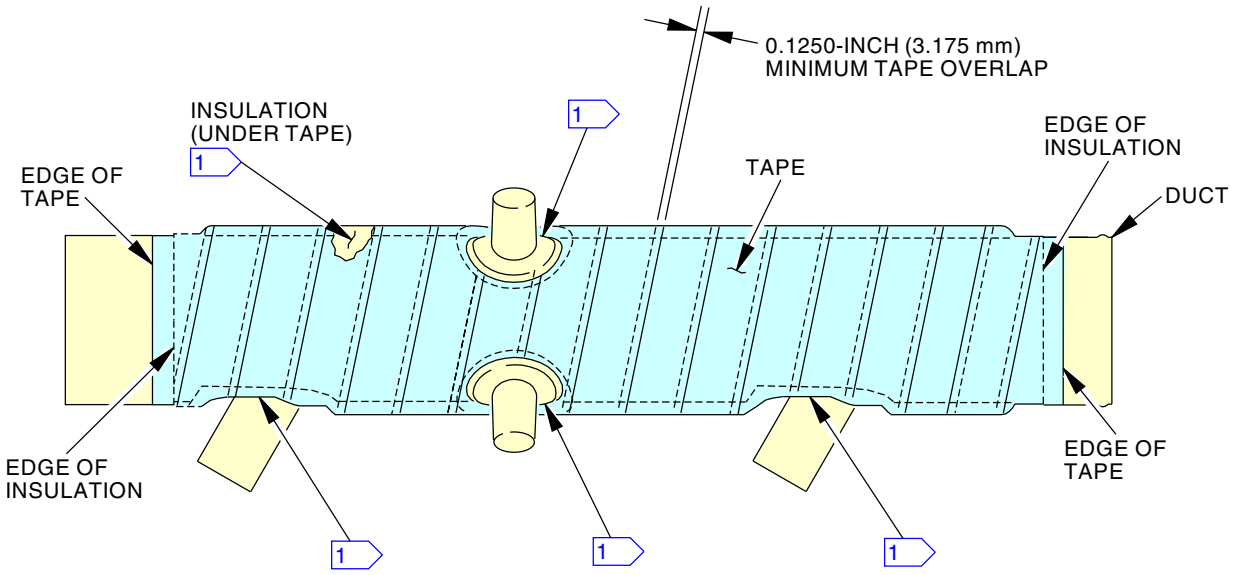

**REWORK POLYIMIDE FOAM INSULATED DUCT
(EXAMPLE)**

NOTE:

- 2-INCH WIDE, 3-INCH WIDE OR 12-INCH WIDE TAPE (BMS 5-157 TYPE I, CLASS 1, GRADE B) MUST COVER 100% OF THE BROWN HYPALON INSULATION SURFACE.
- TAPE MAY BE INSTALLED SPIRAL WRAPPED AS SHOWN OR LENGTHWISE DOWN THE DUCT DEPENDING ON THE INSTALLERS PREFERENCE.
- SHOWN PATTERN IS FOR REFERENCE ONLY. TAPE MAY BE APPLIED IN ANY CONFIGURATION AS LONG AS COMPLETE BMS 8-300 COVERAGE IS OBTAINED.
- WIDER TAPE MAY BE CUT INTO NARROWER STRIPS OR ANY UNIQUE SHAPE IF DESIRED TO ASSIST IN OBTAINING COMPLETE BMS 8-300 COVERAGE.
- MAINTAIN MINIMUM 0.1250-INCH (3.175 mm) OVERLAP OF TAPE.
- AVOID COMPRESSION OF BMS 8-300 INSULATION.
- WRINKLES IN TAPE ARE ACCEPTABLE IF PINCHED TOGETHER AND CONTAIN NO VOIDS.
- COVERING OF EXISTING BMS 5-157 TAPE IS NOT REQUIRED.
- TAPE MAY BE APPLIED TO THE BLANKET PRIOR TO THE BLANKET INSTALLATION ON THE DUCT IF DESIRED BY THE INSTALLER.
- FOR BLANKETS INSTALLED ON DUCT JOINTS, TAPE MAY BE APPLIED TO THE BLANKET BEFORE OR AFTER THE BLANKET IS INSTALLED OVER THE DUCT JOINT. TAPE ORIENTATION IS OPTIONAL.

1 COVER ALL EXPOSED INSULATION (BMS 8-300 TYPE II, GRADE 5) WITH TAPE (BMS 5-157 TYPE I, CLASS 1, GRADE B). CUT TAPE AS REQUIRED TO FIT AROUND AIR OUTLETS, BRANCHES AND INSULATION VENT HOLES.

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**Air Conditioning System Insulated Duct Repair (Foam Wrapped)
Figure 803/21-20-02-990-803 (Sheet 2 of 2)**

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TASK 21-20-02-330-811

12. Insulation Repair - Foam Wrapped Insulated Duct

(Figure 803)

A. General

(1) This procedure has instructions to repair those air conditioning ducts insulated with Melamine or Polyimide Foam. The Foam Insulation is wrapped around the duct and held in place with an adhesive tape.

(2) CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

(a) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement.

(c) BMS 8–385 type 6 and BMS 8–300 type VIII insulation, are new qualified materials optional to foam insulation, G50449, BMS 8–385 type 4.

(d) Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(e) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

1) Tape specifications tape, G50327 , BMS 5–157, Type 1, Class ,1 Grade B, composition MPVF or tape, G51202, and tape, G50789, BMS 5–157, Type 1, Class 2, Grade C, composition MPEEK are qualified tapes used to secure insulation to ducts.

(f) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327 or tape, G51202, or tape, G50789 to meet the flammability/flame propagation requirement. Wrap the tape, G50327 or tape, G51202, or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK

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(Continued)

Reference	Description	Specification
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

D. Prepare for the Repair

SUBTASK 21-20-02-840-076

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-010-013

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-010-012

(3) If necessary, remove the air conditioning duct to get access to the damaged area.

E. Repair the Insulated Duct

SUBTASK 21-20-02-020-002

(1) Do these steps to remove loose tape and unwanted adhesive from the repair area:

(a) Carefully remove loose tape from the repair area.

WARNING

DO NOT GET THE SOLVENT IN YOUR MOUTH OR EYES OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENT. 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) Use the Series 91 solvent, B01011 and a wiping cloth to clean the repair area.

SUBTASK 21-20-02-420-004

(2) Install a minimum 2.0 inch (50.8 mm) wide patch of the tape, G50327 or tape, G51202, or tape, G50789 to completely cover the damaged area of the insulation (Figure 803).

(a) Make sure the tape has an overlap of all the edges of the damaged area by a minimum of 0.50 inch (12.7 mm).

F. Rework Ducts insulated with BMS8-300 Polyimide Foam Insulation

SUBTASK 21-20-02-420-003

(1) Install the tape, G50327 or tape, G51202, or tape, G50789 to completely cover all exposed surfaces of the foam insulation, G02470 insulation as shown in (Figure 803).

NOTE: The BMS8-300 polyimide foam insulation material must be covered with the BMS5-157 tape to meet the CFR 14 Part 25.856 flame propagation requirement.

(a) Cut the tape, G50327 or tape, G51202, or tape, G50789 as required to fit around the air outlets, branches and insulation vent holes.

(b) Apply the tape, G50327 or tape, G51202, or tape, G50789 in any configuration as long as complete coverage of the foam insulation, G02470 insulation is obtained and there is a 1/8 inch (3.2 mm) overlap. The tape may be installed spiral wrapped or lengthwise down the duct as desired.

(c) Wrinkles in the tape are acceptable if pinched together without voids and the foam insulation, G02470 insulation is not compressed.

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(d) The tape, G50327 or tape, G51202, or tape, G50789 can be applied to the outer surface of the foam insulation, G02470 insulation prior to installation on the duct if desired.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-410-007

(1) If necessary, re-install the air conditioning duct.

SUBTASK 21-20-02-410-008

(2) Replace the panels or other airplane structure removed to gain access to the duct.

——— END OF TASK ———

TASK 21-20-02-330-812

13. Insulation Replacement - Foam Wrapped Insulated Duct

(Figure 803)

A. General

(1) This procedure has instructions to replace the insulation on air conditioning ducts insulated with Melamine or Polyimide Foam. The Foam Insulation is wrapped around the duct and held in place with an adhesive tape.

(2) CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

(a) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement.

(c) BMS 8–385 type 6 and BMS 8–300 type VIII insulation, are new qualified materials optional to foam insulation, G50449, BMS 8–385 type 4.

(d) Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(e) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

1) Tape specifications tape, G50327 or tape, G51202, BMS 5–157, Type 1, Class ,1 Grade B, composition MPVF and tape, G50789, BMS 5–157, Type 1, Class 2, Grade C, composition MPEEK are qualified tapes used to secure insulation to ducts.

(f) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327 or tape, G51202, or tape, G50789 to meet the flammability/flame propagation requirement. Wrap the tape, G50327 or tape, G51202, or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

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C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

D. Prepare for the Repair

SUBTASK 21-20-02-840-083

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-010-011

(2) Gain access to the air conditioning duct.

SUBTASK 21-20-02-010-010

(3) If necessary, remove the air conditioning duct to permit removal of the foam insulation.

E. Replace the Foam Insulation

SUBTASK 21-20-02-020-001

(1) Do these steps to remove the tape and the foam insulation from the duct:

(a) Remove the tape from the duct.

(b) Remove the insulation from the duct.

SUBTASK 21-20-02-420-001

(2) Do these steps to install the new foam insulation, G50449 or foam insulation, G02470 on the duct:

WARNING

DO NOT GET THE SOLVENT IN YOUR MOUTH OR EYES OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENT. 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) Use the Series 91 solvent, B01011 and a wiping cloth to clean the outer surface of the foam insulation.

(b) Wrap the foam insulation around the duct.

(c) Install strips of 2 inch wide (50.8 mm) tape, G50327 or tape, G51202, or tape, G50789 to the edges and seams of the foam insulation (Figure 803).

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(d) Make sure the tape has an overlap of all the edges and seams of the foam insulation by a minimum of 1.00 inch (25.4 mm).

F. Rework Ducts insulated with BMS8-300 Polyimide Foam Insulation

SUBTASK 21-20-02-420-002

(1) Install the tape, G50327 or tape, G51202, or tape, G50789 to completely cover all exposed surfaces of the foam insulation, G02470 insulation as shown in (Figure 803).

NOTE: The BMS8-300 polyimide foam insulation material must be covered with the BMS5-157 tape to meet the CFR 14 Part 25.856 flame propagation requirement.

(a) Cut the tape, G50327 or tape, G51202, or tape, G50789 as required to fit around the air outlets, branches and insulation vent holes.

(b) Apply the tape, G50327 or tape, G51202, or tape, G50789 in any configuration as long as complete coverage of the foam insulation, G02470 insulation is obtained and there is a 1/8 inch (3.2 mm) overlap. The tape may be installed spiral wrapped or lengthwise down the duct as desired.

(c) Wrinkles in the tape are acceptable if pinched together without voids and the foam insulation, G02470 insulation is not compressed.

(d) The tape, G50327 or tape, G51202, or tape, G50789 can be applied to the outer surface of the foam insulation, G02470 insulation prior to installation on the duct if desired.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-410-005

(1) If necessary, re-install the air conditioning duct.

SUBTASK 21-20-02-410-006

(2) Replace the panels or other airplane structure removed to gain access to the duct.

——— END OF TASK ———

TASK 21-20-02-330-813

14. Tape Replacement - Fiberglass Insulated Duct

(Figure 803, Figure 804)

A. General

(1) This procedure has instructions to repair those air conditioning ducts insulated with Fiberglass Insulation (BMS 8-48) and a flame-resistant covering (BMS 8-142) which have been overwrapped with cargo liner joint sealing tape (BMS 5-146).

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G02361	Tape - Cargo Lining Joint Seal	BMS5-146

D. Prepare for the Repair

SUBTASK 21-20-02-840-090

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

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SUBTASK 21-20-02-840-091

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-840-092

(3) If necessary, remove the air conditioning duct.

E. Repair the Insulated Duct

SUBTASK 21-20-02-840-093

(1) Do these steps to remove loose tape and unwanted adhesive from the repair area:

(a) Carefully remove loose tape from the repair area.

WARNING

DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE. OBEY THE MATERIAL SAFETY DATA SHEETS (MSDS) FOR SOLVENTS. OBEY LOCAL REGULATIONS FOR THE CORRECT PROCEDURES TO USE OR DISCARD SOLVENTS. SOLVENTS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(b) Use the Series 91 solvent, B01011 and a wiping cloth to clean the repair area.

SUBTASK 21-20-02-840-094

(2) Install the tape, G02361 to the repair area (Figure 803, Figure 804).

(a) Use a continuous strip of tape to wrap around the insulation/covering and the duct.

(b) Make sure the tape has an overlap of the edges of the adjacent tape by a minimum of 0.12 inch (3.17 mm).

(c) Make sure the new tape has an overlap onto the ends of the duct by a minimum of 1.00 inch (25.4 mm).

SUBTASK 21-20-02-840-095

(3) If necessary, install the air conditioning duct.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-096

(1) Replace the panels or other airplane structure removed to gain access to the duct.

——— END OF TASK ———

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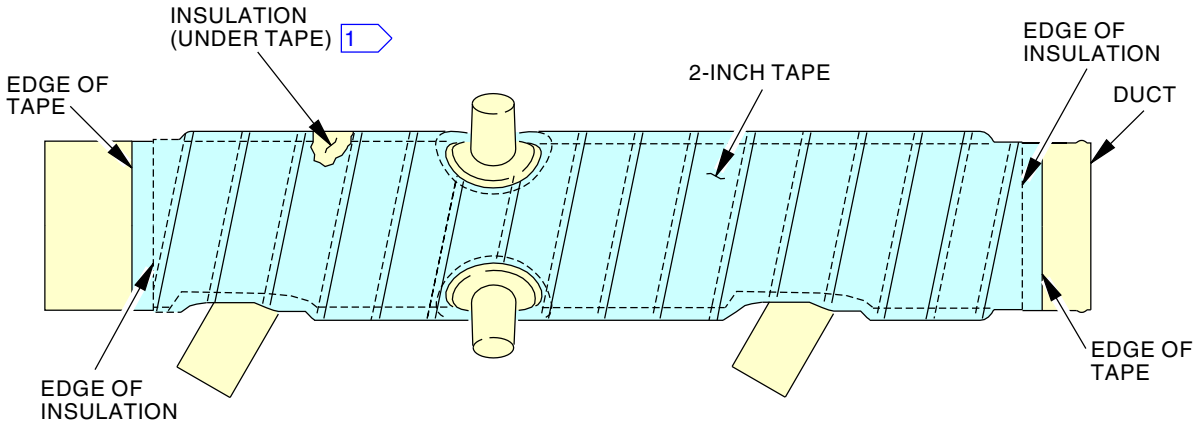

**FIBERGLASS INSULATED DUCT
(EXAMPLE)**

1 COVER ALL EXPOSED INSULATION WITH CARGO LINER JOINT SEALER TAPE. CUT TAPE AS REQUIRED TO FIT AROUND AIR OUTLETS.

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**Air Conditioning System Insulated Duct Repair (Fiberglass)
Figure 804/21-20-02-990-804**

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TASK 21-20-02-330-814

15. Insulation and Covering Repair - Fiberglass Insulated Duct

(Figure 804)

A. General

(1) This procedure has instructions to repair those air conditioning ducts insulated with Fiberglass Insulation (BMS 8-48) and a flame-resistant covering (BMS 8-142) which have been overwrapped with cargo liner joint sealing tape (BMS 5-146).

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G02361	Tape - Cargo Lining Joint Seal	BMS5-146

D. Prepare for the Repair

SUBTASK 21-20-02-840-097

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-098

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-840-099

(3) If necessary, remove the air conditioning duct.

E. Repair the Insulated Duct

SUBTASK 21-20-02-840-100

(1) Do these steps to remove loose tape and unwanted adhesive from the repair area:

(a) Carefully remove loose tape from the repair area.

WARNING

DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE. OBEY THE MATERIAL SAFETY DATA SHEETS (MSDS) FOR SOLVENTS. OBEY LOCAL REGULATIONS FOR THE CORRECT PROCEDURES TO USE OR DISCARD SOLVENTS. SOLVENTS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(b) Use the Series 91 solvent, B01011 and a wiping cloth to clean the repair area.

SUBTASK 21-20-02-840-101

(2) Install a minimum 2.0 inch (50.8 mm) wide patch of the tape, G02361 to completely cover the damaged area of the insulation (Figure 804).

(a) Make sure the tape has an overlap of all the edges of the damaged area by a minimum of 0.50 inch (12.7 mm).

SUBTASK 21-20-02-840-102

(3) If necessary, install the air conditioning duct.

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F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-103

(1) Replace the panels or other airplane structure removed to gain access to the duct.

——— END OF TASK ———

TASK 21-20-02-330-815

16. Insulation and Covering Replacement - Fiberglass Insulated Duct

(Figure 803)

A. General

(1) This procedure has instructions to repair those air conditioning ducts insulated with Fiberglass Insulation (BMS 8-48) and a flame-resistant covering (BMS 8-142) which have been overwrapped with cargo liner joint sealing tape (BMS 5-146).

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I

D. Prepare for the Repair

SUBTASK 21-20-02-840-104

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-105

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-840-106

(3) Remove the damaged air conditioning duct.

SUBTASK 21-20-02-840-107

(4) Install a new air conditioning duct insulated with foam insulation, G02470 (Figure 803).

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-108

(1) Replace the panels or other airplane structure removed to gain access to the duct.

——— END OF TASK ———

TASK 21-20-02-330-816

17. External Patch - Reinforced Thermoplastic Laminate Duct

(Figure 805)

A. General

(1) This procedure gives instructions for the repair of a puncture, crack or cut in a Reinforced Thermoplastic Laminate air conditioning duct with an external patch.

(2) An external patch is applicable when the cut or the crack is less than 0.25 inches (6.35 mm) wide and is less than 3.0 inches (76.2 mm) long.

(3) An external patch is applicable when the puncture is less than 0.25 inches (6.35 mm) diameter.

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B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00062	Solvent - Acetone (99.5% Grade)	ASTM D 329 (Supersedes O-A-51)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G00316	Fabric - Woven Glass Reinforcements For Laminating Plastics	BMS9-3
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

D. Prepare for the Repair

SUBTASK 21-20-02-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-010-008

(2) Gain access to the damaged air conditioning duct joint.

SUBTASK 21-20-02-010-009

(3) If insulation is installed on the duct, then remove the insulation.

SUBTASK 21-20-02-120-003

(4) Do these steps to prepare the damaged area of the duct.

(a) Use sandpaper on the damaged area to remove the gloss from the finish of the duct.

(b) Use the solvent, B00062 and a cotton wiper, G00034 to clean the duct joint area.

(c) Make sure fibers from the damaged area of the duct do not extend more than 0.125 inches (3.175 mm) into the inside of the duct.

SUBTASK 21-20-02-340-090

(5) Do these steps to prepare the materials for the duct repair:

(a) Cut sufficient pieces of the Fiberglass fabric, G00316 to equal the number of plies of the damaged duct. Cut the Fiberglass fabric, G00316 pieces 0.50 inches (12.7 mm) larger on all sides than the damage. Round the corners of the pieces of the Fiberglass fabric.

(b) Prepare the Fiberglass duct repair resin, G50400.

E. Repair the Air Conditioning Duct

SUBTASK 21-20-02-340-091

(1) Apply a thin, smooth layer of the resin, G50400 to the duct where the Fiberglass fabric will be applied. Make sure the area of the resin is a minimum of the size and shape of the Fiberglass fabric pieces.

SUBTASK 21-20-02-340-092

(2) Place a piece of the Fiberglass fabric on the resin so that it extends beyond the area of damage a minimum of 1/2 inch on all sides.

SUBTASK 21-20-02-340-093

(3) Soak the Fiberglass fabric with the applicable resin.

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SUBTASK 21-20-02-340-094

(4) Put a piece of plastic sheet on the Fiberglass fabric and press lightly to remove any bubbles or any wrinkles and to remove unwanted resin.

SUBTASK 21-20-02-340-095

(5) Remove the plastic sheet from the Fiberglass fabric piece and remove any unwanted resin with a wiping cloth.

SUBTASK 21-20-02-340-096

(6) Place another piece of the Fiberglass fabric on the first piece, soak it with resin, and smooth it. Continue using the same procedure for each new ply of the fabric.

SUBTASK 21-20-02-340-097

(7) Allow the resin to cure for 24 hours at room temperature.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-410-003

(1) If insulation was removed from the duct joint, install new insulation.

SUBTASK 21-20-02-410-004

(2) Replace the panels or other airplane structure removed to gain access to the duct joint.

——— END OF TASK ———

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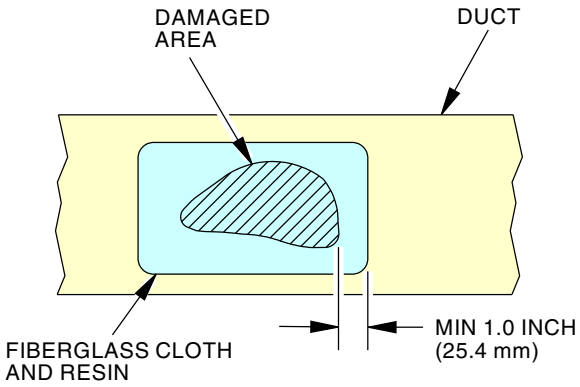
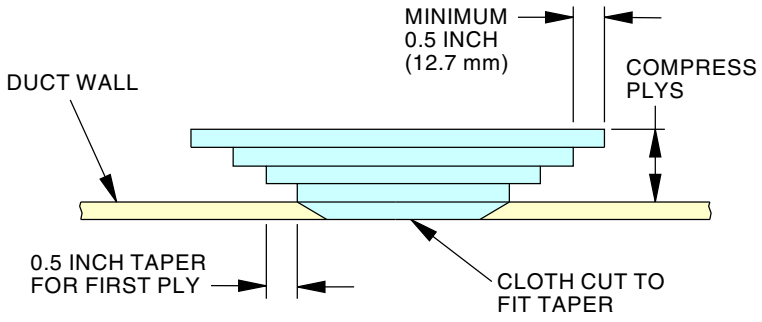


STRUCTURAL REPAIR - REINFORCED THERMOPLASTIC LAMINATE - OVERHEAD VIEW



STRUCTURAL REPAIR - REINFORCED THERMOPLASTIC LAMINATE - CROSS-SECTION VIEW

W45603 S0000123734_V3

Structural Repair - Reinforced Thermoplastic Laminate Duct
Figure 805/21-20-02-990-805

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TASK 21-20-02-330-817

18. Structural Repair - Reinforced Thermoplastic Laminate Duct

(Figure 805)

A. General

(1) This procedure gives instructions for making a structural repair to a Reinforced Thermoplastic Laminate air conditioning duct.

(2) A structural repair is applicable when the damage to the air conditioning duct is a cut or a hole that is more than 0.25 inches (6.35 mm) wide and more than 3.0 inches (76.2 mm) long but less than 5 percent of the total surface area of the duct. If the damage is more than 5 percent of the total surface area of the duct, then replace the duct section.

(3) A structural repair is applicable when the damage to the air conditioning duct is a puncture that is more than 0.25 inches (6.35 mm) in diameter.

(4) It is not permitted to overlap structural repairs to the air conditioning duct.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00062	Solvent - Acetone (99.5% Grade)	ASTM D 329 (Supersedes O-A-51)
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G00316	Fabric - Woven Glass Reinforcements For Laminating Plastics	BMS9-3
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

D. Prepare for the Repair

SUBTASK 21-20-02-010-005

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-010-006

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-010-007

(3) If insulation is installed on the duct, then remove the insulation.

SUBTASK 21-20-02-120-002

(4) Do these steps to prepare the damaged area of the duct.

(a) Cut away the damaged area to make a rounded opening with a smooth shape.

(b) Use sandpaper to prepare the surface of the duct around the opening a distance of 0.50 inches (12.7 mm) for each ply in the duct. For example, if there are 6 plies, sand 3 inches from the opening on all sides (0.50 x 6.0 = 3.0 inches)(12.7 x 152.4 = 76.2 mm).

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(c) Use sandpaper to prepare the surface of the duct an additional 0.50 inches (12.7 mm) from the repair area.

(d) Make sure fibers from the damaged area of the duct do not extend more than 0.125 inches (3.175 mm) into the inside of the duct.

(e) Use the solvent, B00062 and a cotton wiper, G00034 to clean the duct joint area.

SUBTASK 21-20-02-350-002

(5) Cut a piece of plastic sheet 2.0 to 3.0 inches (50.8 to 76.2 mm) larger on all sides than the opening. Cut a piece of cardboard or aluminum 2.0 to 3.0 inches (50.8 to 76.2 mm) larger than the opening on all sides.

SUBTASK 21-20-02-350-003

(6) Attach the plastic sheet to the inside of the opening with adhesive tape so that it covers the opening. Attach the cardboard or aluminum to the inside of the opening with adhesive tape so that it covers the opening and provides support for the plastic sheet.

SUBTASK 21-20-02-340-080

(7) Do these steps to prepare the materials for the duct repair:

(a) Cut sufficient pieces of the Fiberglass fabric, G00316 to equal the number of plies of damaged the duct. Cut an additional piece of fabric, G00316

(b) Cut the first piece of the Fiberglass fabric, G00316 pieces 0.50 inches (12.7 mm) larger on all sides than the damage. Round the corners of the pieces of the Fiberglass fabric.

(c) Cut each piece of the Fiberglass fabric, G00316 0.50 inches (12.7 mm) larger on all sides than the piece before.

(d) Prepare the Fiberglass duct repair resin, G50400.

E. Repair the Air Conditioning Duct

SUBTASK 21-20-02-340-081

(1) Apply a thin, smooth layer of resin, G50400 to the plastic sheet in the opening in the duct.

SUBTASK 21-20-02-340-082

(2) Place a piece of the Fiberglass fabric in the opening over the plastic sheet so that it covers the opening completely.

SUBTASK 21-20-02-340-083

(3) Soak the Fiberglass fabric with the applicable resin.

SUBTASK 21-20-02-340-084

(4) Put a piece of plastic sheet on the Fiberglass fabric and press lightly with a squeegee or with your hand. Smooth from the center to the edges of the Fiberglass fabric to remove bubbles or wrinkles and to remove unwanted resin.

SUBTASK 21-20-02-340-085

(5) Remove the plastic sheet from the patch and remove unwanted resin with a cotton wiper, G00034.

SUBTASK 21-20-02-340-086

(6) Place the next piece of the Fiberglass fabric on the first piece so that it covers the opening. Trim the Fiberglass fabric if necessary. Soak the Fiberglass fabric with resin and smooth it. Continue using the same procedure until the thickness of the patch equals the thickness of the duct.

SUBTASK 21-20-02-340-087

(7) Round the corners of the last piece of the Fiberglass fabric. Smooth the Fiberglass fabric to remove bubbles or winkles.

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SUBTASK 21-20-02-340-088

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

(8) Wipe the duct around the patch with a cotton wiper, G00034 and Series 91 solvent, B01011 to remove unwanted resin.

SUBTASK 21-20-02-340-089

(9) Allow the resin to cure for 24 hours at room temperature.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-410-001

(1) If insulation was removed from the duct joint, install new insulation.

SUBTASK 21-20-02-410-002

(2) Replace the panels or other airplane structure removed to gain access to the duct joint.

——— END OF TASK ———

TASK 21-20-02-330-818

19. Duct End Repair - Reinforced Thermoplastic Laminate Duct

(Figure 805)

A. General

(1) This procedure gives instructions for making a repair to the end of a Reinforced Thermoplastic Laminate air conditioning duct.

(2) A duct end repair replaces a full section of a damaged duct. A repair section to a duct end can not extend more than 4.0 inches (101.6 mm) from the end of the duct.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00062	Solvent - Acetone (99.5% Grade)	ASTM D 329 (Supersedes O-A-51)
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding - Series 91	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G00316	Fabric - Woven Glass Reinforcements For Laminating Plastics	BMS9-3
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

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D. Prepare for the Repair

SUBTASK 21-20-02-040-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-010-001

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-010-002

(3) If insulation is installed on the duct, then remove the insulation.

SUBTASK 21-20-02-120-001

(4) Do these steps to prepare the damaged area of the duct.

(a) Remove the damaged area of the duct end.

(b) Cut the duct end straight and perpendicular to the circumference of the duct.

(c) Use sandpaper to taper the surface of the duct around the opening a distance of 0.50 inches (12.7 mm).

(d) Use sandpaper to prepare the surface of the duct a distance of 0.50 inches (12.7 mm) for each ply in the duct. For example, if there are 6 plies, sand 3 inches from the duct end on all sides (0.50 x 6.0 = 3.0 inches)(12.7 x 152.4 = 76.2 mm).

(e) Use sandpaper to remove the gloss of the duct finish an additional of 0.50 inches (12.7 mm) from the repair area.

(f) Make sure that fibers from the cut end of the duct do not extend more than 0.125 inches (3.175 mm) into the inner surface of the duct.

(g) Use the solvent, B00062 and a cotton wiper, G00034 to clean the duct joint area.

SUBTASK 21-20-02-350-001

(5) Do these steps to prepare a parting surface to hold the new duct section:

(a) Get a cardboard tube of an equal diameter to the damaged duct. Make sure that the cardboard tube is of a sufficient length to give support to the new duct suction.

(b) Cut a piece of a plastic sheet of a sufficient size to cover the cardboard tube.

(c) Attach the plastic sheet to the outer surface of the cardboard tube with adhesive tape.

SUBTASK 21-20-02-340-070

(6) Do these steps to prepare the materials for the duct repair:

(a) Do the steps that follow to cut the pieces of the Fiberglass fabric, G00316 to the correct size:

1) Cut the same number pieces of the Fiberglass fabric, G00316 as the number of plies of the damaged duct. Cut an additional piece of fabric, G00316

2) Cut the pieces of the Fiberglass fabric, G00316 to a length sufficient to go around the circumference of the duct, plus 0.50 inches (12.7 mm) to make an overlap.

3) Cut each piece of the Fiberglass fabric, G00316 0.50 inches (12.7 mm) wider than the piece before.

4) Round the corners of the last piece of the Fiberglass fabric.

(b) Prepare the Fiberglass duct repair resin, G50400.

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E. Repair the Air Conditioning Duct

SUBTASK 21-20-02-340-071

(1) Apply a thin, smooth layer of resin, G50400 to the plastic sheet in the opening in the duct.

SUBTASK 21-20-02-340-072

(2) Place a piece of the Fiberglass fabric in the opening over the plastic sheet so that it covers the opening completely.

SUBTASK 21-20-02-340-073

(3) Soak the Fiberglass fabric with the applicable resin.

SUBTASK 21-20-02-340-074

(4) Put a piece of plastic sheet on the Fiberglass fabric and press lightly with a squeegee or with your hand. Smooth from the center to the edges of the Fiberglass fabric to remove bubbles or wrinkles and to remove unwanted resin.

SUBTASK 21-20-02-340-075

(5) Remove the plastic sheet from the patch and remove unwanted resin with a cotton wiper, G00034.

SUBTASK 21-20-02-340-076

(6) Place the next piece of the Fiberglass fabric on the first piece so that it covers the opening. Trim the Fiberglass fabric if necessary. Soak the Fiberglass fabric with resin and smooth it. Continue using the same procedure to apply each new ply of fabric.

SUBTASK 21-20-02-340-077

(7) Place the last piece of the Fiberglass fabric on top of the patch so it extends beyond the damage a minimum of 2.0 inches (50.8 mm) on all sides. Smooth the Fiberglass fabric to remove bubbles or winkles.

SUBTASK 21-20-02-340-078

WARNING

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

(8) Wipe the duct around the patch with a cotton wiper, G00034 and Series 91 solvent, B01011 to remove unwanted resin.

SUBTASK 21-20-02-340-079

(9) Allow the resin to cure for 24 hours at room temperature.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-010-003

(1) If insulation was removed from the duct joint, install new insulation.

SUBTASK 21-20-02-010-004

(2) Replace the panels or other airplane structure removed to gain access to the duct joint.

END OF TASK

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MAIN AIR DISTRIBUTION DUCT ICE SCREEN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the mix bay ice screens

(2) An installation of the mix bay ice screens

(3) A removal of the mix manifold ice screen

(4) An installation of the mix manifold ice screen.

B. There are eight ice screens installed in the ducts behind the Station 998 end wall liner at the aft end of the forward cargo compartment.

C. There is an ice screen installed in the mix manifold which is behind the Station 998 end wall liner at the aft end of the forward cargo compartment.

TASK 21-20-03-000-807-002

2. Mix Bay Ice Screen Removal

(Figure 401)

A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-20-03-860-024-002

(1) Do these steps to make sure there is no air supplied to the mix manifold:

(a) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

NOTE: Do not use a ground conditioned air source to supply conditioned air to the airplane.

(b) Make sure the LOWER and UPPER RECIRC FANS switches are set to the OFF position.

NOTE: The LOWER and UPPER RECIRC FANS switches are on the Air Conditioning Module in the pilot's overhead panel, P5.

SUBTASK 21-20-03-010-010-002

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-20-03-860-025-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-20-03-010-011-002

(4) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-20-03-010-012-002

(5) Remove the Station 998 end wall liner at the aft end of the forward cargo compartment, do this task: Forward Cargo Compartment Aft End Wall Removal, TASK 25-52-17-000-801.

E. Mix Bay Ice Screen Removal

SUBTASK 21-20-03-020-024-002

(1) Do these steps to remove the duct:

NOTE: You can remove the forward ducts to get access to the aft ducts.

(a) Remove the coupling [6] and the sleeve [7].

(b) To remove the 9 inch straight duct, do these steps:

1) Remove the clamps [3].

2) Move the sleeves [2] away from the duct.

(c) To remove the 7 inch tapered duct, do these steps:

1) Remove the clamps [3] and the clamps [4].

2) Move the sleeves [2] and the sleeve [5] away from the duct.

(d) Remove the duct.

SUBTASK 21-20-03-020-025-002

(2) Do these steps to remove the ice screen:

(a) Remove the strap [1] and the tape from the duct insulation.

NOTE: Make a note of the location of the tape for use during the installation.

(b) Remove the insulation from the duct.

NOTE: If the insulation is not damaged, then you can keep it for the installation.

(c) Remove the nuts [8], the bolts [10], and the washers [9].

(d) If you removed the 9 inch straight duct, then remove the ice screen [11] from the duct.

(e) If you removed the 7 inch tapered duct, then remove the ice screen [12] from the duct.

——— END OF TASK ———

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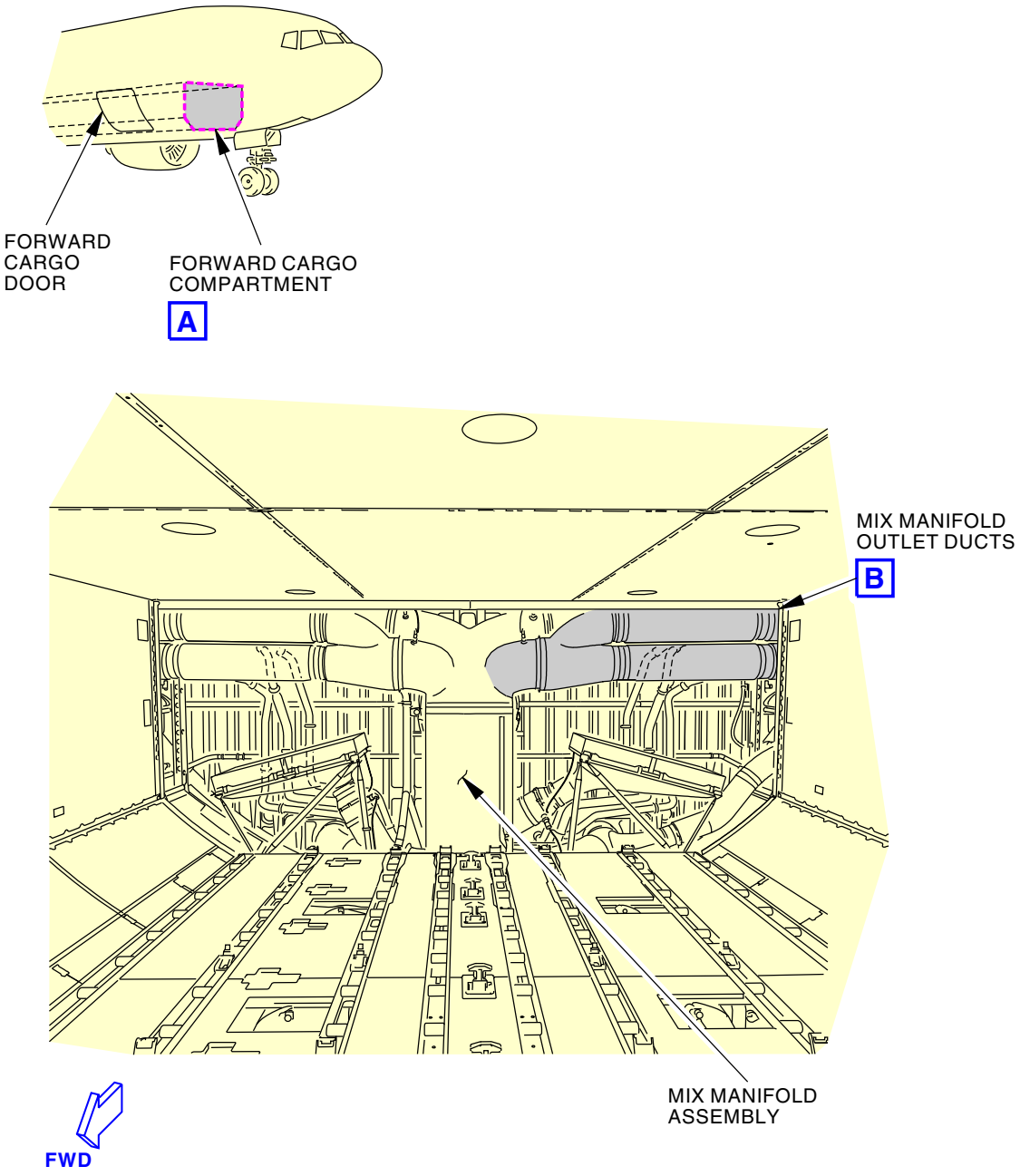

FORWARD CARGO COMPARTMENT
(THE STATION 998 END WALL LINER IS NOT SHOWN)

A

L26690 S0006403026_V2

Mix Bay Ice Screen Installation
Figure 401/21-20-03-990-807-002 (Sheet 1 of 3)

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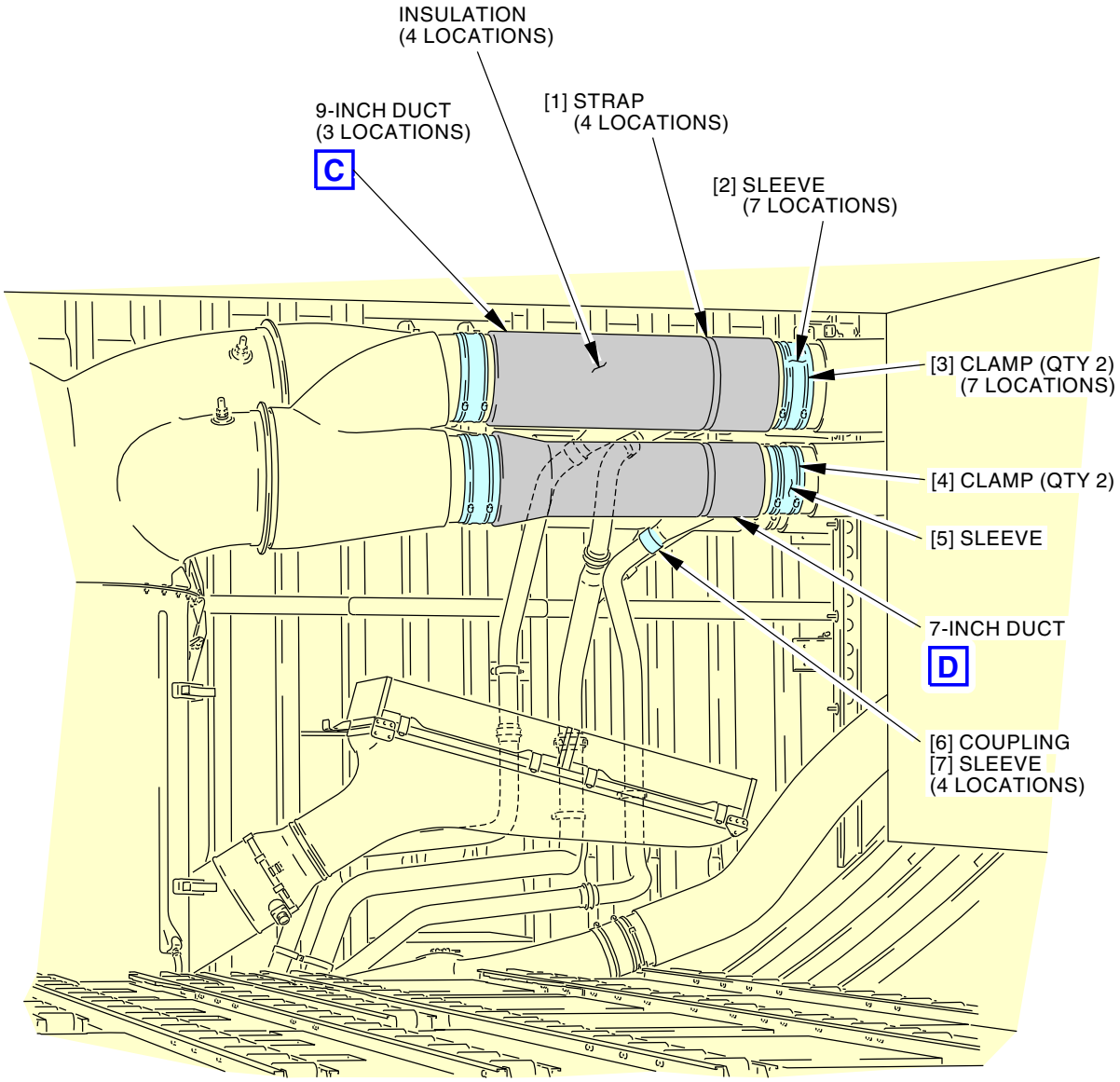

MIX MANIFOLD OUTLET DUCTS
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

B

L26692 S0006403027_V2

Mix Bay Ice Screen Installation
Figure 401/21-20-03-990-807-002 (Sheet 2 of 3)

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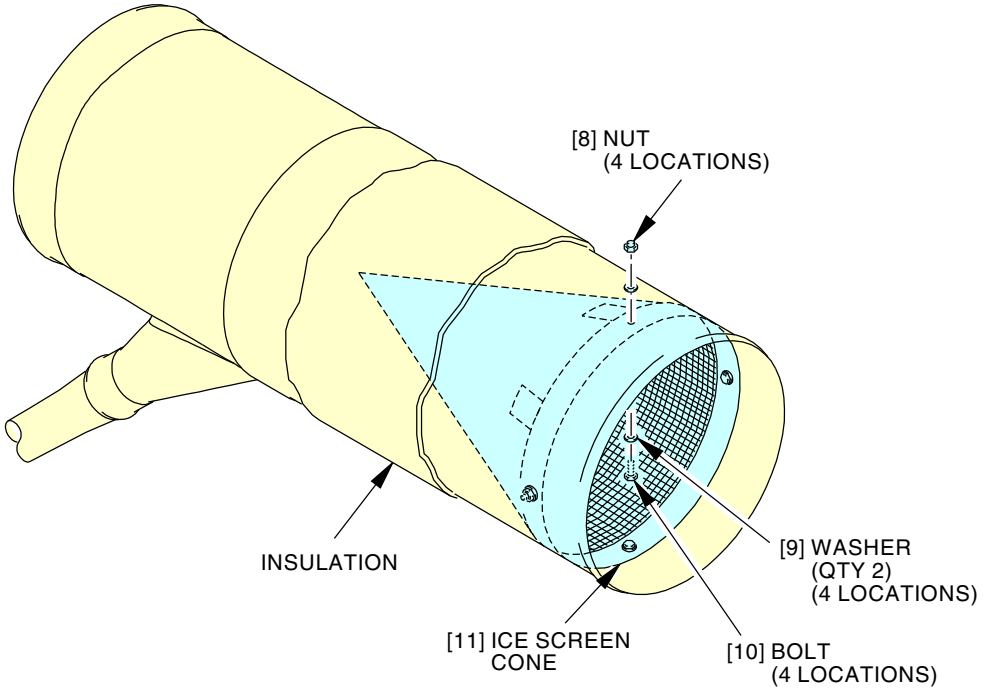
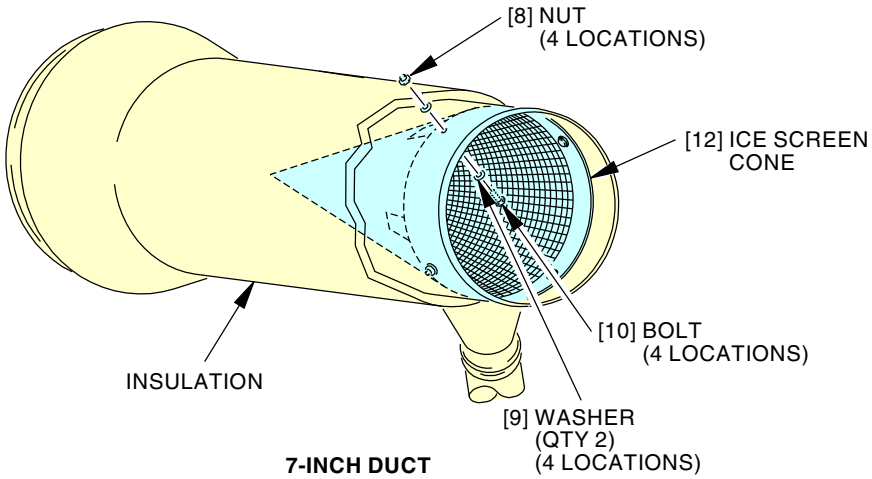


9-INCH DUCT
(ICE SCREEN INSTALLATION)
(EXAMPLE)

C



7-INCH DUCT
(ICE SCREEN INSTALLATION)
(EXAMPLE)

D

L26699 S0006403028_V2

Mix Bay Ice Screen Installation
Figure 401/21-20-03-990-807-002 (Sheet 3 of 3)

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TASK 21-20-03-400-806-002

3. Mix Bay Ice Screen Installation

(Figure 401)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
11	Screen	21-52-51-08-140	ARO ALL
12	Screen	21-52-51-08-110	ARO ALL

C. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Mix Bay Ice Screen Installation

SUBTASK 21-20-03-420-010-002

(1) Do these steps to install the ice screen:

(a) If you removed the 9 inch straight duct, then put the ice screen [11] into the duct.

(b) If you removed the 7 inch tapered duct, then put the ice screen [12] into the duct.

(c) Install the nuts [8], the bolts [10], and the washers [9] that hold the ice screen to the duct.

(d) Install the insulation onto the duct.

(e) Install a new strap [1] over the insulation and the tape.

SUBTASK 21-20-03-420-011-002

(2) Do these steps to install the duct:

NOTE: Install the aft ducts before installing the forward ducts.

(a) Put the duct into its position.

(b) To install the 9 inch straight duct, do these steps:

1) Move the sleeves [2] onto the duct.

2) Loosely install the clamps [3].

3) Install the sleeve [7] and the coupling [6].

4) Tighten the couplings [6] 12 to 16 pound-inches (1.36 to 1.80 newton-meters).

5) Tighten the clamps [3] 13 to 18 pound-inches (1.47-2.03 newton-meters).

(c) To install the 7 inch tapered duct, do these steps:

1) Move the sleeves [2] and the sleeve [5] onto the duct.

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2) Loosely install the clamps [3] and the clamps [4].

3) Install the sleeve [7] and the coupling [6].

4) Tighten the couplings [6] 12 to 16 pound-inches (1.36 to 1.80 newton-meters).

5) Tighten the clamps [3] and the clamps [4] 13 to 18 pound-inches (1.47 to 2.03 newton-meters).

F. Mix Bay Ice Screen Installation Test

SUBTASK 21-20-03-860-026-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-20-03-860-027-002

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

SUBTASK 21-20-03-860-028-002

(3) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-20-03-790-006-002

(4) Feel for leaks around the duct assembly connections.

(a) If you find a leak you must repair it.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-03-410-014-002

(1) To install the Station 998 end wall liner, do this task: Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801.

SUBTASK 21-20-03-410-015-002

(2) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

SUBTASK 21-20-03-410-016-002

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-20-03-000-808-002

4. Mix Manifold Ice Screen Removal

(Figure 402)

A. References

Reference	Title
21-20-04-000-801	Mix Manifold Removal (P/B 401)

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B. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right

C. Prepare for the Removal

SUBTASK 21-20-03-860-029-002

(1) Remove the mix manifold. To remove the mix manifold, do this task: Mix Manifold Removal, TASK 21-20-04-000-801.

D. Mix Manifold Ice Screen Removal

SUBTASK 21-20-03-020-056-002

(1) Remove the sealant that is applied to the heads of the screws [35], at 2 locations, in the point of the connection stiffener [39] and mix manifold.

SUBTASK 21-20-03-020-028-002

(2) Do the steps that follow to remove the ice screen:

(a) Remove the screw [35] and washer [33], at 2 locations, which attach the stiffener [39] to the mix manifold.

(b) Remove the screw [35] and washer [33], at 2 locations, which attach the stiffener [39] to the ice screen [31] and doubler plate [40].

(c) Remove the screw [41] and washer [33] at 1 location, which attaches the stiffener [39], the stiffener doubler plate [40], ice screen [31] and the ice screen doubler plate [42].

(d) Remove the stiffener [39] and the doubler plate [40] from the mix manifold.

(e) Remove the screw [35] and washer [33], at 6 locations, which attach the ice screen [31] to the two doubler plates [42] and to the mix manifold.

(f) Remove the ice screen [31] from between the doubler plates [42].

NOTE: It is permitted to operate the air conditioning system without the ice screen installed.

——— END OF TASK ———

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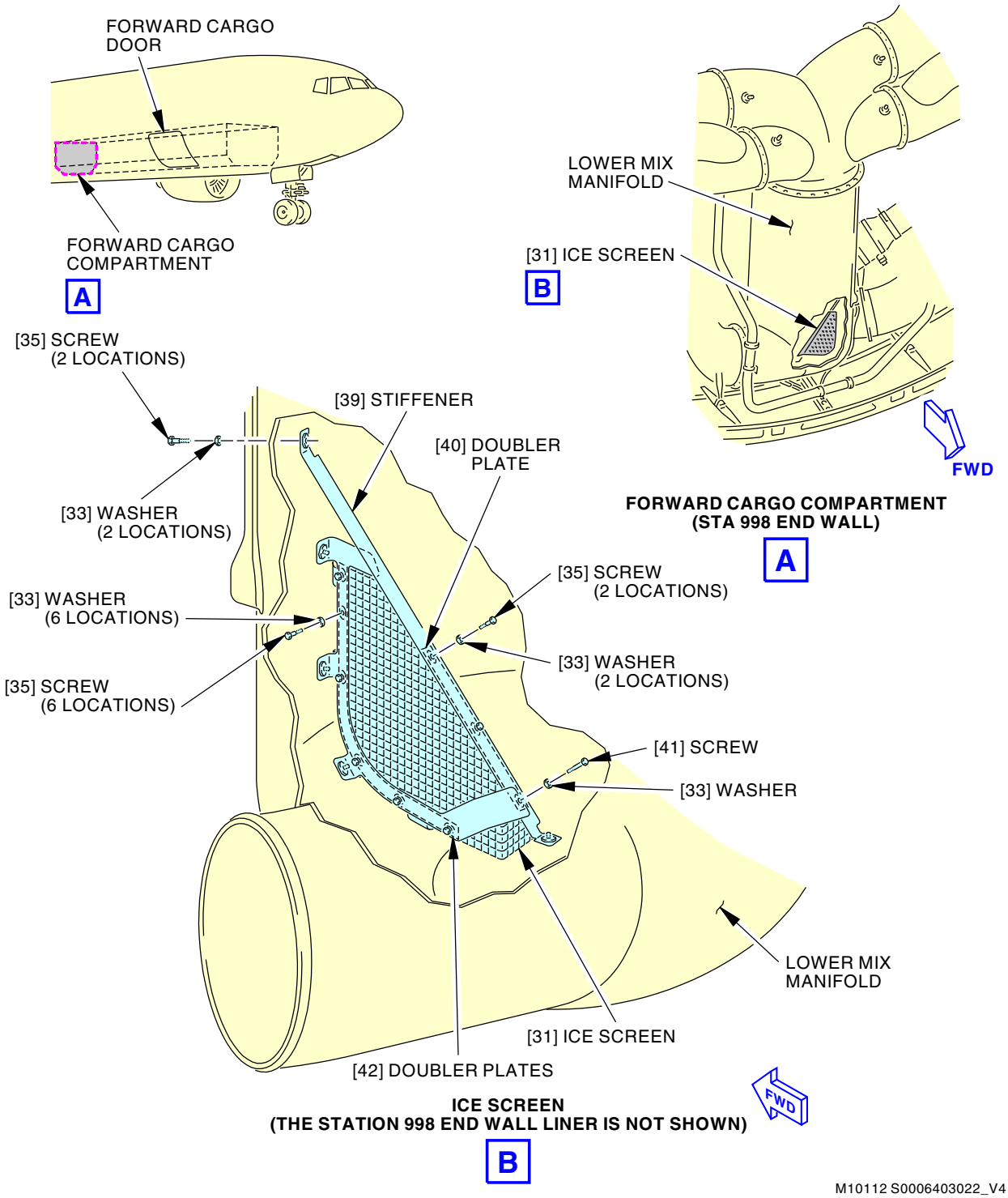

Mix Manifold Ice Screen Installation
Figure 402/21-20-03-990-808-002

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TASK 21-20-03-400-807-002

5. Mix Manifold Ice Screen Installation

(Figure 402)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-20-04-400-801	Mix Manifold Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

C. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Mix Bay Ice Screen Installation

SUBTASK 21-20-03-420-021-002

(1) Do the steps that follow to install the ice screen [31]:

(a) Put ice screen [31] between the two doubler plates [42].

(b) Install the screw [35] and washer [33], at 6 locations, which attach the ice screen [31] to the doubler plates [42] and to the mix manifold.

SUBTASK 21-20-03-420-022-002

(2) Install the stiffener [39] and doubler plate [40]:

(a) Put the stiffener [39] and the doubler plate [40] in their position in the mix manifold.

(b) Install the screw [41] and washer [33] at 1 location, which attaches the stiffener [39], the stiffener doubler plate [40], ice screen [31] and the ice screen doubler plate [42].

(c) Install the screw [35] and washer [33], at 2 locations, which attach the stiffener [39] to the ice screen [31] and doubler plate [40].

(d) Install the screw [35] and washer [33] at 2 locations, which attach the stiffener [39] to the mix manifold.

SUBTASK 21-20-03-390-001-002

(3) Apply a layer of the sealant, A00247 to the heads of the screws [35], washers [33] and mix manifold at 2 locations, which attach the stiffener [39] to the mix manifold to make an air tight seal.

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SUBTASK 21-20-03-020-032-002

(4) Install the mix manifold. To install the mix manifold, do this task: Mix Manifold Installation, TASK 21-20-04-400-801.

F. Mix Manifold Ice Screen Installation Test

SUBTASK 21-20-03-860-030-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-20-03-860-031-002

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

SUBTASK 21-20-03-860-032-002

(3) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-20-03-790-007-002

(4) Feel for leaks around the duct assembly connections.

(a) If you find a leak you must repair it.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-03-410-017-002

(1) To install the Station 998 end wall liner, do this task: Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801.

SUBTASK 21-20-03-410-018-002

(2) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

SUBTASK 21-20-03-410-019-002

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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MAIN AIR DISTRIBUTION DUCT ICE SCREEN - CLEANING/PAINTING

1. General

A. This procedure contains this task:

(1) Main Air Distribution Duct Ice Screen Cleaning.

B. There are eight ice screens installed behind the Station 998 end wall liner at the aft end of the forward cargo compartment.

TASK 21-20-03-000-801

2. Main Air Distribution Duct Ice Screen Cleaning

A. References

Reference	Title
21-20-03-000-807-002	Mix Bay Ice Screen Removal (P/B 401)
21-20-03-400-806-002	Mix Bay Ice Screen Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00157	Cleaner - Detergent - Spraywhite E	

C. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right

D. Prepare for Cleaning the Ice Screen

SUBTASK 21-20-03-020-001

(1) Remove the ice screen:

(a) To remove a mix bay ice screen, do this task: Mix Bay Ice Screen Removal, TASK 21-20-03-000-807-002.

E. Clean the Ice Screen

SUBTASK 21-20-03-140-001

(1) Do these steps to clean the ice screen:

(a) Remove all dust and unwanted material from the ice screen.

(b) Use a brush to wash the ice screen in a mixture of one part Spraywhite E cleaner, B00157 and ten parts water or equivalent mild detergent.

(c) Flush the ice screen with clean water.

WARNING USE AIR PRESSURE OF 25 PSIG OR LESS TO CLEAN AND DRY THE ICE SCREEN. DO NOT POINT THE AIRFLOW TOWARD YOURSELF OR OTHER PERSONS. YOU CAN BE INJURED BY FLYING PARTICLES.

(d) Blow dry, filtered, compressed air through the ice screen to remove any contamination.

(e) Dry the ice screen with the compressed air.

F. Restore the Airplane to Its Usual Condition

SUBTASK 21-20-03-420-001

(1) Reinstall the ice screen:

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(a) To install a mix bay ice screen, do this task: Mix Bay Ice Screen Installation, TASK 21-20-03-400-806-002.

——— END OF TASK ———

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MIX MANIFOLD - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the mix manifold

(2) An installation of the mix manifold.

B. The mix manifold is installed behind the Station 998 end wall liner at the aft end of the forward cargo compartment.

TASK 21-20-04-000-801

2. Mix Manifold Removal

(Figure 401)

A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-20-04-860-001

(1) Do these steps to make sure there is no air supplied to the mix manifold:

(a) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

NOTE: Do not use a ground conditioned air source to supply conditioned air to the airplane.

(b) Make sure the LOWER and UPPER RECIRC FANS switches are set to the OFF position.

NOTE: The LOWER and UPPER RECIRC FANS switches are on the Air Conditioning Module in the pilot's overhead panel, P5.

SUBTASK 21-20-04-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-20-04-860-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-20-04-010-002

(4) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-20-04-010-003

(5) Remove the Station 998 end wall liner at the aft end of the forward cargo compartment (TASK 25-52-17-000-801).

E. Mix Manifold Removal

SUBTASK 21-20-04-020-037

(1) Disconnect the electrical connector DB21252 from the RIGHT LWR RECIRC FAN.

SUBTASK 21-20-04-020-002

(2) Do these steps to disconnect the electrical connectors from the upper mix manifold [3]:

(a) Make a note of the location of the 4 electrical connectors for use during the installation.

(b) Disconnect the electrical connectors from the upper mix manifold [3].

NOTE: It is not necessary to remove the temperature sensors from the upper mix manifold [3].

(c) Temporarily attach the electrical connectors and wire bundles to the airplane structure above the mix manifold.

SUBTASK 21-20-04-020-003

(3) Do these steps to remove the left forward outlet duct [2] and the right forward outlet duct [1] from the upper mix manifold [3]:

(a) To remove the left forward outlet duct [2] do the steps that follow:

1) Remove the clamps [16] and sleeves [15].

2) Remove the bolts [17], washers [18], and nuts [19].

3) Remove the left forward outlet duct [2] and gasket [14].

(b) To remove the right forward outlet duct [1] do the steps that follow:

1) Remove the clamps [16] and sleeves [15].

2) Remove the bolts [17], washers [18], and nuts [19].

3) Remove the right forward outlet duct [1] and the gasket [14].

SUBTASK 21-20-04-020-005

(4) Do the applicable step that follows to disconnect the aft outlet ducts from the upper mix manifold [3]:

(a) If the ducts are connected with clamps, do this step:

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1) Remove the clamps [20] and the sleeves [21].

(b) If the ducts are connected with fasteners, do this step:

1) Remove the bolts [17], washers [18], and nuts [19].

SUBTASK 21-20-04-020-006

(5) Do the steps that follow to disconnect the recirculation fan from the lower mix manifold [11]:

(a) Remove the coupling [7].

(b) Move the sleeve [8] to the recirculation fan.

SUBTASK 21-20-04-020-009

(6) Do the applicable steps that follow to disconnect the left inlet duct [22] from the lower mix manifold [11]:

(a) If the ducts are connected with sleeves, do the step that follows:

1) Remove the clamps [28] and the sleeve [27].

(b) If the ducts are connected with fasteners, do the steps that follow:

1) Remove the bolts [25], washers [18], and nuts [19].

2) Remove the gasket [26].

SUBTASK 21-20-04-020-010

(7) Do the applicable steps that follow to disconnect the right inlet duct [30] from the lower mix manifold [11]:

(a) If the ducts are connected with sleeves, do the steps that follow:

1) Remove the clamps [38] and the sleeve [37].

(b) If the ducts are connected with fasteners, do the steps that follow:

1) Remove the bolts [31], washers [18], and nuts [19].

2) Remove the gasket [32].

SUBTASK 21-20-04-020-015

(8) Remove the clamps [23], clamps [45], and the sleeve [24] which connect the left inlet duct [22] and right inlet duct [30] to the front spar adapter.

NOTE: clamps [23] and clamps [45] are connected end to end and can be removed as one clamp at each location.

SUBTASK 21-20-04-020-016

(9) Remove the bolts [39], washers [18], and nuts [19] which attach the mix manifold to the brackets of the mix manifold support assembly.

NOTE: Make a note of the position of the mix manifold. It is necessary to put the manifold in the same position for the installation.

SUBTASK 21-20-04-020-017

(10) Do the steps that follow to remove the drain hoses from the lower mix manifold [11]:

NOTE: You can move the mix manifold forward as necessary to get access to the hoses.

(a) Remove the straps [44].

(b) Disconnect the drain hoses from the mix manifold.

NOTE: Make a note of the hose locations for the installation.

(c) Move the drain hoses out of the clamps on the mix manifold.

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SUBTASK 21-20-04-020-018

(11) To remove the upper mix manifold [3], do the steps that follow:

(a) Remove the bolts [40], washers [18], and nuts [19] which attach the upper mix manifold [3] to the lower mix manifold [11].

NOTE: Make a note of the bolts [40] location for the installation.

(b) Remove the bolts [40], washers [18] which attach the upper mix manifold [3] to the lower mix manifold [11].

(c) Carefully turn the lower mix manifold [11] forward as you turn upper mix manifold [3] aft to remove the upper mix manifold [3].

SUBTASK 21-20-04-020-019

(12) Carefully lift the lower mix manifold [11] to disengage the foot pin, while you remove it from the mix bay.

(a) Make sure that the foot pin on the bottom of the manifold is disengaged from the bearing before you move the manifold from the mix bay.

——— END OF TASK ———

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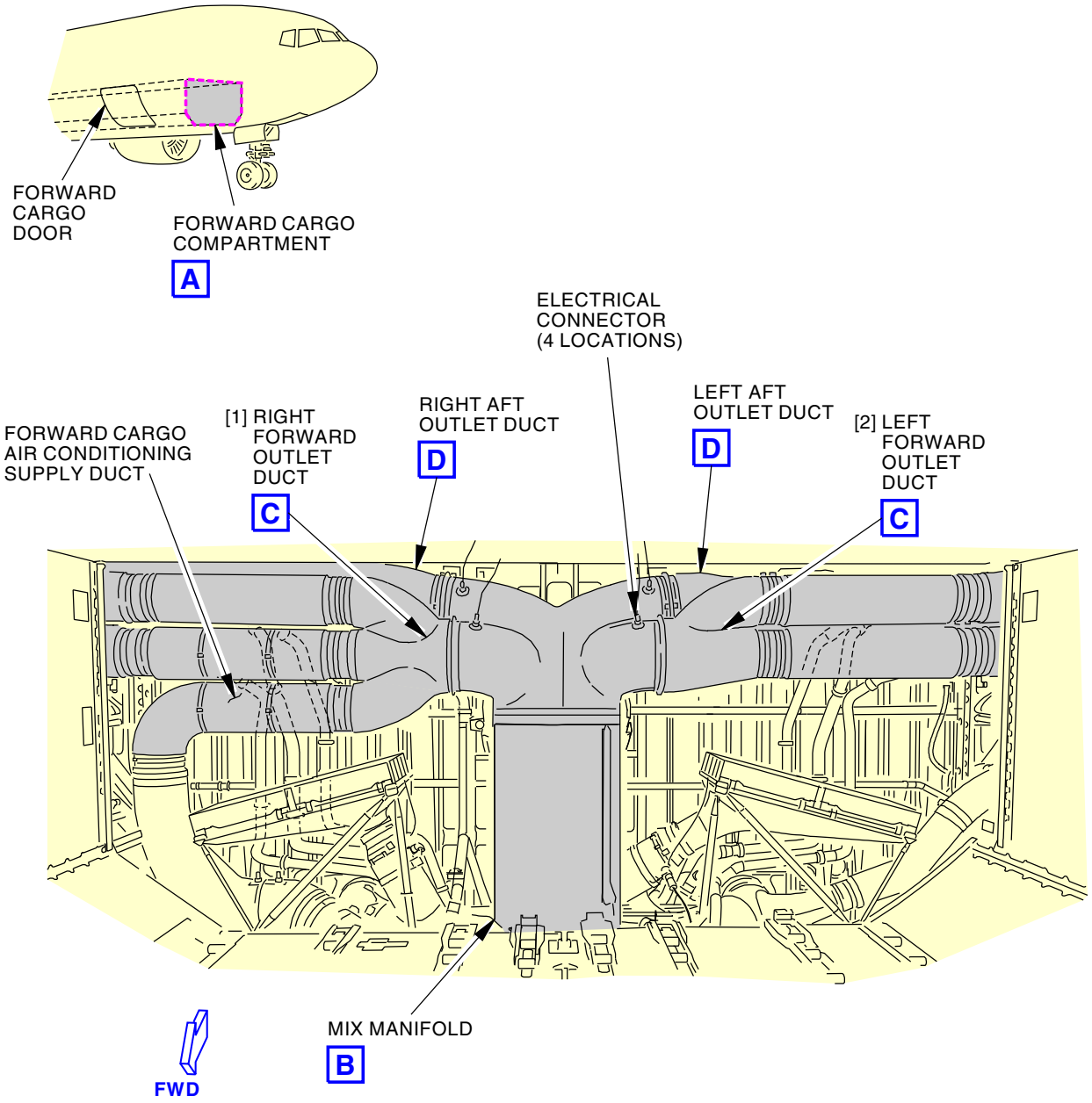

FORWARD CARGO COMPARTMENT
(THE STATION 998 END WALL LINER IS NOT SHOWN)

A

2181452 S0000480744_V2

Mix Manifold Installation
Figure 401/21-20-04-990-801 (Sheet 1 of 7)

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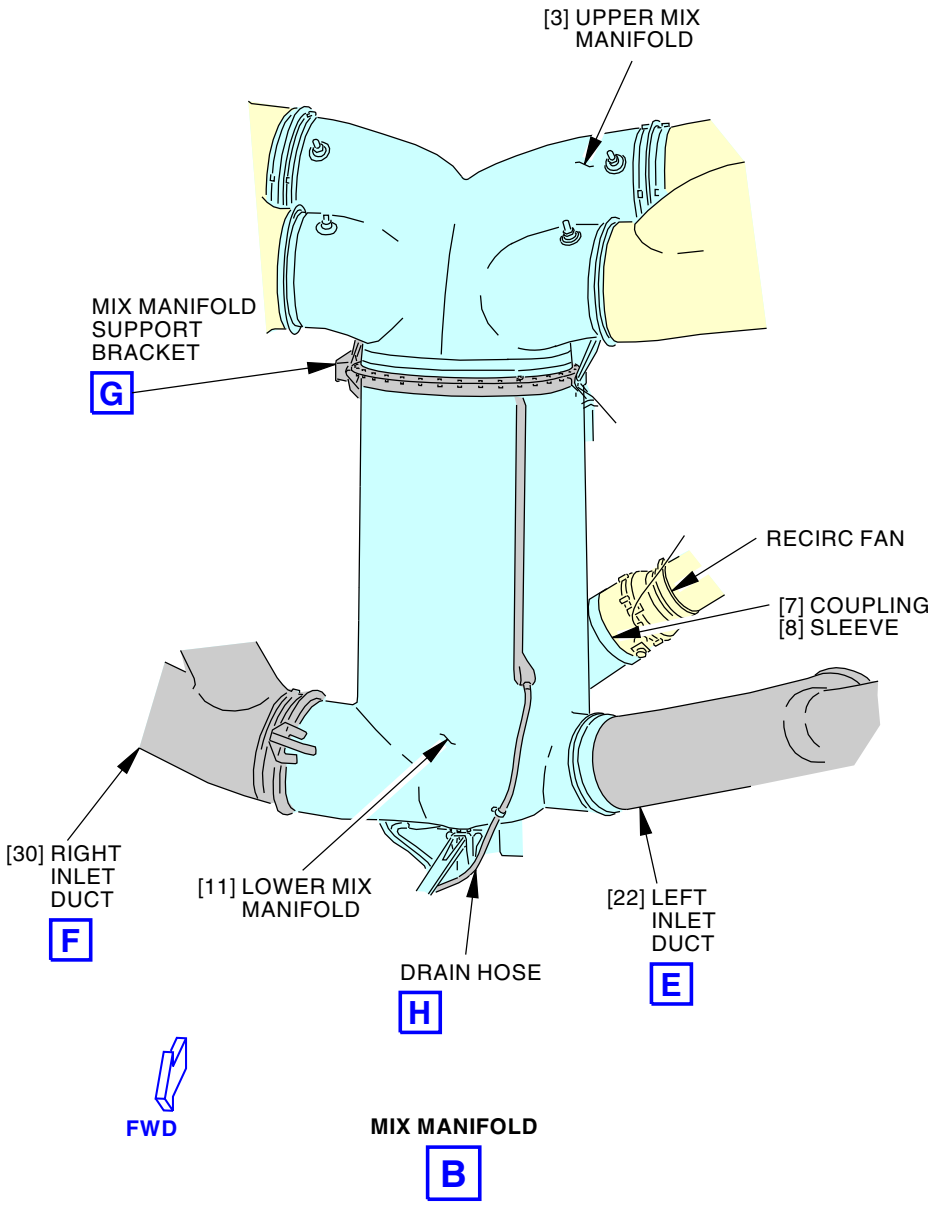

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Mix Manifold Installation
Figure 401/21-20-04-990-801 (Sheet 2 of 7)

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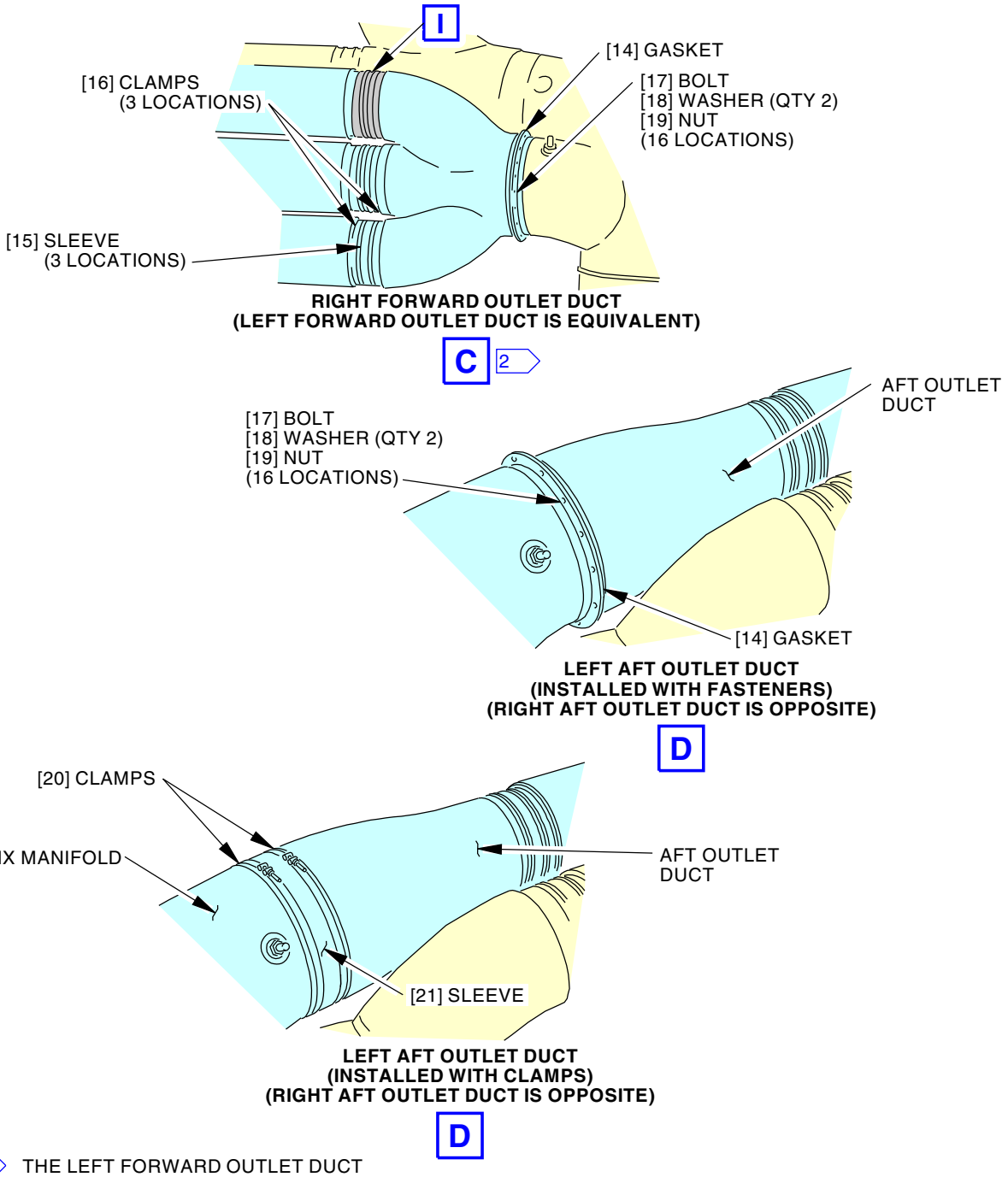

Mix Manifold Installation
Figure 401/21-20-04-990-801 (Sheet 3 of 7)

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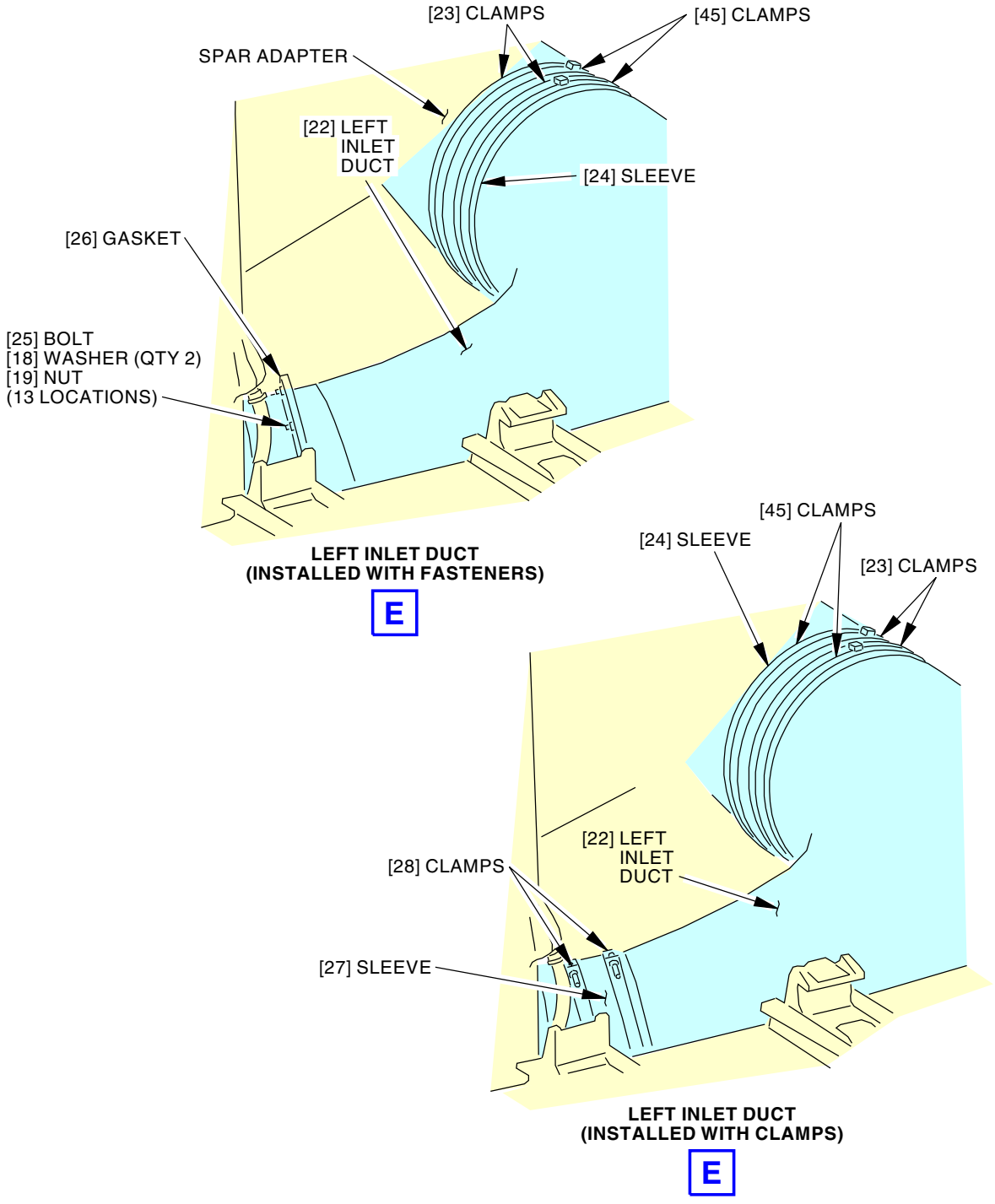

Mix Manifold Installation
Figure 401/21-20-04-990-801 (Sheet 4 of 7)

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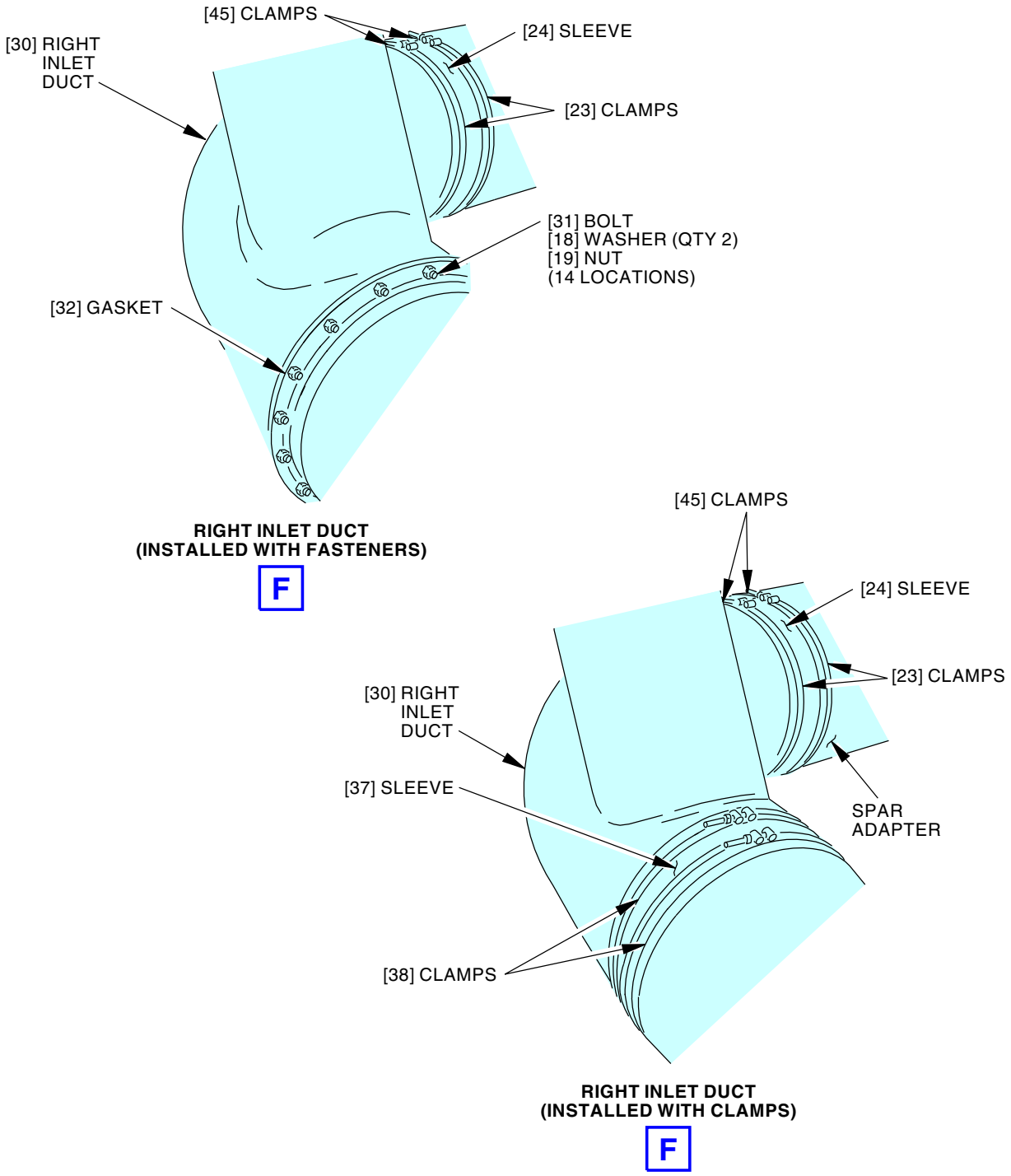

Mix Manifold Installation
Figure 401/21-20-04-990-801 (Sheet 5 of 7)

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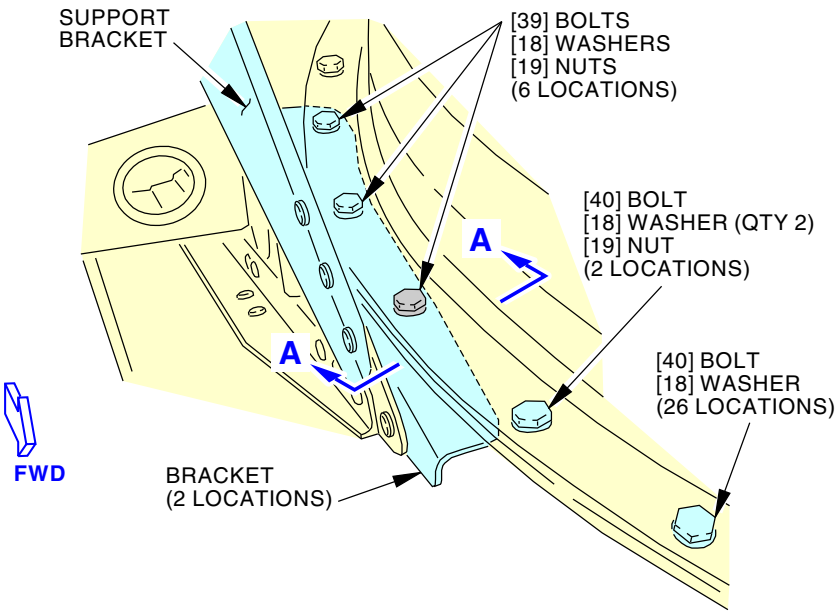
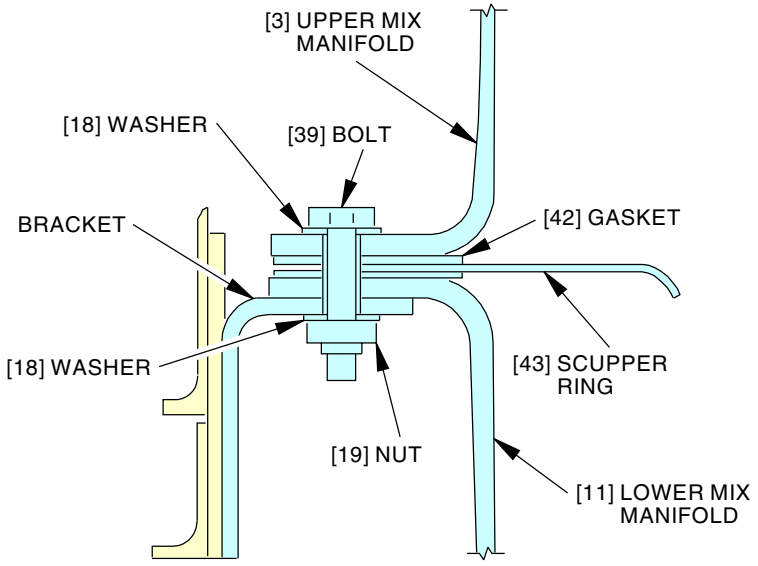


MIX MANIFOLD SUPPORT BRACKET
(RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE)

G



A-A

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Mix Manifold Installation
Figure 401/21-20-04-990-801 (Sheet 6 of 7)

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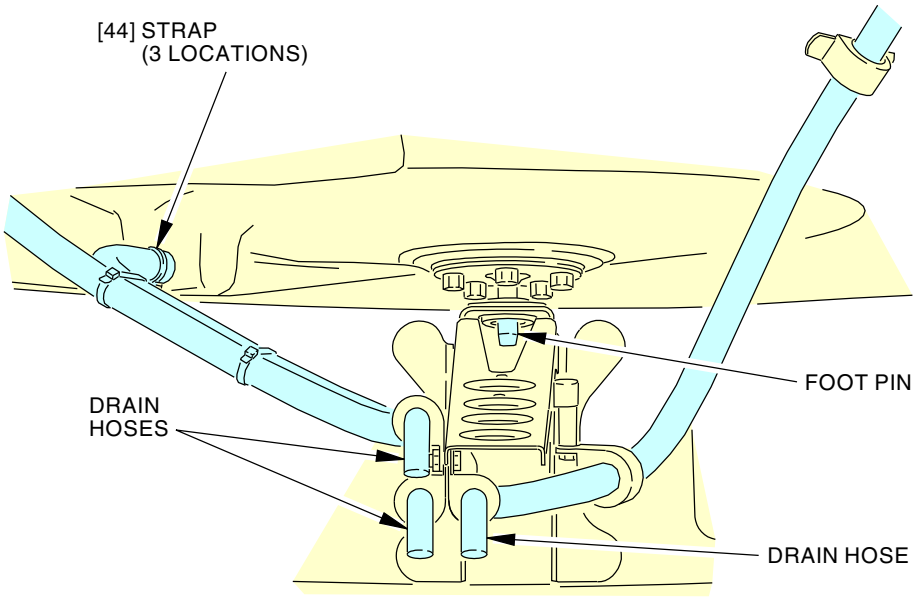

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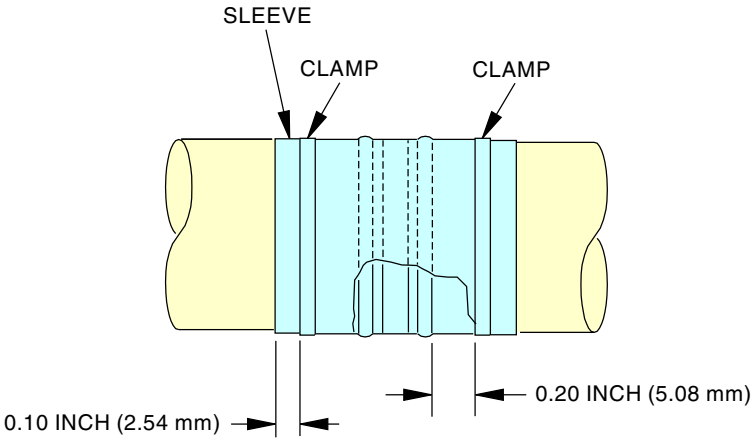

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Mix Manifold Installation
Figure 401/21-20-04-990-801 (Sheet 7 of 7)

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TASK 21-20-04-400-801

3. Mix Manifold Installation

(Figure 401)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Mix Manifold Installation

SUBTASK 21-20-04-420-001

(1) Inspect the gasket [42] on the scupper ring [43] for damage or deterioration.

(a) If the gasket [42] is damaged, replace it.

SUBTASK 21-20-04-420-002

(2) Do these steps to install the lower mix manifold [11]:

(a) Carefully put the foot pin on the bottom of the lower mix manifold [11] in the bearing on the lower manifold support.

(b) Move the lower mix manifold [11] to its position in the mix bay.

SUBTASK 21-20-04-020-020

(3) To install the upper mix manifold [3], do the steps that follow:

(a) Turn the lower mix manifold [11] forward.

(b) Put upper mix manifold [3] in its position on the lower mix manifold [11].

(c) Carefully turn the lower mix manifold [11] aft as you turn upper mix manifold [3] forward.

SUBTASK 21-20-04-020-021

(4) Do the steps that follow to install the drain hoses on the lower mix manifold [11]:

NOTE: You can move the mix manifold forward as necessary to get access to the hoses.

(a) Move the drain hoses in to the clamps on the mix manifold.

NOTE: Use the note you made of the location of the hoses.

(b) Connect the drain hoses to the mix manifold.

(c) Install the straps [44].

SUBTASK 21-20-04-420-003

(5) Do the steps that follow to attach the mix manifold to airplane structure:

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(a) Align the holes in the lower mix manifold [11] with support assembly.

NOTE: Use the note you made of the lower mix manifold [11] position. The mix manifold must be in the correct position or the ducts will not be aligned.

(b) Align the holes in the upper mix manifold [3] with holes in the lower mix manifold [11].

(c) Install the bolts [39], washers [18], and nuts [19] which attach the mix manifold to the brackets of the mix manifold support assembly.

(d) Install the bolts [40], washers [18], and nuts [19] which attach the upper mix manifold [3] to the lower mix manifold [11].

NOTE: Use the note you made of the bolts [40] location.

(e) Install the bolts [40], washers [18] which attach the upper mix manifold [3] to the lower mix manifold [11].

SUBTASK 21-20-04-420-004

(6) Do the steps that follow to install the clamps [23], clamps [45], and sleeve [24] to attach the left inlet duct [22] and right inlet duct [30] to the front spar adapter.

NOTE: The steps that follow are applicable to each inlet duct.

(a) Install the sleeve [24] on the inlet duct and the front spar adapter.

(b) Connect one each of the clamps [23] and clamps [45] end to end so that the screw threads of one clamp are fully engaged with the band of the other clamp.

NOTE: Connecting the two clamps together is done to make one larger clamp from two smaller clamps.

(c) Loosely install the clamps [23] and clamps [45] on the inlet duct and the front spar adapter.

(d) Make sure there is a 0.10 in. (2.54 mm) distance between the edge of the clamps [23] and clamps [45] and the edge of the sleeve [24] around the circumference of the sleeve.

(e) Make sure the clamps [23] and clamps [45] are not installed on the bead of the inlet duct and the front spar adapter.

(f) Alternate the tightening of each of the clamps [23] and clamps [45] to provide an even force on the sleeve [24] and duct.

(g) Tighten each of the clamps [23] and clamps [45] from 13 in-lb (1.47 N·m) to 17 in-lb (1.92 N·m).

SUBTASK 21-20-04-020-035

(7) Do the steps that follow to connect the left inlet duct [22] and right inlet duct [30] to the lower mix manifold [11].

NOTE: The steps that follow are for the left inlet duct [22] and right inlet duct [30].

(a) Install the sleeve [27], sleeve [37] on the inlet duct and the lower mix manifold [11].

(b) Loosely install the clamps [28], clamps [38] on the inlet duct and the lower mix manifold [11].

(c) Make sure there is a 0.10 in. (2.54 mm) distance between the edge of the clamps [28], clamps [38] and the edge of the sleeve [27], sleeve [37] around the circumference of the sleeve.

(d) Make sure the clamps [28], clamps [38] are not installed on the bead of the inlet duct and the lower mix manifold [11].

(e) Tighten the clamps [28], clamps [38] from 13 in-lb (1.47 N·m) to 18 in-lb (2.03 N·m).

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SUBTASK 21-20-04-020-029

(8) Do the steps that follow to connect the recirculation fan to the lower mix manifold [11]:

(a) Move the sleeve [8] to the duct ends of the recirculation fan and the mix manifold.

(b) Put the coupling [7] in its position on the sleeve [8].

(c) Tighten the coupling [7] from 45 in-lb (5.08 N·m) to 55 in-lb (6.21 N·m).

SUBTASK 21-20-04-020-030

(9) Do the applicable steps that follow to attach the left and right aft outlet ducts to the lower mix manifold [11]:

NOTE: The steps that follow are applicable to each aft outlet duct.

(a) If the ducts are connected with sleeves, do the steps that follow:

1) Install the sleeve [21] on the outlet duct and the upper mix manifold [3].

2) Loosely install the clamps [20] on the outlet duct and the upper mix manifold [3].

3) Make sure there is a 0.10 in. (2.54 mm) distance between the edge of the clamps [20] and the edge of the sleeve [21] around the circumference of the sleeve.

4) Make sure the clamps [20] are not installed on the bead of the outlet duct and the upper mix manifold [3].

5) Tighten the clamps [20] from 13 in-lb (1.47 N·m) to 18 in-lb (2.03 N·m).

(b) If the ducts are connected with fasteners, do the steps that follow:

1) Inspect the gasket [14] for damage or deterioration.

a) If the gasket [14] is damaged, replace it.

(c) Put the gasket [14] in its position between the duct and the mix manifold.

1) Install the bolts [17], washers [18], and nuts [19].

SUBTASK 21-20-04-020-031

(10) Do these steps to install the left forward outlet duct [2] and right forward outlet duct [1]:

NOTE: The steps that follow are applicable to each forward outlet duct.

(a) Inspect the gasket [14] for damage or deterioration.

1) If the gasket [14] is damaged, replace it.

(b) Put the applicable right forward outlet duct [1] or left forward outlet duct [2] and the gasket [14] in position between the duct and the mix manifold.

(c) Install the bolts [17], washers [18], and nuts [19].

(d) Install the sleeves [15] on the ducts.

(e) Loosely install the clamps [16] on the outlet ducts.

(f) Make sure there is a minimum of 0.10 in. (2.54 mm) distance between the edge of the clamps [16] and the edge of the sleeve [15] around the circumference of the sleeve [15].

(g) Make there is a 0.20 in. (5.08 mm) distance between the edge of the clamps [16] and the duct bead around the circumference of the bead.

(h) Tighten the clamps [16].

SUBTASK 21-20-04-420-005

(11) Install the electrical connectors on the upper mix manifold [3].

NOTE: Use the note you made of the location of the electrical connectors.

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SUBTASK 21-20-04-420-006

(12) Connect the electrical connector DB21252 to the RIGHT LWR RECIRC FAN.

E. Mix Manifold Installation Test

SUBTASK 21-20-04-860-003

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-20-04-860-004

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

SUBTASK 21-20-04-860-005

(3) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-20-04-790-001

(4) Feel for leaks around the duct assembly connections.

(a) If you find a leak you must repair it.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-04-410-001

(1) To install the Station 998 end wall liner, do this task: Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801.

SUBTASK 21-20-04-410-002

(2) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

SUBTASK 21-20-04-410-003

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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GROUND CONDITIONED AIR CONNECTOR AND CHECK VALVE DUCT ASSEMBLY - REMOVAL/ INSTALLATION

1. General

A. This procedure has these tasks:

(1) Ground conditioned air connector removal.

(2) Ground conditioned air connector installation.

(3) Check valve duct assembly removal.

(4) Check valve duct assembly installation.

B. Ground conditioned air is supplied to the airplane through the ground conditioned air connectors and check valve duct assemblies on the left and right cooling packs.

C. The ground conditioned air connectors and check valve duct assemblies are found forward of the Environmental Control System (ECS) Access Doors, 195EL and 196ER, and behind the ECS Low Pressure Connection Doors, 195CL and 196CR.

D. To remove the check valve duct assembly you must remove the ground conditioned air connector. The check valve duct assembly consists of a swing check valve and a duct.

TASK 21-21-01-000-801

2. Ground Conditioned Air Connector Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-21-01-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-21-01-010-001

(2) To get access to the ground conditioned air connector [6] for the right cooling pack, open these access panels:

Number	Name/Location
196CR	ECS Low Pressure Connection Door

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(Continued)

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

and the .

SUBTASK 21-21-01-010-002

(3) To get access to the ground conditioned air connector [6]

for the left cooling pack, open these access panels:

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door

E. Ground Conditioned Air Connector Removal

SUBTASK 21-21-01-020-001

(1) Remove the bolts [1] and washers [2] that attach the ground conditioned air connector [6] to the check valve duct assembly [11].

SUBTASK 21-21-01-020-007

(2) Remove the bolts [3], washers [2], washers [4] and the nuts [5] that attach the ground conditioned air connector [6] to the two tie rod assemblies.

SUBTASK 21-21-01-020-006

(3) Remove the ground conditioned air connector [6] from the underwing fairing platform assembly.

SUBTASK 21-21-01-020-002

(4) Remove the gasket [7] and examine it for damage and deterioration.

(a) Discard the gasket [7] if it has damage or deterioration.

——— END OF TASK ———

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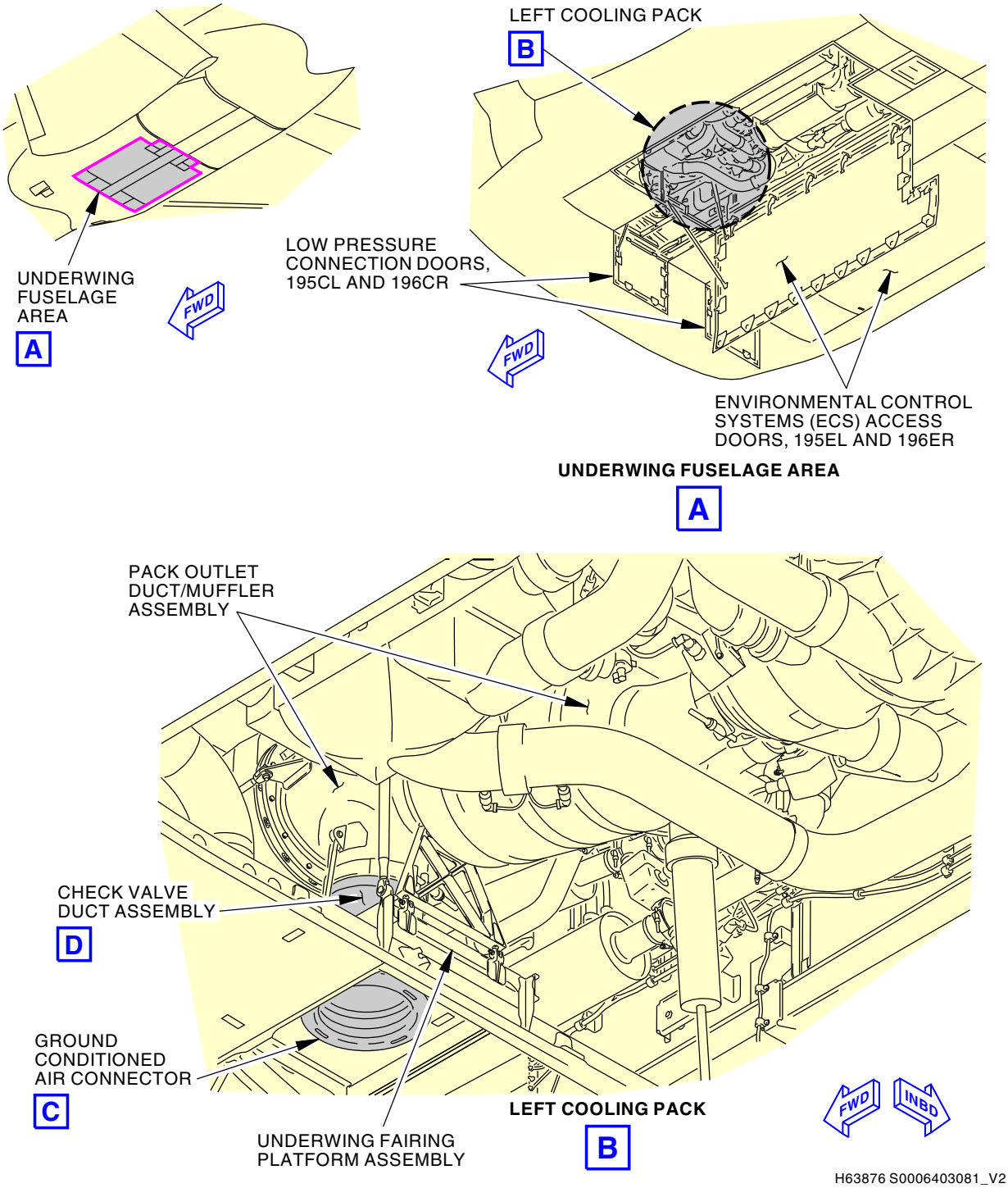

Ground Conditioned Air Connector and Check Valve Duct Assembly Installation
Figure 401/21-21-01-990-801 (Sheet 1 of 3)

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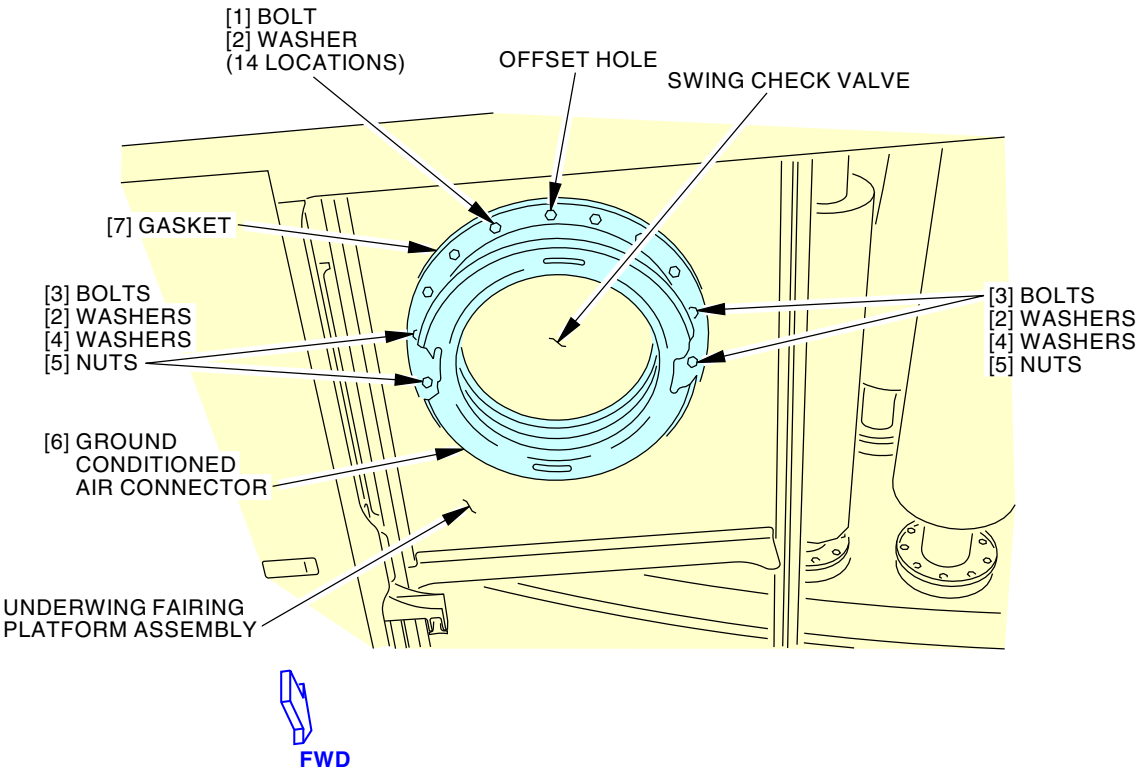

GROUND CONDITIONED AIR CONNECTOR

C

F12362 S0006403082_V2

Ground Conditioned Air Connector and Check Valve Duct Assembly Installation
Figure 401/21-21-01-990-801 (Sheet 2 of 3)

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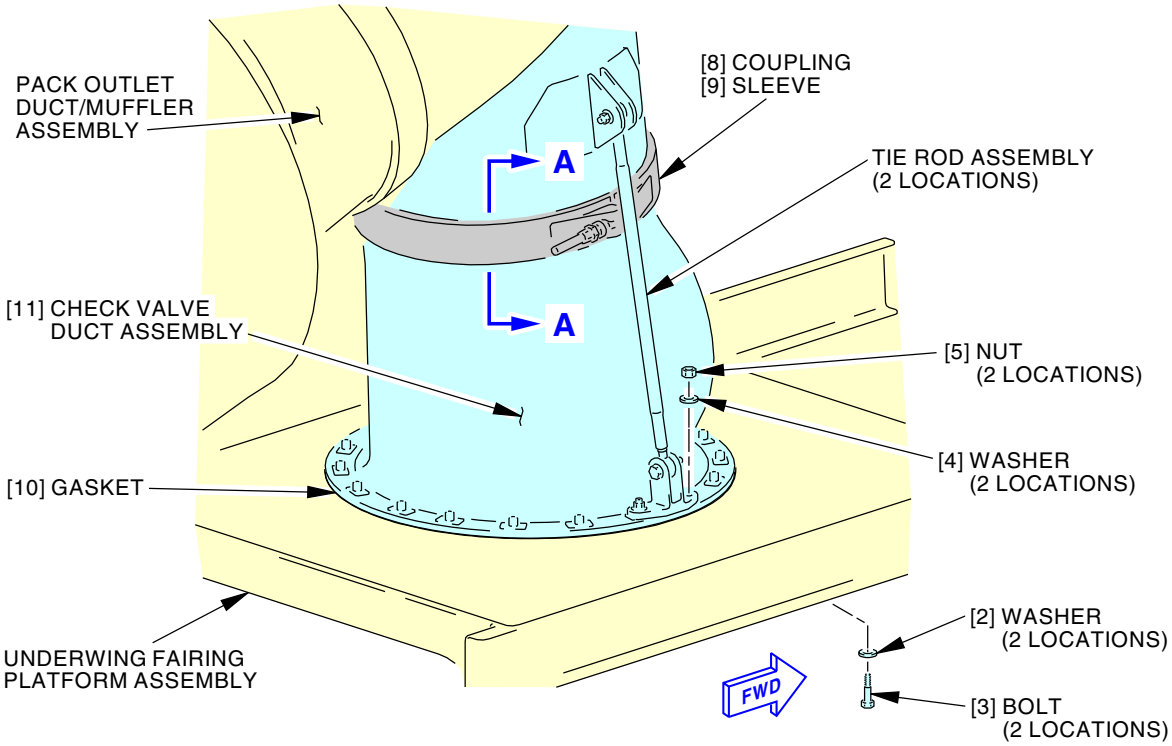
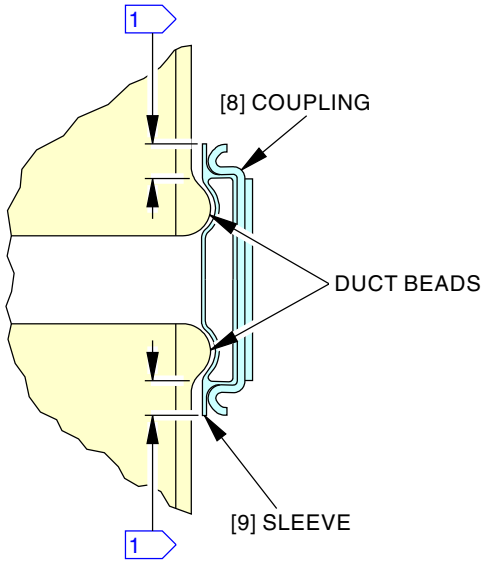


CHECK VALVE DUCT ASSEMBLY

D



1 THE DISTANCE FROM EACH EDGE OF THE COUPLING AND SLEEVE TO EACH DUCT BEAD MUST BE EQUAL ALL AROUND THE CIRCUMFERENCE OF THE DUCT.

A-A

F13416 S0006403083_V2

Ground Conditioned Air Connector and Check Valve Duct Assembly Installation
Figure 401/21-21-01-990-801 (Sheet 3 of 3)

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TASK 21-21-01-400-801

3. Ground Conditioned Air Connector Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-00-00-800-805	Supply Conditioned Air with a Ground Air Source (P/B 201)
21-00-00-800-806	Remove Conditioned Air Supplied by a Ground Air Source (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Connector	21-52-07-03-630	ARO ALL
7	Gasket	21-52-07-03-675	ARO ALL

C. Location Zones

Zone	Area
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

E. Ground Conditioned Air Connector Installation

SUBTASK 21-21-01-820-001

(1) Put the gasket [7] on the ground conditioned air connector [6].

(a) Make sure you align all the holes in the gasket [7] with the holes in the ground conditioned air connector [6].

SUBTASK 21-21-01-420-001

(2) Put the ground conditioned air connector [6] against the bottom of the underwing fairing platform assembly.

(a) Make sure you align all the holes in the ground conditioned air connector [6] with the holes in the underwing fairing platform assembly.

SUBTASK 21-21-01-420-002

(3) Install the bolts [1] and washers [2] that attach the ground conditioned air connector [6] to the check valve duct assembly [11].

SUBTASK 21-21-01-020-008

(4) Install the bolts [3], washers [2], washers [4] and the nuts [5] to attach the ground conditioned air connector [6] to the two tie rod assemblies.

F. Ground Conditioned Air Connector Installation Test

SUBTASK 21-21-01-860-002

(1) Do this task: Supply Conditioned Air with a Ground Air Source, TASK 21-00-00-800-805.

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SUBTASK 21-21-01-360-001

(2) Make sure there is no air leakage between the ground conditioned air connector [6] and the underwing fairing platform assembly.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-21-01-860-003

(1) Do this task: Remove Conditioned Air Supplied by a Ground Air Source, TASK 21-00-00-800-806.

SUBTASK 21-21-01-410-001

(2) If you removed the ground conditioned air connector [6]

for the right cooling pack, close these access panels:

Number	Name/Location
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-21-01-410-002

(3) If you removed the ground conditioned air connector [6]

for the left cooling pack, close these access panels:

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

TASK 21-21-01-000-802

4. Check Valve Duct Assembly Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-21-01-860-004

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

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SUBTASK 21-21-01-010-003

(2) To get access the check valve duct assembly [11]

for the right cooling pack, open these access panels:

Number	Name/Location
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-21-01-010-004

(3) To get access to the check valve duct assembly [11]

for the left cooling pack, open these access panels:

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door

E. Check Valve Duct Assembly Removal

SUBTASK 21-21-01-020-003

(1) Do the steps that follow to remove the ground conditioned air connector [6]:

(a) Remove the bolts [1] and washers [2] that attach the ground conditioned air connector [6] to the check valve duct assembly [11].

(b) Remove the bolts [3], washers [2], washers [4] and the nuts [5] that attach the ground conditioned air connector [6] to the two tie rod assemblies.

(c) Remove the ground conditioned air connector [6] from the underwing fairing platform assembly.

(d) Remove the gasket [7] and examine it for damage and deterioration.

1) Discard the gasket [7] if it has damage or deterioration.

SUBTASK 21-21-01-020-004

(2) Do the steps that follow to remove the check valve duct assembly [11]:

(a) Remove the coupling [8].

(b) Move the sleeve [9] onto the pack outlet duct/muffler assembly.

(c) Move the two tie rod assemblies out of the way.

(d) Remove the check valve duct assembly [11].

(e) Examine the gasket [10] which remains on the underwing fairing platform assembly for damage and deterioration.

(f) Remove and discard the gasket [10] if it has damage or deterioration.

NOTE: The gasket [10] is bonded to the underwing fairing platform assembly.

SUBTASK 21-21-01-420-003

(3) Install a cover on the duct opening.

END OF TASK

TASK 21-21-01-400-802

5. Check Valve Duct Assembly Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

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A. References

Reference	Title
21-00-00-800-805	Supply Conditioned Air with a Ground Air Source (P/B 201)
21-00-00-800-806	Remove Conditioned Air Supplied by a Ground Air Source (P/B 201)

B. Tools/Equipment

Reference	Description
STD-1064	Scraper - Phenolic, Hard Resin

C. Consumable Materials

Reference	Description	Specification
A00924	Adhesive - Silicone, Flame Retardant, 1-Part - RTV 133	BAC5010 Type 98
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
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Connector	21-52-07-03-630	ARO ALL
7	Gasket	21-52-07-03-675	ARO ALL
10	Gasket	21-52-07-03-670	ARO ALL
11	Duct assembly	21-52-07-03-680	ARO ALL

E. Location Zones

Zone	Area
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

G. Check Valve Duct Assembly Installation

SUBTASK 21-21-01-020-005

(1) Remove the cover from the duct opening.

SUBTASK 21-21-01-420-004

(2) If you removed the gasket [10], do the steps which follow to install a new gasket [10]:

(a) Use a hard resin phenolic scraper, STD-1064 or equivalent to remove the RTV 133 adhesive, A00924 from the fairing platform assembly where you will install the gasket [10].

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(b) Clean the seal surface with a clean cotton wiper, G00034 that is wet with solvent, B00083.

1) immediately rub the seal surface dry with a clean cotton wiper, G00034.

(c) Apply a layer of the RTV 133 adhesive, A00924 to the mating surfaces of the gasket [10] and the underwing fairing platform assembly.

(d) Put the gasket [10] on the underwing fairing platform assembly.

1) Make sure you align all the holes in the gasket [10] with the holes in the underwing fairing platform assembly before the RTV 133 adhesive, A00924 has cured fully.

SUBTASK 21-21-01-420-005

(3) Put the check valve duct assembly [11] on the gasket [10].

(a) Make sure you align all the holes in the check valve duct assembly [11] with the holes in the gasket [10].

SUBTASK 21-21-01-820-002

(4) Put the gasket [7] on the ground conditioned air connector [6].

(a) Make sure you align all the holes in the gasket [7] with the holes in the ground conditioned air connector [6].

SUBTASK 21-21-01-420-006

(5) Put the ground conditioned air connector [6] against the bottom of the underwing fairing platform assembly.

(a) Make sure you align all the holes in the ground conditioned air connector [6] with the holes in the underwing fairing platform assembly.

SUBTASK 21-21-01-420-007

(6) Install the bolts [1] and washers [2] that attach the ground conditioned air connector [6] to the check valve duct assembly [11].

SUBTASK 21-21-01-420-008

(7) Connect the check valve duct assembly [11] to the pack outlet duct/muffler assembly:

(a) Move the sleeve [9] onto the duct beads of the pack outlet duct/muffler assembly and the check valve duct assembly [11].

(b) Make sure the sleeve [9] is installed equally over the duct beads before you install the coupling [8].

(c) Loosely install the coupling [8] onto the sleeve [9].

(d) Make sure the coupling [8] and the sleeve [9] are installed equally over the duct beads.

(e) Tighten the nut on the coupling [8] 45 to 55 inch-pounds.

SUBTASK 21-21-01-420-009

(8) Connect the two tie rod assemblies to the check valve duct assembly [11]:

(a) Put each tie rod assembly onto the check valve duct assembly [11].

(b) If a tie rod assembly does not align with the check valve duct assembly [11], do these steps to adjust the length of the tie rod assembly:

1) Cut and remove the MS20995C32 lockwire, G01048 from the jamnut on the rod end.

2) Loosen the jamnut.

3) Turn the rod end to adjust the length of the tie rod assembly.

4) Tighten the jamnut.

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5) Install a new MS20995C32 lockwire, G01048 to the jamnut.

(c) Install the bolts [3], washers [2], washers [4] and the nuts [5] to attach the ground conditioned air connector [6] to the tie rod assemblies.

H. Ground Conditioned Air Connector and Check Valve Duct Assembly Installation Test

SUBTASK 21-21-01-860-005

(1) Do this task: Supply Conditioned Air with a Ground Air Source, TASK 21-00-00-800-805.

SUBTASK 21-21-01-360-002

(2) Make sure there is no air leakage between the check valve duct assembly [11] and the underwing fairing platform assembly.

SUBTASK 21-21-01-360-003

(3) Make sure there is no air leakage between the ground conditioned air connector [6] and the underwing fairing platform assembly.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-21-01-860-006

(1) Do this task: Remove Conditioned Air Supplied by a Ground Air Source, TASK 21-00-00-800-806.

SUBTASK 21-21-01-410-003

(2) If you removed the ground conditioned air connector [6] and check valve duct assembly [11] for the right cooling pack, close these access panels:

Number	Name/Location
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-21-01-410-004

(3) If you removed the ground conditioned air connector [6] and check valve duct assembly [11] for the left cooling pack, close these access panels:

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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OVERHEAD DISTRIBUTION DUCT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of a section of the overhead distribution duct.

(2) An installation of a section of the overhead distribution duct.

B. Some ducts in the air distribution system are wrapped with insulation. CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

C. Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

D. BMS 8–385 is the preferred foam insulation material that meets the flame propagation requirement.

E. BMS 8–385 Type 6 (foam insulation, G51169) and BMS 8–300 Type VIII (foam insulation, G51170), are new qualified materials optional to BMS 8–385 Type 4 (foam insulation, G50449).

F. If BMS 8–300 foam insulation material is used, it must be completely covered with BMS 5–157, Type 1, Class 1, Grade B composition MPVF tape (tape, G50327 or tape, G51202) or BMS 5–157, Type 1, Class 2, Grade C composition MPEEK (tape, G50789) that meets the flame propagation requirement.

G. Do not use BMS 8–39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

H. When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

(1) Tape specifications BMS 5–157, Type 1, Class 1, Grade B composition MPVF tape (tape, G50327 or tape, G51202) and BMS 5–157, Type 1, Class 2, Grade C composition MPEEK (tape, G50789) are qualified tapes used to secure insulation ducts.

TASK 21-21-02-000-801

2. Overhead Distribution Duct Removal

Figure 401

A. General

(1) This task includes the steps to remove a section of the overhead distribution ducts.

(2) Remove and discard insulation [1] material if it is damaged. Replacement insulation material must meet the flame propagation requirement.

(3) When insulation material is removed and reinstalled, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

(4) Refer to IPC Sections 21-21-51 for duct locations and part numbers.

(5) Refer to Figure 401 for examples of ducts.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)
25-28-01-000-802	Outboard Stowage Bin Module Removal (P/B 401)

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(Continued)

Reference	Title
25-28-02-000-801	Center Stowage Bin Removal (P/B 401)
25-28-02-000-802	Center Stowage Bin Module Removal (P/B 401)
25-28-02-000-805	Center Stowage Bin Module Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Prepare for the Removal

SUBTASK 21-21-02-000-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-21-02-000-002

(2) Position the L PACK and R PACK switches on the air conditioning panel to OFF.

SUBTASK 21-21-02-000-008

(3) Remove electrical power (TASK 24-22-00-860-806).

SUBTASK 21-21-02-010-001

(4) Remove the applicable ceiling panels (TASK 25-21-06-000-801).

SUBTASK 21-21-02-010-002

(5) If necessary, remove the applicable center stowage bin modules, do this task: Center Stowage Bin Module Removal, TASK 25-28-02-000-802 or Center Stowage Bin Module Removal, TASK 25-28-02-000-805 or Center Stowage Bin Removal, TASK 25-28-02-000-801.

SUBTASK 21-21-02-010-003

(6) If necessary, remove the applicable outboard stowage bin modules, do this task: Outboard Stowage Bin Module Removal, TASK 25-28-01-000-802.

E. Overhead Distribution Duct Removal

SUBTASK 21-21-02-000-006

(1) Remove the flexible sleeves from the section of the distribution duct [4] to be removed.

(a) If installed remove the straps [2] that hold the flexible sleeves to the distribution duct [4].

NOTE: Do not damage the flexible sleeve when cutting the panduit straps.

(b) If installed remove the clamps [3] that hold the flexible sleeves to the distribution duct [4].

SUBTASK 21-21-02-000-007

(2) If installed, remove the straps [6] and connectors [7] that hold the distribution duct [4] to the bracket assemblies.

NOTE: To avoid damaging the distribution duct insulation, cut the straps [6] near the bracket assemblies.

SUBTASK 21-21-02-000-009

(3) Support the distribution duct [4] and slide the flexible sleeves away from the ends of the distribution duct [4].

SUBTASK 21-21-02-000-010

(4) Remove the distribution duct [4].

END OF TASK

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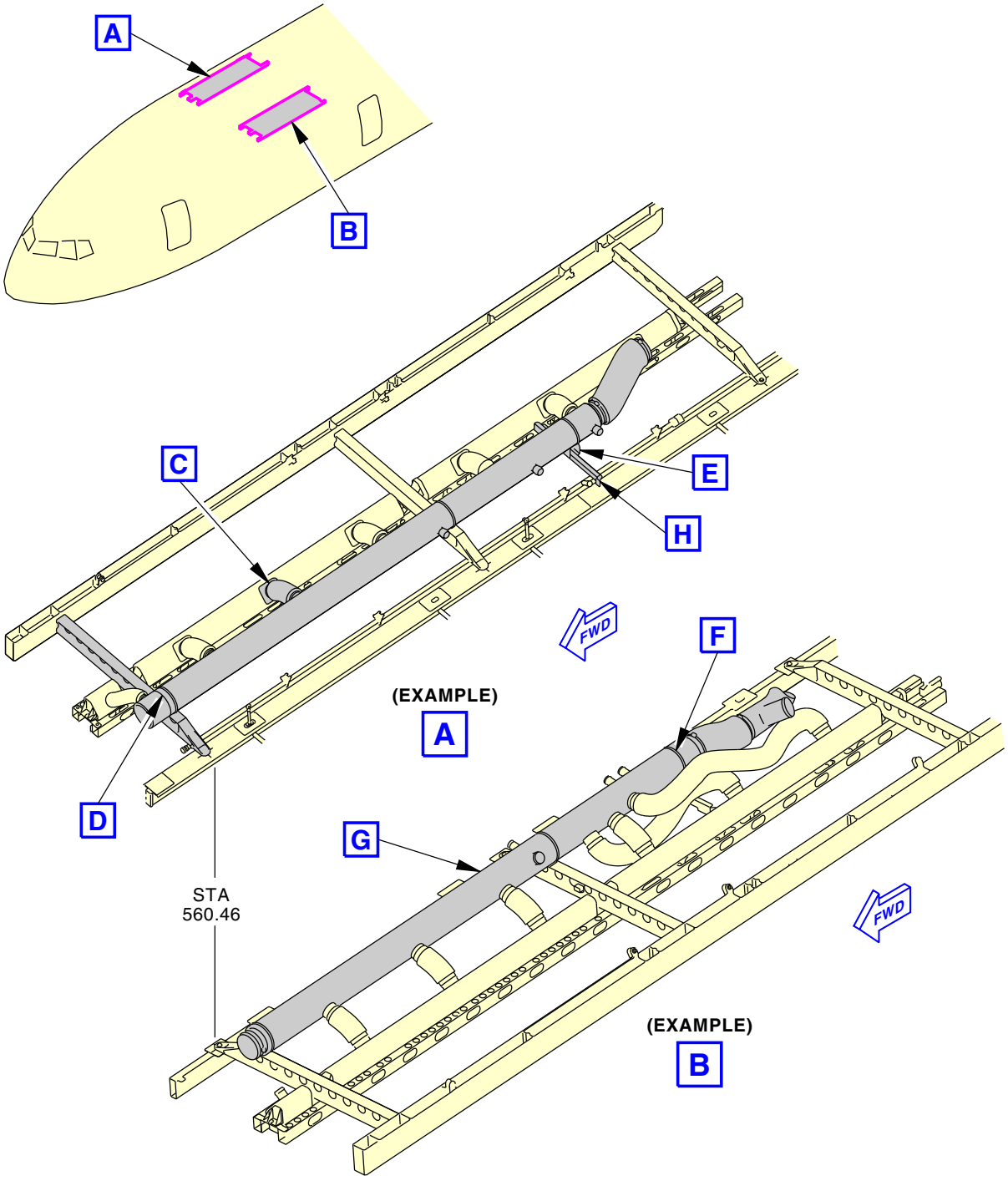

Passenger Cabin Overhead Air Distribution Duct Installation
Figure 401/21-21-02-990-801 (Sheet 1 of 2)

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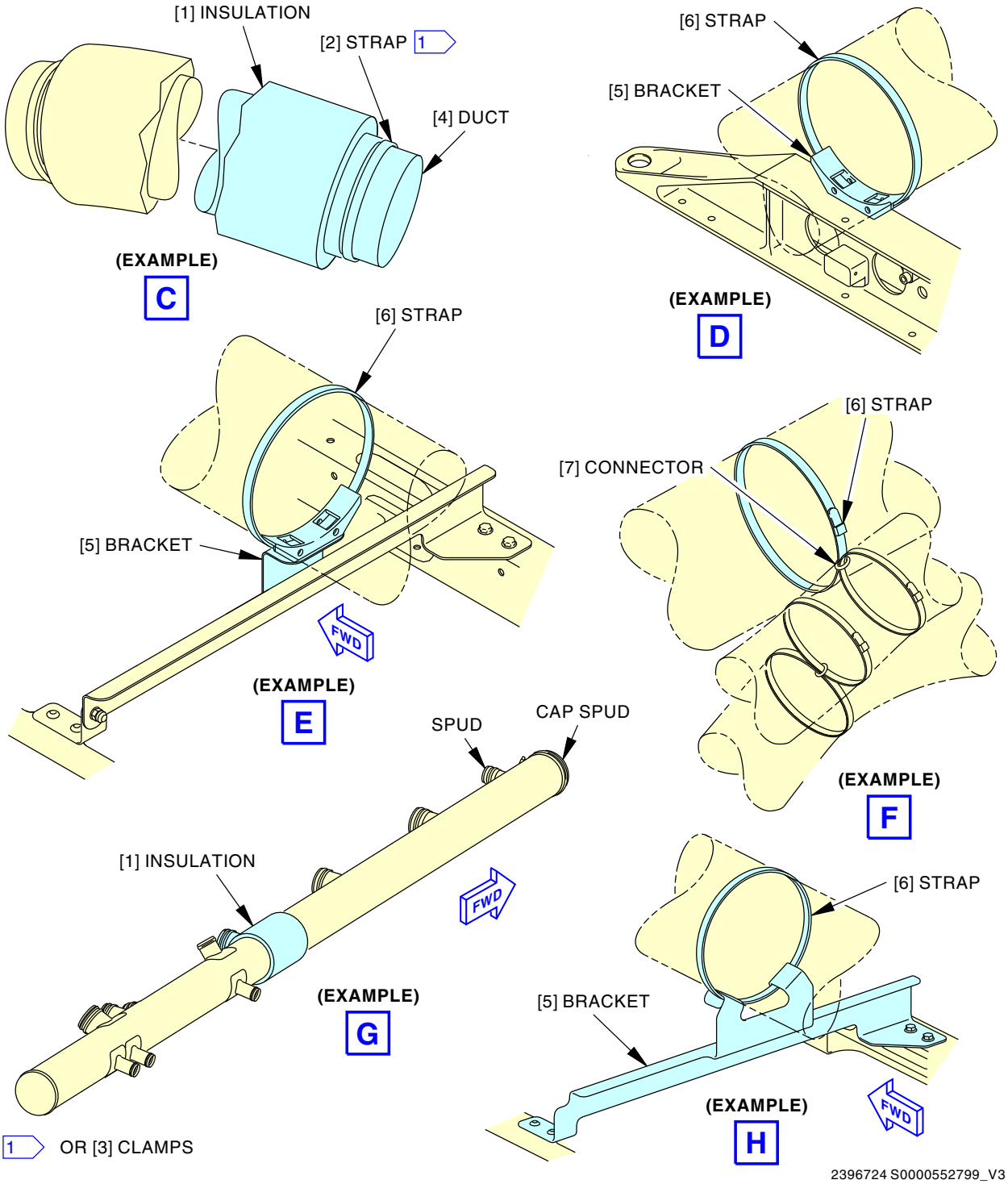

Passenger Cabin Overhead Air Distribution Duct Installation
Figure 401/21-21-02-990-801 (Sheet 2 of 2)

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TASK 21-21-02-400-801

3. Overhead Distribution Duct Installation

(Figure 401)

A. General

(1) This task includes the steps to install a section of the overhead distribution duct.

(2) The insulation [1] material that was removed can be reinstalled if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(3) When insulation material is removed and reinstalled, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

(4) Refer to IPC Sections 21-21-51 for duct locations and part numbers.

(5) Refer to Figure 401 for examples of ducts.

B. References

Reference	Title
25-21-06-400-801	Main Ceiling Panel - Installation (P/B 401)
25-28-01-400-802	Outboard Stowage Bin Module Installation (P/B 401)
25-28-02-400-801	Center Stowage Bin Installation (P/B 401)
25-28-02-400-802	Center Stowage Bin Module Installation (P/B 401)
25-28-02-400-805	Center Stowage Bin Module Installation (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic 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-3923	Tool - Installation, Tie Strap Part #: GS2BL Supplier: 06383 Part #: GS4H Supplier: 06383 Part #: GTS Supplier: 06383 Part #: PPTS Supplier: 06383
COM-4950	Installation Tool - Cable Tie (Used with 0.25-Inch wide band) Part #: 600-058 Supplier: 06324 Part #: PPTMT Supplier: 06383 Part #: ST2MT Supplier: 06383

D. Consumable Materials

Reference	Description	Specification
A00226	Compound - Tamper-Proof Putty	BMS8-45
A50055	Adhesive - Two-Part, RT Cure, Urethane	BAC5010 Type 89 (BMS5-105)

E. Location Zones

Zone	Area
200	Upper Half of Fuselage

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F. Overhead Distribution Duct Installation

SUBTASK 21-21-02-400-001

(1) Put the distribution duct [4] in its position.

(a) Refer to IPC Sections 21-21-51 for locations and part numbers.

SUBTASK 21-21-02-400-002

(2) Slide the flexible sleeves onto the ends of the distribution duct as follows:

(a) Make sure each flexible sleeve overlaps the duct end by approximately 1.25 in. (31.75 mm).

If straps [2] were installed do the following steps:

1) Loosely position the new straps [2] 0.2 in. (5.08 mm) from the peak of the bead of the duct [4].

Use a tie strap installation tool, COM-3923 to tighten the straps [2].

a) Set the selector knob to the heavy position.

b) Set the tension indicator to 8.

c) Tighten the straps [2].

(b) If clamps [3] were installed do the following steps:

1) Loosely position the clamps 0.20 in. (5.08 mm) from the ends of the flexible sleeve.

Tighten the clamps [3]:

a) Hold the cable tie installation tool, COM-4950 tight against the clamp head and perpendicular to the duct surface.

b) Set the selector knob to the heavy position.

c) Set the tension indicator to 8.

d) Maximum tension is achieved when the tool handle is squeezed slowly.

e) Inspect the clamp tightness with the cut-off excess clamp material. It should be difficult to slide this under the head of a properly installed clamp.

f) Loose clamps must be removed and replaced.

g) Cover sharp edge of the cut off clamp with urethane adhesive, A50055 or compound, A00226.

SUBTASK 21-21-02-400-003

(3) If required, install the straps [6] and connectors [7] that hold the distribution duct [4] to the bracket assemblies.

(a) Use a tie strap installation tool, COM-3923 to tighten the straps [6].

1) Set the selector knob to the heavy position.

2) Set the tension indicator to 8.

3) Tighten the straps [6].

G. Overhead Distribution Duct Installation Test

SUBTASK 21-21-02-700-001

(1) Do this check of the overhead distribution duct:

(a) Supply pressure to the pneumatic system: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

(b) Check the distribution duct to make sure there is no leakage of air at the connections.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-21-02-410-004

(1) Remove the supplied pressure from the pneumatic system if not necessary (TASK 36-00-00-860-801).

SUBTASK 21-21-02-410-001

(2) If removed, install the applicable outboard stowage bin modules, do this task: Outboard Stowage Bin Module Installation, TASK 25-28-01-400-802.

SUBTASK 21-21-02-410-002

(3) If removed, install the applicable center stowage bin modules, do this task: Center Stowage Bin Module Installation, TASK 25-28-02-400-805 or Center Stowage Bin Installation, TASK 25-28-02-400-801 or Center Stowage Bin Module Installation, TASK 25-28-02-400-802.

SUBTASK 21-21-02-410-003

(4) Install the applicable ceiling panels (TASK 25-21-06-400-801).

——— END OF TASK ———

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FLIGHT DECK AIR DISTRIBUTION MUFFLERS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flight deck air distribution mufflers.

(2) An installation of the flight deck air distribution mufflers.

B. There are two mufflers for the flight deck air distribution system. The removal and installation procedure is the same for each muffler.

TASK 21-22-01-000-801

2. Flight Deck Air Distribution Muffler Removal

(Figure 401)

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

C. Procedure

SUBTASK 21-22-01-010-001

(1) To get access to the mufflers [1], do the steps that follow (Figure 401):

(a) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

(b) Remove the left sidewall liner in the forward cargo compartment (TASK 25-52-06-000-801).

SUBTASK 21-22-01-020-001

(2) Remove and discard the plastic straps [3] that keep the sleeves [2] on the mufflers [1].

SUBTASK 21-22-01-020-002

(3) Remove and discard the plastic straps [4] that attach the mufflers [1] to the support assembly.

SUBTASK 21-22-01-020-003

(4) Remove the muffler [1].

——— END OF TASK ———

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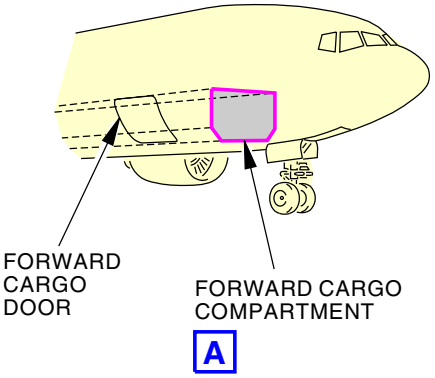

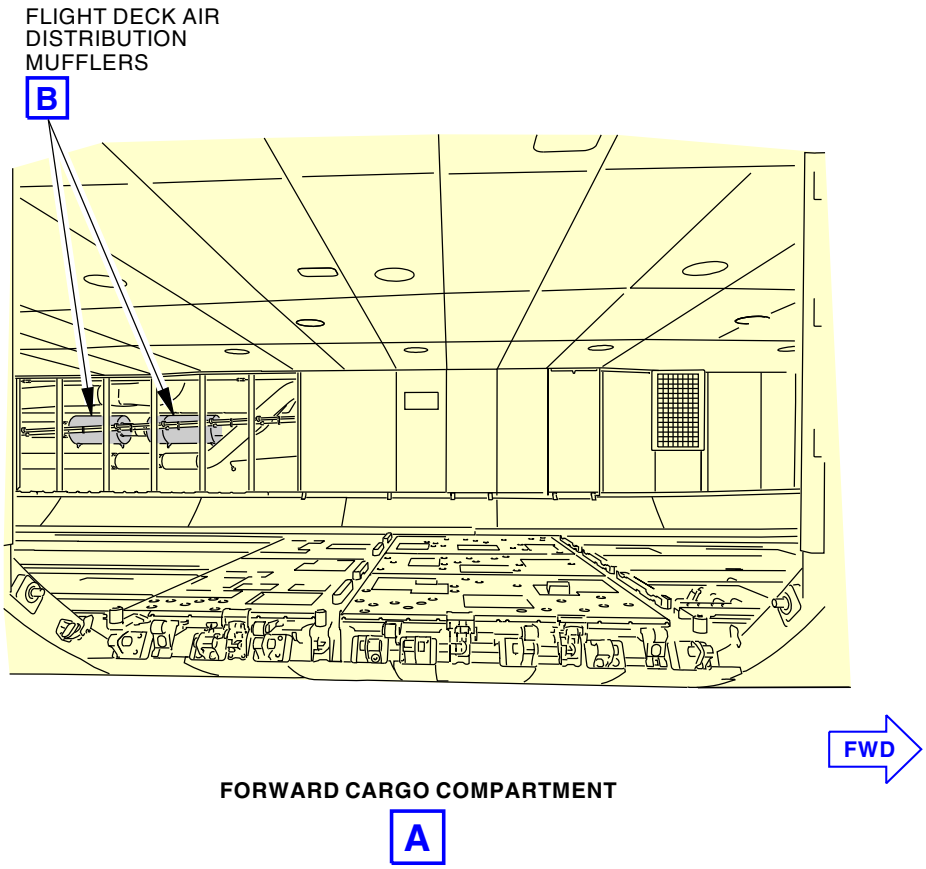

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Flight Deck Air Distribution Muffler Installation
Figure 401/21-22-01-990-801 (Sheet 1 of 2)

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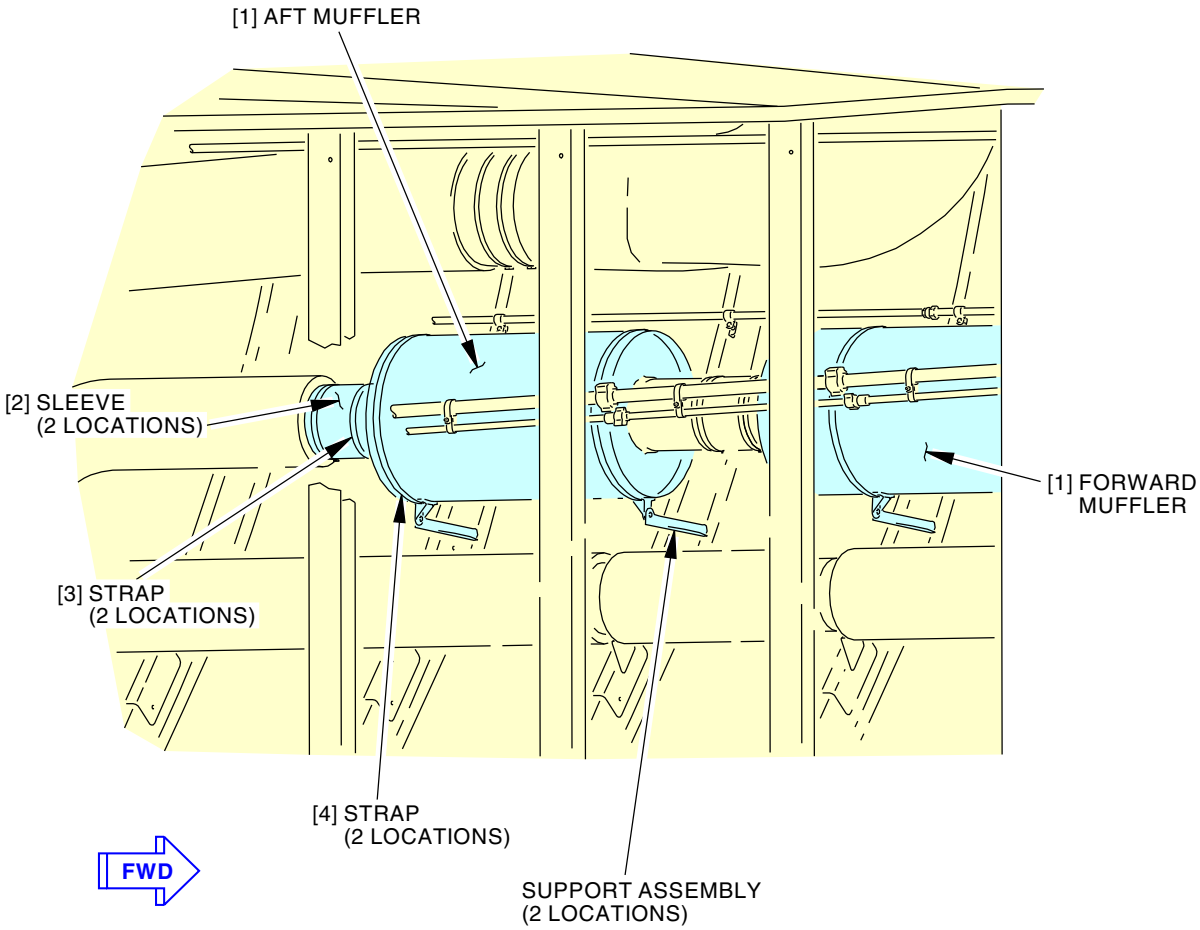

FLIGHT DECK AIR DISTRIBUTION MUFFLERS

B

NOTE:

THE FORWARD MUFFLER INSTALLATION
IS EQUIVALENT TO THE AFT MUFFLER.

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Flight Deck Air Distribution Muffler Installation
Figure 401/21-22-01-990-801 (Sheet 2 of 2)

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TASK 21-22-01-400-801

3. Flight Deck Air Distribution Muffler Installation

(Figure 401)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Muffler	21-22-01-01-075	ARO ALL
		21-22-01-08-085	ARO ALL

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Procedure

SUBTASK 21-22-01-420-001

(1) Put the muffler [1] into the sleeves [2].

SUBTASK 21-22-01-420-002

(2) Install new plastic straps [3] on the sleeves [2].

SUBTASK 21-22-01-420-003

(3) Install new plastic straps [4] to attach the muffler [1] to the support assembly.

E. Flight Deck Air Distribution Muffler Installation Test

SUBTASK 21-22-01-860-001

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

SUBTASK 21-22-01-860-002

(2) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-22-01-790-001

(3) Make sure there is no air leakage at the mufflers [1] connections.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-22-01-860-003

(1) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-22-01-410-001

(2) Install the left sidewall liner (TASK 25-52-06-400-801).

SUBTASK 21-22-01-410-002

(3) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

END OF TASK

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FLIGHT DECK GASPER AIR OUTLET - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the gasper air outlets installed in the Flight Deck.

(2) Installation of the gasper air outlets installed in the Flight Deck.

TASK 21-22-02-000-801

2. Flight Deck Gasper Air Outlet Removal

Figure 401

A. References

Reference	Title
25-15-03-000-801	Forward Console Removal (P/B 401)

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Prepare for the Removal

SUBTASK 21-22-02-020-001

(1) Remove the clipboard/stowage box. To remove the clipboard/stowage box, do this task: (Forward Console Removal, TASK 25-15-03-000-801).

D. Gasper Air Outlet Removal

SUBTASK 21-22-02-020-002

(1) Remove and discard the strap [4] which connects the hose to the housing [3].

SUBTASK 21-22-02-020-003

(2) Remove the hose from the housing [3].

SUBTASK 21-22-02-020-004

(3) Remove the screws [2], at four locations, which attach the gasper air outlet [1] to the housing [3].

SUBTASK 21-22-02-020-005

(4) Remove the gasper air outlet [1] and the housing [3].

END OF TASK

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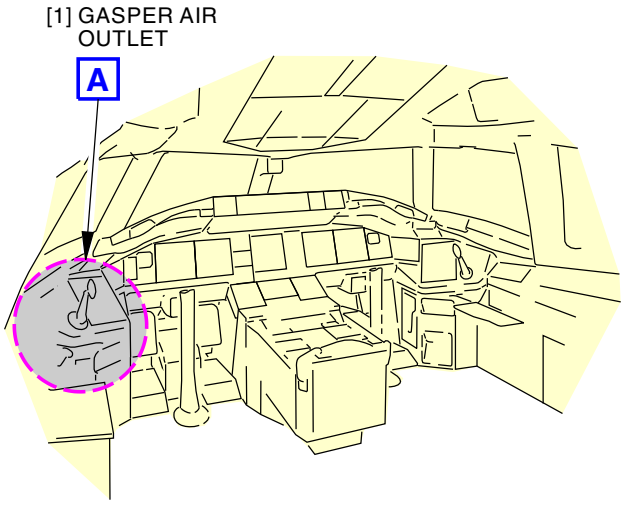
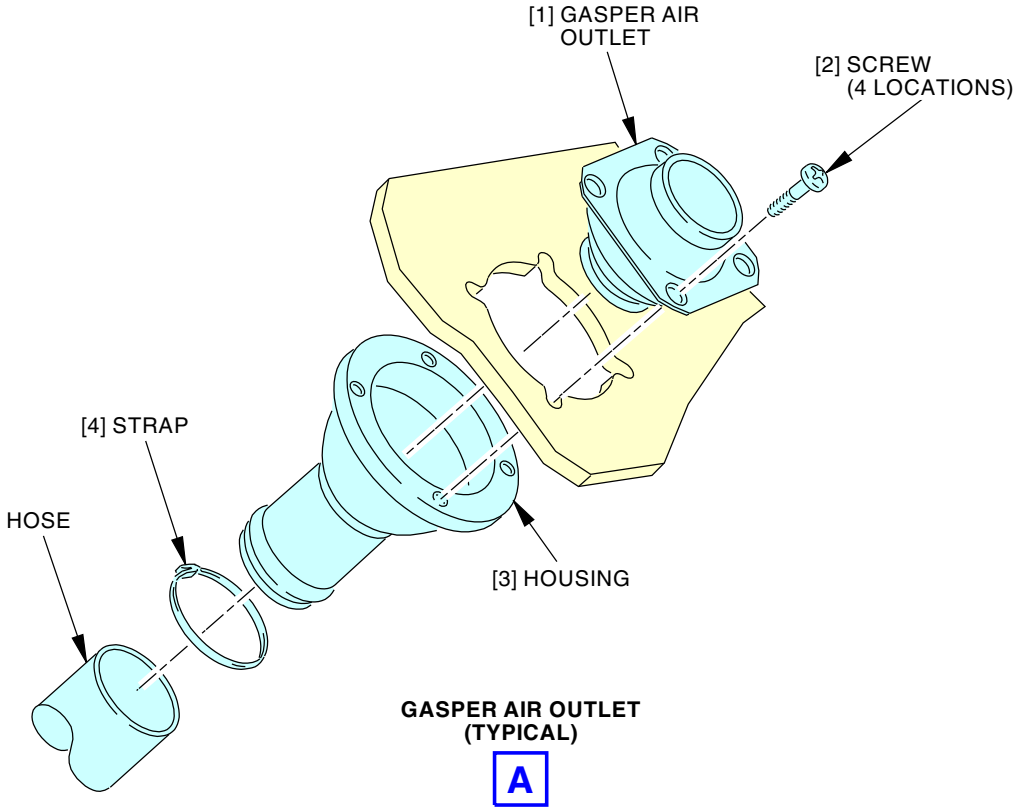


FLIGHT COMPARTMENT



GASPER AIR OUTLET (TYPICAL)

A

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Gasper Air Outlet (Flight Compartment) Installation
Figure 401/21-22-02-990-801

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TASK 21-22-02-400-801

3. Flight Deck Gasper Air Outlet Installation

Figure 401

A. References

Reference	Title
25-15-03-400-801	Forward Console Installation (P/B 401)

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Gasper Air Outlet Installation

SUBTASK 21-22-02-420-001

(1) Put the gasper air outlet [1] and the housing [3] in their position on the console.

SUBTASK 21-22-02-420-002

(2) Install the screws [2], at four locations, which attach the gasper air outlet [1] to the housing [3].

SUBTASK 21-22-02-420-003

(3) Connect the hose to the housing [3].

SUBTASK 21-22-02-420-004

(4) Install a new strap [4] on the hose.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-22-02-420-005

(1) Install the clipboard/stowage box. To install the clipboard/stowage box, do this task: (Forward Console Installation, TASK 25-15-03-400-801).

——— END OF TASK ———

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PASSENGER CABIN EQUIPMENT GASPER AIR OUTLETS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the gasper air outlets installed in the passenger cabin.

(2) An installation of the gasper air outlets installed in the passenger cabin.

B. The gasper air outlets are located in different areas of the passenger cabin as follows:

(1) The galley areas.

C. The view shown in Figure 401 is of the galley installation, but the other installations are similar.

TASK 21-23-01-000-801

2. Passenger Cabin Equipment Gasper Air Outlets Removal

Figure 401

A. References

Reference	Title
25-21-07-000-801	Lowered Ceiling Panel Removal (P/B 401)

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Prepare for the Removal

SUBTASK 21-23-01-010-001

(1) Remove the applicable ceiling panel. To remove the applicable ceiling panel, do this task: Lowered Ceiling Panel Removal, TASK 25-21-07-000-801.

D. Gasper Air Outlet Removal

SUBTASK 21-23-01-030-001

(1) Remove and discard the strap [4] which connects the hose to the housing [3].

SUBTASK 21-23-01-020-001

(2) Remove the hose from the housing [3].

SUBTASK 21-23-01-020-002

(3) Remove the screws [2], at four locations, which attach the gasper air outlet [1] to the housing [3].

SUBTASK 21-23-01-020-003

(4) Remove the gasper air outlet [1] and the housing [3].

——— END OF TASK ———

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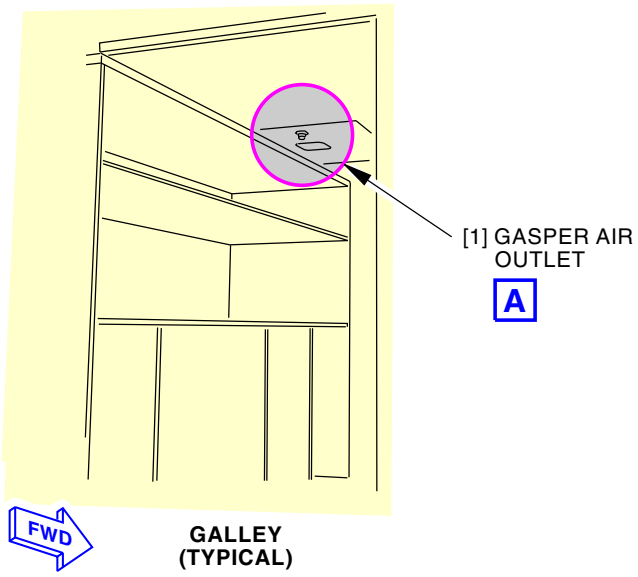

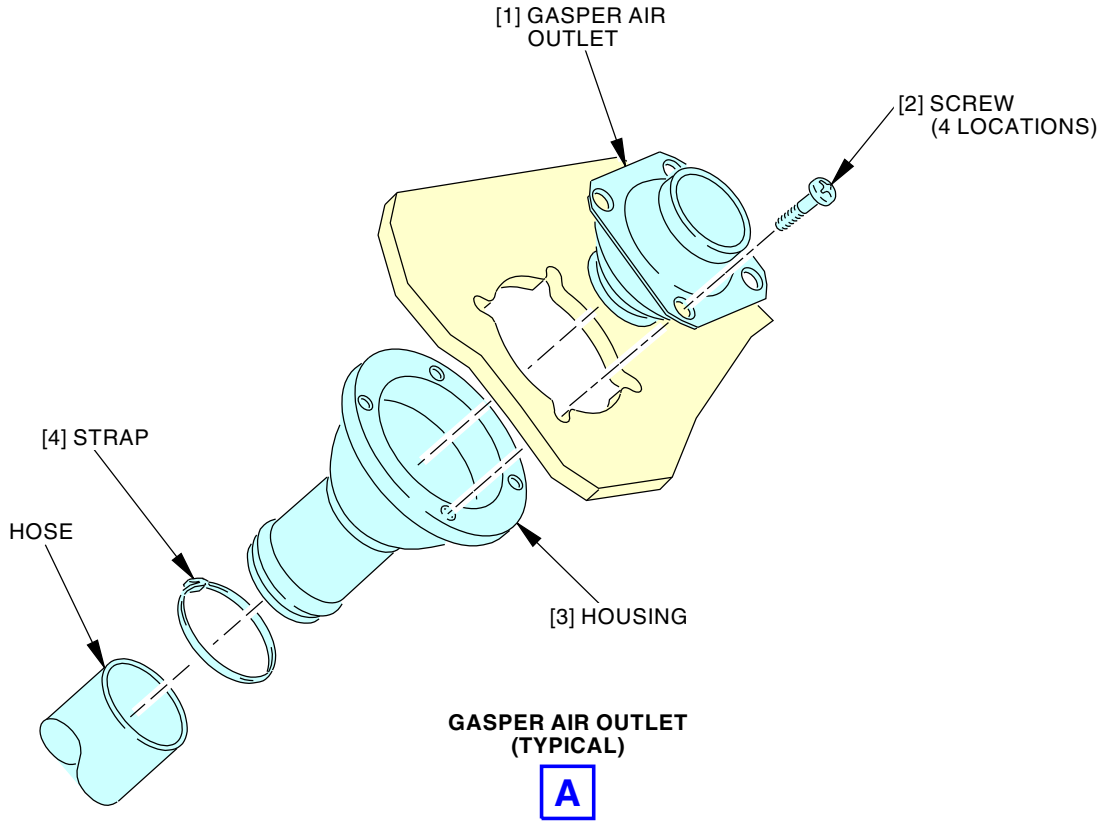

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Passenger Cabin Equipment Gasper Air Outlet Installation
Figure 401/21-23-01-990-801

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TASK 21-23-01-400-801

3. Passenger Cabin Equipment Gasper Air Outlets Installation

Figure 401

A. References

Reference	Title
25-21-07-400-801	Lowered Ceiling Panel Installation (P/B 401)

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Gasper Air Outlet Installation

SUBTASK 21-23-01-420-001

(1) Put the gasper air outlet [1] and the housing [3] in their position on the ceiling panel.

SUBTASK 21-23-01-430-001

(2) Install the screw [2], at four locations, which attach the gasper air outlet [1] to the housing [3].

SUBTASK 21-23-01-420-002

(3) Connect the hose to the housing [3].

SUBTASK 21-23-01-430-002

(4) Install a strap [4] on the hose.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-23-01-410-001

(1) Install the applicable ceiling panel. To install the applicable ceiling panel, do this task: Lowered Ceiling Panel Installation, TASK 25-21-07-400-801.

——— END OF TASK ———

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RETURN AIR GRILLS (DECOMPRESSION VENTS) - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Return air grill removal.

(2) Return air grill installation.

(3) Return air grill baffle removal.

(4) Return air grill baffle installation.

(5) Return air grill and baffle cleaning.

(6) Return air grill baffle inspection.

B. The return air grills, which are also called decompression vents, are installed near the floor, in the passenger compartment sidewall. The return air grills permits the air in the passenger cabin to flow into the lower fuselage areas. This will prevent damage to the airplane if a decompression condition occurs. The return air grill will be called the grill throughout this procedure.

TASK 21-23-05-000-802

2. Return Air Grill Removal

(Figure 201)

A. Tools/Equipment

Reference	Description
STD-6591	Bit - Spanner, #10

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Procedure

SUBTASK 21-23-05-020-002

(1) Do the steps that follow to remove the return air grill [1]:

ARO ALL; AIR GRILLS WITH TAMPER RESISTANT FASTENERS

(a) Turn the two tamper resistant quarter-turn fasteners [2] counter-clockwise to the horizontal (open) position using spanner bit, STD-6591.

NOTE: When the two holes on the tamper resistant quarter-turn fastener [2] are in the vertical position, the quarter-turn latch is in the closed position. When the two holes on the tamper resistant quarter-turn fastener [2] are in the horizontal position, the quarter-turn latch is in the open position.

ARO ALL

(b) Move one of the return air grills [1] forward or aft to release it from the overlap with the other return air grill [1].

(c) Move the return air grill [1] up until it clears the flange of the mopsill.

(d) Pull the return air grill [1] down and inboard to release the upper edge from the sidewall panel.

(e) Remove the return air grill [1].

END OF TASK

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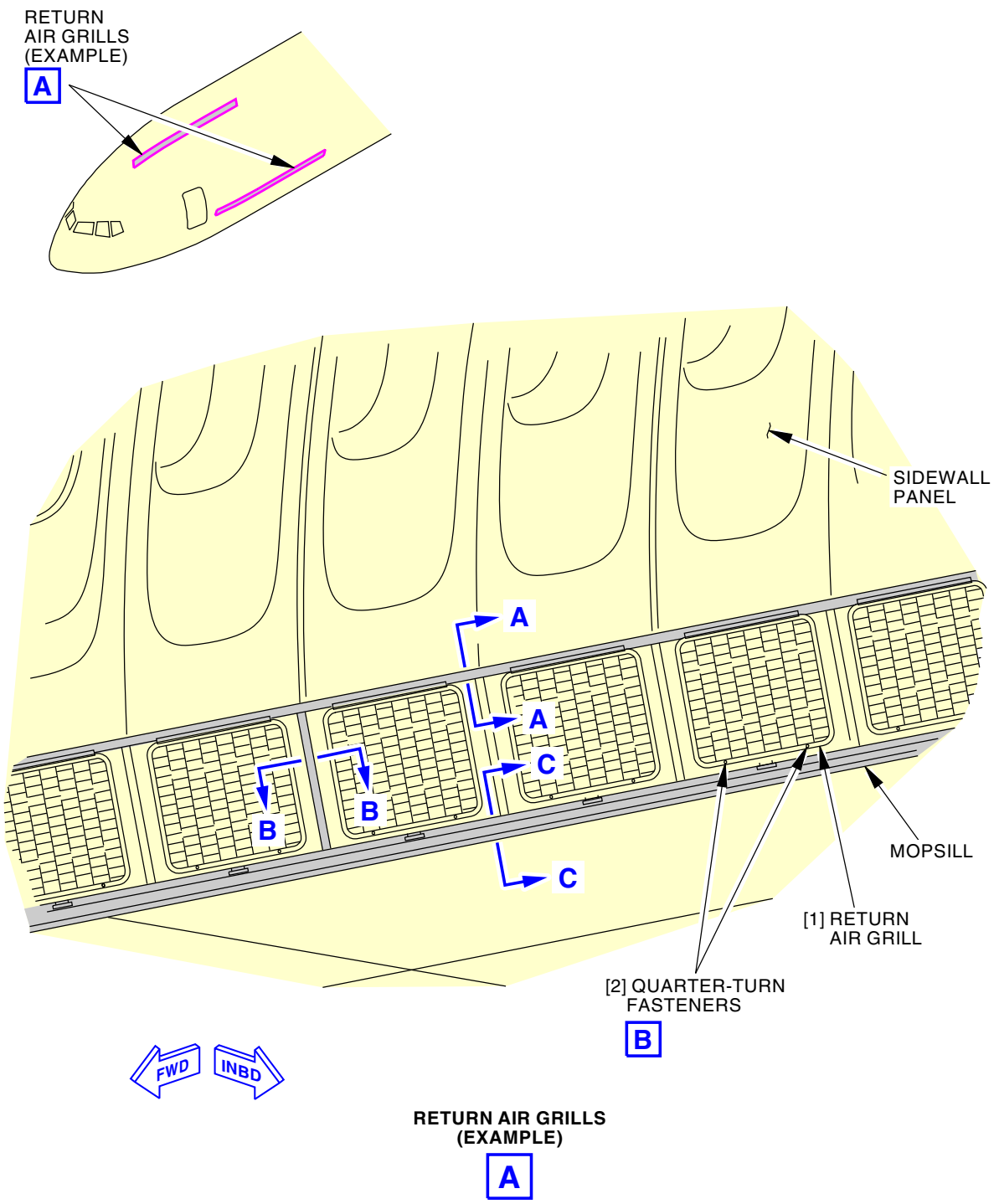

Return Air Grills Installation
Figure 201/21-23-05-990-803 (Sheet 1 of 2)

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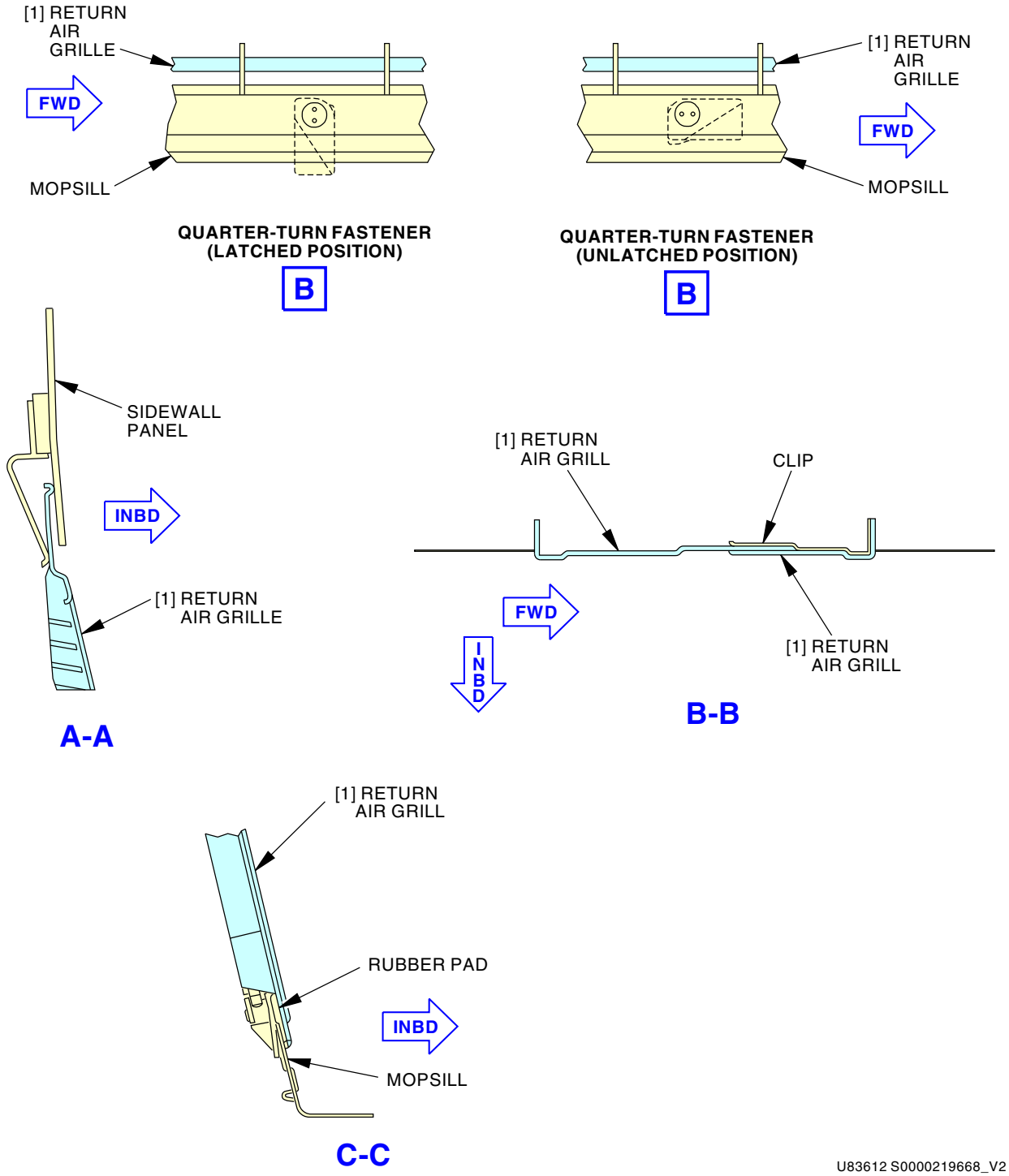

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Return Air Grills Installation
Figure 201/21-23-05-990-803 (Sheet 2 of 2)

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TASK 21-23-05-000-803

3. Return Air Grill Baffle Removal

(Figure 202)

A. Location Zones

Zone	Area
200	Upper Half of Fuselage

B. Procedure

SUBTASK 21-23-05-020-016

(1) Remove the return air grill [1] from the sidewall (TASK 21-23-05-000-802).

NOTE: The baffle is installed to the backside of the return air grill [1].

SUBTASK 21-23-05-020-003

(2) For the return air grills [1] PN 417W1101, with a vinyl baffle, do these steps to remove the baffle [23]:

(a) Remove the screws [21] and washers [22], at 5 locations, which attach the top of the baffle [23] to the grill.

(b) Carefully pull the baffle [23] away from the screws [21] on the return air grill [1].

SUBTASK 21-23-05-020-004

(3) For the return air grills [1] PN 417W1502, with a fiberglass baffle, do these steps to remove the baffle [24]:

Do these steps to remove the baffle [24] from the return air grill [1]:

(a) Carefully pull the baffle [24] away from the return air grill [1].

NOTE: The baffle [24] is attached to the return air grill [1] with strips of hook and loop material.

——— END OF TASK ———

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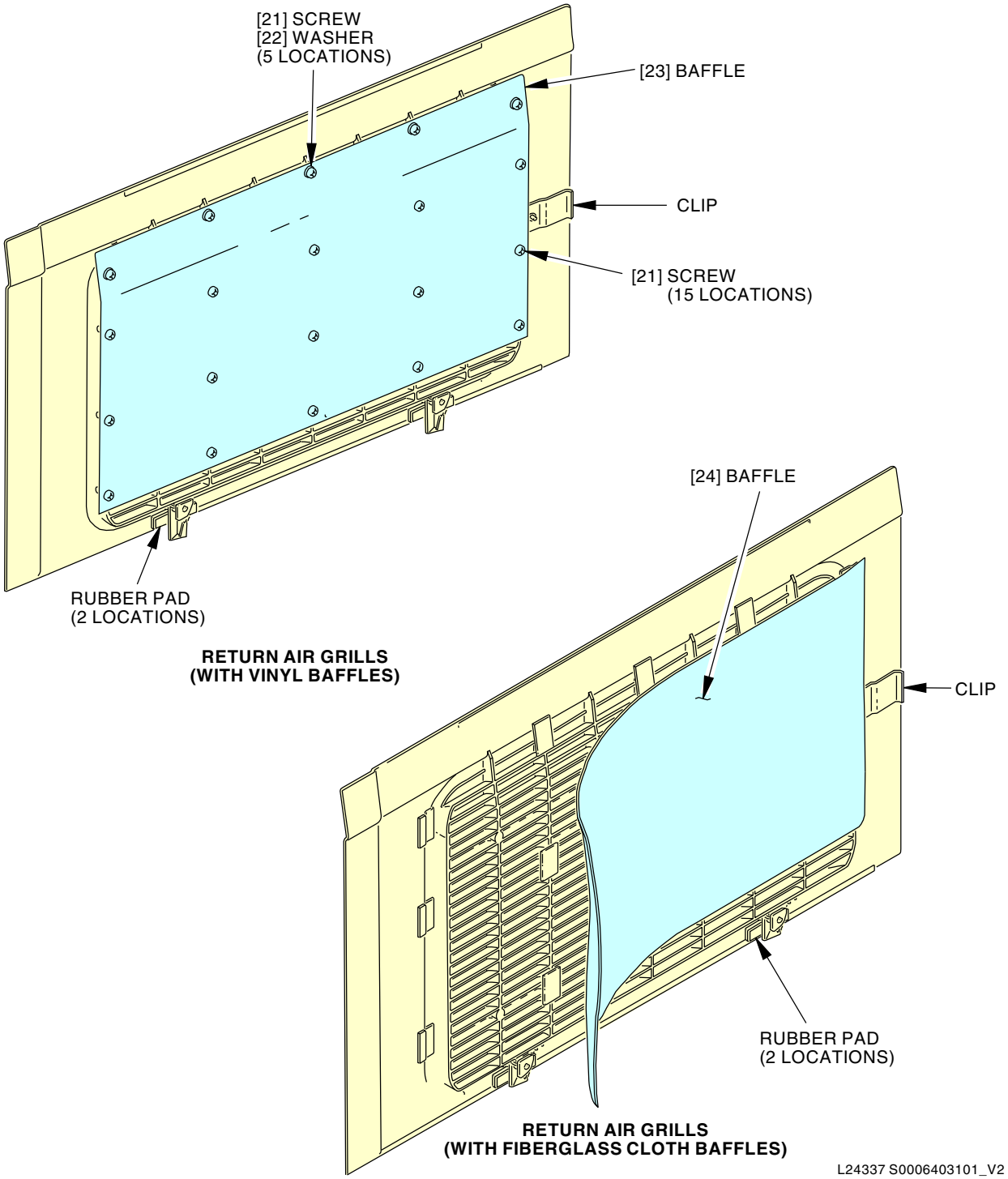

Return Air Grill Baffle Installation
Figure 202/21-23-05-990-805

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TASK 21-23-05-400-802

4. Return Air Grill and Baffle Cleaning

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-1428	Cleaner - Vacuum, Cabin Interior, 400HZ Part #: 98606 Supplier: 08531 Part #: AVQ250-2 Supplier: 03FQ4 Part #: BP80 Supplier: $0373 Part #: RSV130 Supplier: $1291 Opt Part #: 02146A Supplier: 0A5X2 Opt Part #: C-39485-41 Supplier: 16893 Opt Part #: R80 Supplier: $0373 Opt Part #: WD80 Supplier: $0373

B. Consumable Materials

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Procedure

SUBTASK 21-23-05-020-017

(1) Remove the return air grill from the sidewall (TASK 21-23-05-000-802).

NOTE: The baffle is installed to the backside of the return air grill.

SUBTASK 21-23-05-420-002

(2) Clean the return air grill and the baffle:

(a) Use a vacuum, COM-1428 to remove unwanted materials from the baffle and the return air grill.

(b) If it is necessary, remove the baffle from the return air grill to clean (TASK 21-23-05-000-803).

(c) Replace the baffle if it has damage.

(d) Clean the return air grill and baffle with a cotton wiper, G00034 that is moist with water.

(e) If it was removed, install the baffle (TASK 21-23-05-400-803).

SUBTASK 21-23-05-420-011

(3) Install the return air grill to the sidewall.

——— END OF TASK ———

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TASK 21-23-05-400-803

5. Return Air Grill Baffle Installation

(Figure 202)

A. Location Zones

Zone	Area
200	Upper Half of Fuselage

B. Procedure

SUBTASK 21-23-05-020-005

(1) For the return air grills [1] P/N 417W1101, with a vinyl baffle, do these steps to install the baffle [23]:

(a) Install the baffle [23] on the grill [1] with the dark side against the louvers.

(b) Carefully pull the baffle [23] over the screws [21] on the return air grill [1].

NOTE: The holes in the baffle must be below the head of the screws [21].

(c) Install the screws [21] and washers [22], at 5 locations, which attach the top of the baffle [23] to the return air grill [1].

SUBTASK 21-23-05-020-006

(2) For the return air grills [1] P/N 417W1502, with a fiberglass baffle, do these steps to install the baffle [24]:

(a) Align the hook and loop tape strips on the baffle [24] and the return air grill [1].

(b) Make sure that the baffle [24] does not cover the bottom three rows of the grill opening.

(c) Press firmly on the baffle [24] to attach the hook and loop tape strips and secure it to the backside of the return air grill [1].

SUBTASK 21-23-05-420-012

(3) Install the return air grill [1] to the sidewall (TASK 21-23-05-400-804).

——— END OF TASK ———

TASK 21-23-05-400-804

6. Return Air Grill Installation

(Figure 201)

A. Tools/Equipment

Reference	Description
STD-6591	Bit - Spanner, #10

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Grill	21-23-05-38H-052	ARO ALL

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Procedure

SUBTASK 21-23-05-420-004

(1) Do the steps that follow to install the return air grill [1]:

(a) Clean the rubber pads below the quarter-turn fasteners [2].

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(b) Clean the inboard and outboard surface of the vertical flange of the mopsill.

ARO ALL; AIR GRILLS WITH TAMPER RESISTANT FASTENERS

(c) Make sure that the two tamper resistant quarter-turn fasteners [2] are in the horizontal (open) position before you install the grill [1].

ARO ALL

(d) Put the top edge of the air return grill [1] in the clip behind the sidewall panel (Detail A-A).

(e) Push the return air grill [1] up and outboard until the lower edge is against the mopsill face.

(f) Move the return air grill [1] forward or aft to make sufficient space to install the other return air grill [1].

1) Make sure the return air grill [1] engages the clip on the adjacent grill (Detail B-B).

(g) Move the return air grill [1] forward or aft to make sure there is an equal amount of space on each side of the return air grill [1].

ARO ALL; AIR GRILLS WITH TAMPER RESISTANT FASTENERS

(h) Apply downward pressure to the return air grill [1] while you turn the two tamper resistant quarter-turn fasteners [2] clockwise to the vertical (closed) position (Detail C-C) using spanner bit, STD-6591.

NOTE: When the two holes on the tamper resistant quarter-turn fastener are in the vertical position, the quarter-turn latch is in the closed position. When the two holes on the tamper resistant quarter-turn fastener are in the horizontal position, the quarter-turn latch is in the open position.

1) When correctly installed, the return air grill [1] will have an overlap of the mopsill of approximately 0.25 in. (6.35 mm).

2) Push forward or aft on the return air grill [1] to make sure the tamper resistant quarter-turn latches are engaged correctly.

ARO ALL

——— END OF TASK ———

TASK 21-23-05-200-802

7. Return Air Grill Baffle Inspection

(Figure 201, Figure 202)

A. General

(1) This task has instructions to inspect, remove, and install the baffles on the backside of the return air grills.

(2) In the event of a rapid decompression of the airplane fuselage, the baffles are designed to detach from the backside of the return air grills to permit airflow movement from the main cabin to the lower lobe compartments. After a decompression event, it is necessary to inspect the baffles and reinstall them to the backside of the return air grills.

B. References

Reference	Title
25-25-01 P/B 401	PASSENGER SEATS - REMOVAL/INSTALLATION

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C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Prepare for Inspection

SUBTASK 21-23-05-010-002

(1) Remove the passenger seats as needed to get access to the return air grill [1] (PAGEBLOCK 25-25-01/401).

SUBTASK 21-23-05-020-011

(2) Remove the return air grill [1] (TASK 21-23-05-000-802).

ARO ALL; AIRPLANES WITH RETURN AIR GRILLS WITH VINYL BAFFLES

E. Baffle Inspection

SUBTASK 21-23-05-212-001

(1) If the baffle [23] is missing or has damage (tears, punctures, rips, cuts), install a new baffle [23].

SUBTASK 21-23-05-212-002

(2) If the baffle [23] has become partially or fully detached from the backside of the return air grill [1], reinstall the baffle [23] with the attachment hardware.

SUBTASK 21-23-05-212-003

(3) If the baffle [23] has missing or damaged attachment hardware, install new attachment hardware.

SUBTASK 21-23-05-212-004

(4) Inspect the lower sidewall areas for unwanted materials or missing baffle [23] hardware, and clean the areas as applicable before you reinstall the return air grill [1].

ARO ALL; RETURN AIR GRILLS WITH FIBREGLASS CLOTH BAFFLES

F. Baffle Inspection

SUBTASK 21-23-05-212-005

(1) If the baffle [24] is missing or has damage (tears, punctures, rips, cuts), install a new baffle.

SUBTASK 21-23-05-212-006

(2) If the baffle [24] has become partially or fully detached from the backside of the return air grill [1], reinstall the baffle [24] with the attachment hardware.

SUBTASK 21-23-05-212-007

(3) If the baffle [24] has missing or damaged attachment hardware, install new attachment hardware.

SUBTASK 21-23-05-212-008

(4) Inspect the lower sidewall areas for unwanted materials or missing baffle [24] hardware, and clean the areas as applicable before you reinstall the return air grill [1].

ARO ALL

G. Baffle Removal

SUBTASK 21-23-05-020-012

(1) To remove the baffle on the return air grill [1], do this task: Return Air Grill Baffle Removal, TASK 21-23-05-000-803.

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H. Baffle Installation

SUBTASK 21-23-05-420-013-001

(1) To install the baffle on the return air grill [1], do this task: Return Air Grill Baffle Installation, TASK 21-23-05-400-803.

I. Put the airplane back to its usual condition.

SUBTASK 21-23-05-420-007

(1) Install the return air grill [1] (TASK 21-23-05-400-804).

SUBTASK 21-23-05-410-001

(2) Install the passenger seats that were removed (PASSENGER SEATS - REMOVAL/INSTALLATION, PAGEBLOCK 25-25-01/401).

——— END OF TASK ———

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RECIRCULATION SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Operational Test - Upper and Lower Recirculation Fans

(2) Operational Test - Upper and Lower Recirculation Fans Switches

B. To do a complete system test of the recirculation system you must do each of the above tasks.

TASK 21-25-00-710-801

2. Recirculation Fans - Operational Test

A. General

(1) This test makes sure that the Right Cabin Temperature Controller (CTC-R) can control these recirculation system fans which are energized by the Electrical Load Management System (ELMS) in the P110 and P210 panels:

(a) Upper recirculation fans (Forward and Aft)

(b) Lower recirculation fans (Left and Right)

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 21-25-00-860-001

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

SUBTASK 21-25-00-860-003

(2) Make sure the L PACK switch and the R PACK switch are set to the OFF position.

NOTE: The L PACK switch and the R PACK switch are on the Air Conditioning Module in the pilot's overhead panel, P5.

SUBTASK 21-25-00-860-004

(3) Make sure the UPPER RECIRC FANS switch and the LOWER RECIRC FANS switch are set to the ON position.

NOTE: The UPPER RECIRC FANS switch and the LOWER RECIRC FANS switch are on the Air Conditioning Module in the pilot's overhead panel, P5.

SUBTASK 21-25-00-740-001

(4) Use a maintenance access terminal (MAT) to do the System Test of the Recirculation Fan System. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

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3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Recirculation Fan 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.

(e) To put the MAT back to its initial condition, make these selections:
1) LINE MAINTENANCE
2) EXIT MAINTENANCE

——— END OF TASK ———

TASK 21-25-00-740-801

3. Recirculation Fans Switches - Operational Test

A. General

(1) This test makes sure that the UPPER RECIRC FANS switch and the LOWER RECIRC FANS switch operates correctly.

NOTE: The UPPER RECIRC FANS switch and the LOWER RECIRC FANS switch are on the Air Conditioning Module in the pilot's overhead panel, P5.

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. Prepare for the Test

SUBTASK 21-25-00-860-005

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

SUBTASK 21-25-00-860-006

(2) Make sure the UPPER RECIRC FANS switch and the LOWER RECIRC FANS switch are set to the ON position.

SUBTASK 21-25-00-740-002

(3) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the upper and lower recirculation fan switches. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

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(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 23 Overhead panel ARINC 629 System.

NOTE: If 23 Overhead panel ARINC 629 System does not show, then there are no maintenance messages in existing faults for the upper and lower recirculation fans switches.

(c) If 23 Overhead panel ARINC 629 System shows do these steps:

1) Select 23 Overhead panel ARINC 629 System
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the upper and lower recirculation fans switches.
4) If a maintenance message for the upper or lower recirculation fans switch shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 21-25-00-860-007

(4) Push the UPPER RECIRC FANS switch and the LOWER RECIRC FANS switch to the OFF position.

SUBTASK 21-25-00-740-003

(5) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the upper and lower recirculation fan switches:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 23 Overhead panel ARINC 629 System.

NOTE: If 23 Overhead panel ARINC 629 System does not show, then there are no maintenance messages in existing faults for the upper and lower recirculation fans switches.

(c) If 23 Overhead panel ARINC 629 System shows do these steps:

1) Select 23 Overhead panel ARINC 629 System
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the upper and lower recirculation fans switches.
4) If a maintenance message for the upper or lower recirculation fans switch shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(d) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE
2) EXIT MAINTENANCE

END OF TASK

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UPPER RECIRCULATION FANS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Upper recirculation fan - deactivation.

(2) Upper recirculation fan - activation.

TASK 21-25-01-040-801

2. Upper Recirculation Fans - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the upper recirculation fans.

B. References

Reference	Title
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-000-801	Center Stowage Bin Diagonal Brace Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
234	Area Above Passenger Compartment Ceiling, Right - Section 43
254	Area Above Passenger Compartment Ceiling, Right - Section 46

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-25-01-860-015

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure there is no air flow in the distribution ducts when you remove the recirculation fan.

SUBTASK 21-25-01-860-016

(2) Do not use a ground conditioned air source to supply conditioned air to the airplane from the ground conditioned air connector.

SUBTASK 21-25-01-210-001

(3) Make sure that the UPPER and LOWER RECIRC FANS switch-lights are set to the OFF position.

NOTE: The UPPER and LOWER RECIRC FANS switch-lights are on the Air Conditioning Module in the pilot's overhead panel, P5.

SUBTASK 21-25-01-010-016

(4) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-25-01-020-015

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	21	C21313	FWD UPR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
B	5	C21314	AFT UPR RECIRC FAN
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-01-860-020

(6) Do these steps to access the forward upper recirculation fan:

NOTE: Forward upper recirculation fan is located above the passenger compartment ceiling area.

(a) Remove the inboard main cabin ceiling panel above the center stowage bins (PAGEBLOCK 25-21-06/401).

(b) As necessary, remove the center stowage bin diagonal brace (TASK 25-28-06-000-801).

SUBTASK 21-25-01-860-021

(7) Do these steps to access the aft upper recirculation fan:

NOTE: Aft upper recirculation fan is located above the passenger compartment ceiling area.

(a) Remove the inboard main cabin ceiling panel above the center stowage bins (PAGEBLOCK 25-21-06/401).

(b) As necessary, remove the center stowage bin diagonal brace (TASK 25-28-06-000-801).

F. Upper Recirculation Fan - Tryout

NOTE: This tryout is to make sure that the upper recirculation fans are at a zero energy state.

SUBTASK 21-25-01-860-018

(1) At the pilot's overhead panel, P5, put the UPPER and LOWER RECIRC FAN switch-lights to the ON position.

SUBTASK 21-25-01-860-019

(2) Use a maintenance access terminal (MAT) to do an operational test of the upper recirculation fan.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

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3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Recirculation Fan 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 that the FORWARD and AFT upper recirculation fans DO NOT come on.

NOTE: An observer must be in voice contact with an operator in the flight deck at all times to complete this step.

(d) After the test, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

——— END OF TASK ———

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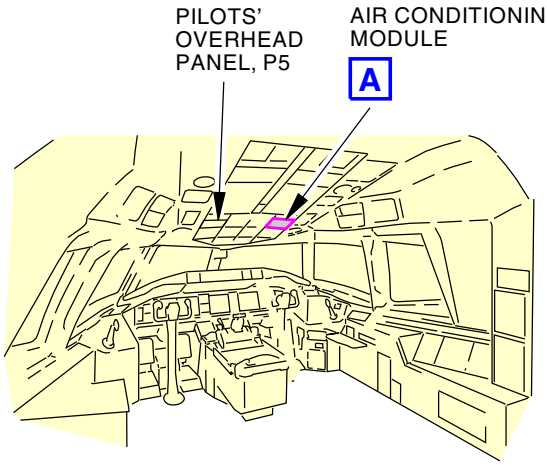
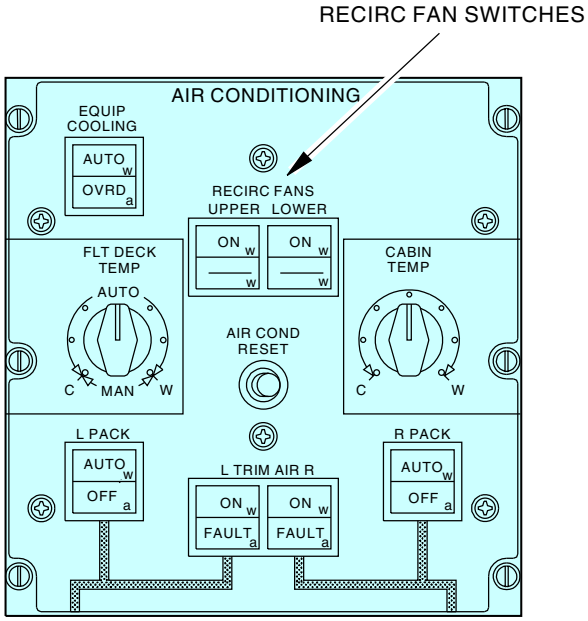


FLIGHT COMPARTMENT



AIR CONDITIONING MODULE

A

2406897 S0000557142_V2

Upper Recirculation Fan
Figure 201/21-25-01-990-809 (Sheet 1 of 5)

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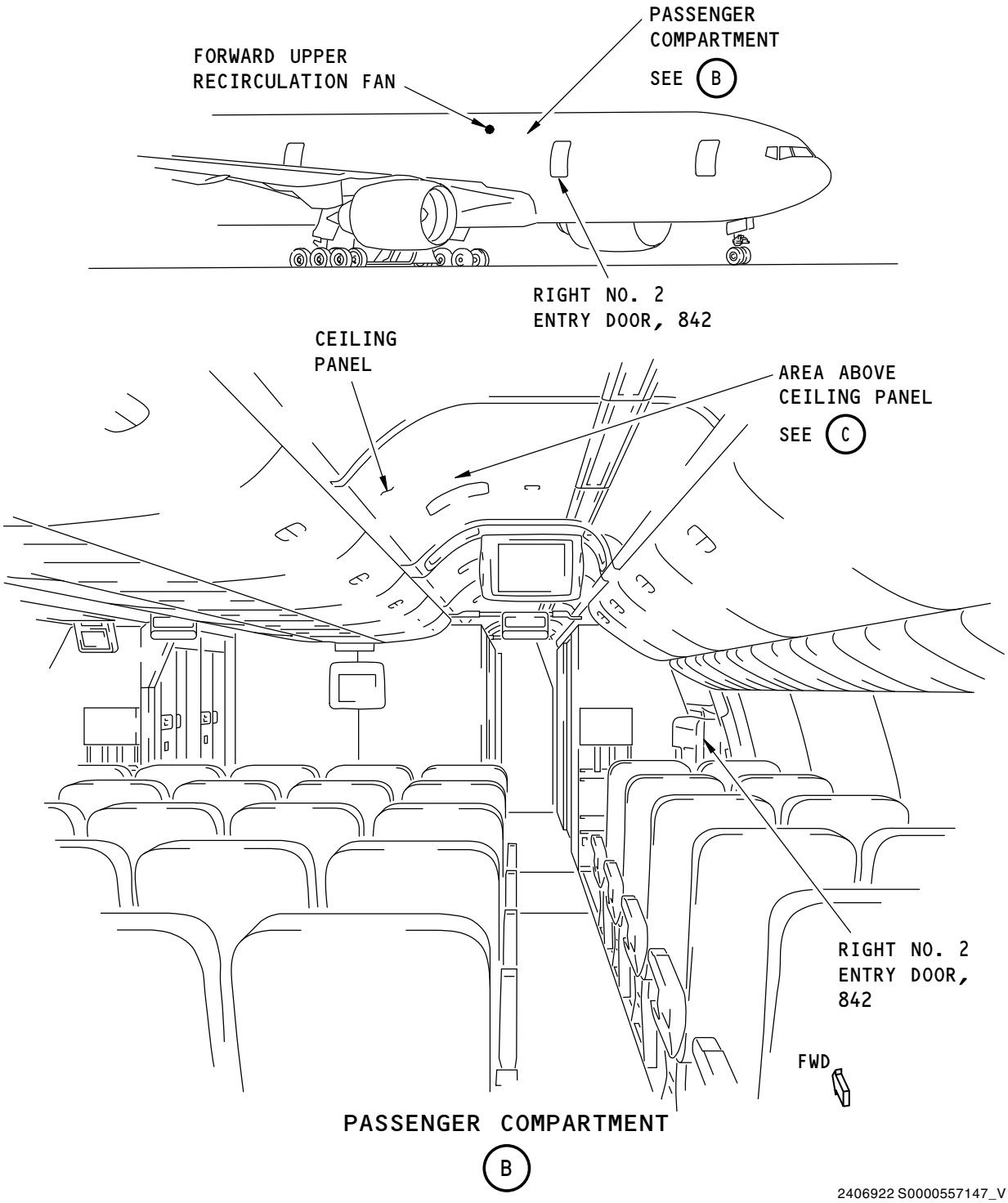

Upper Recirculation Fan
Figure 201/21-25-01-990-809 (Sheet 2 of 5)

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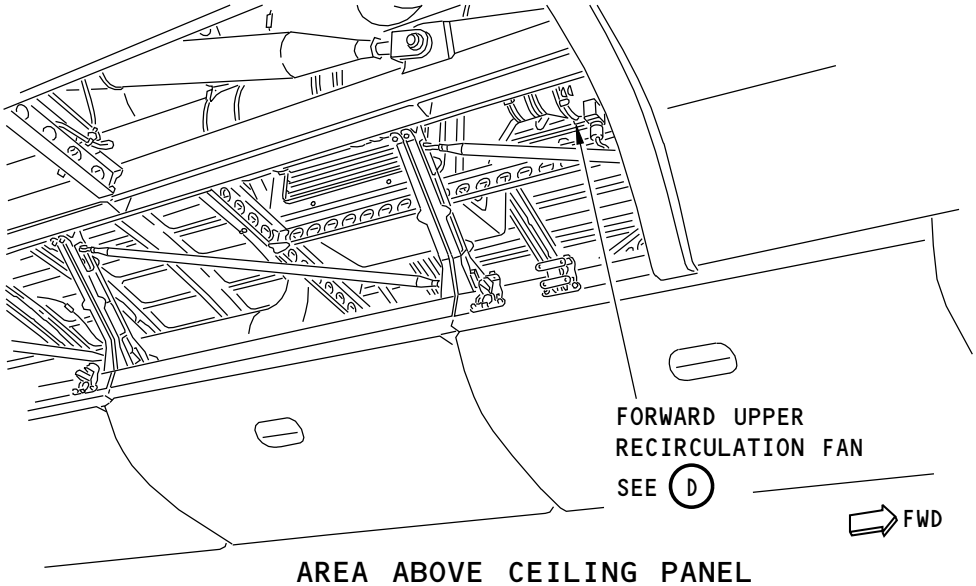
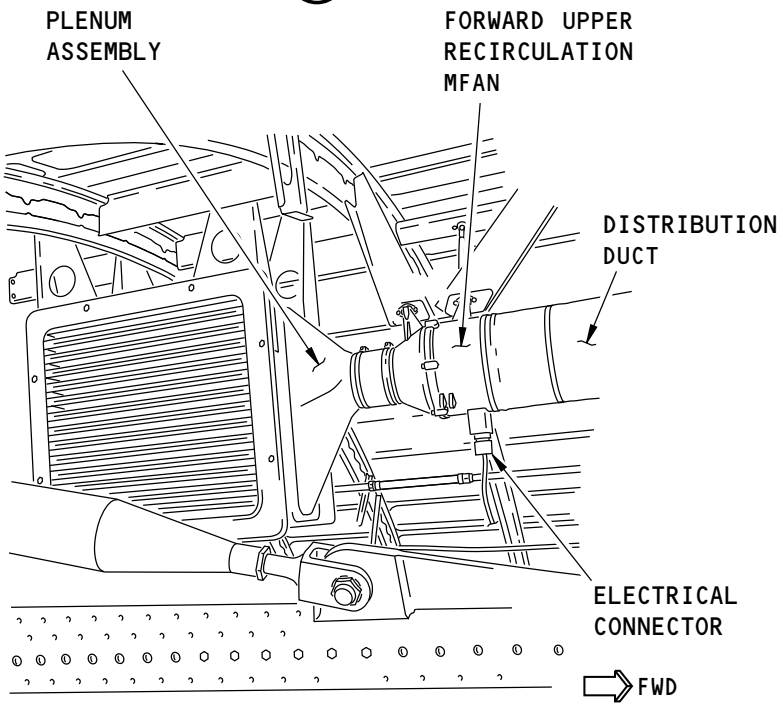


AREA ABOVE CEILING PANEL

C



FORWARD UPPER RECIRCULATION FAN

D

2406928 S0000557148_V1

Upper Recirculation Fan
Figure 201/21-25-01-990-809 (Sheet 3 of 5)

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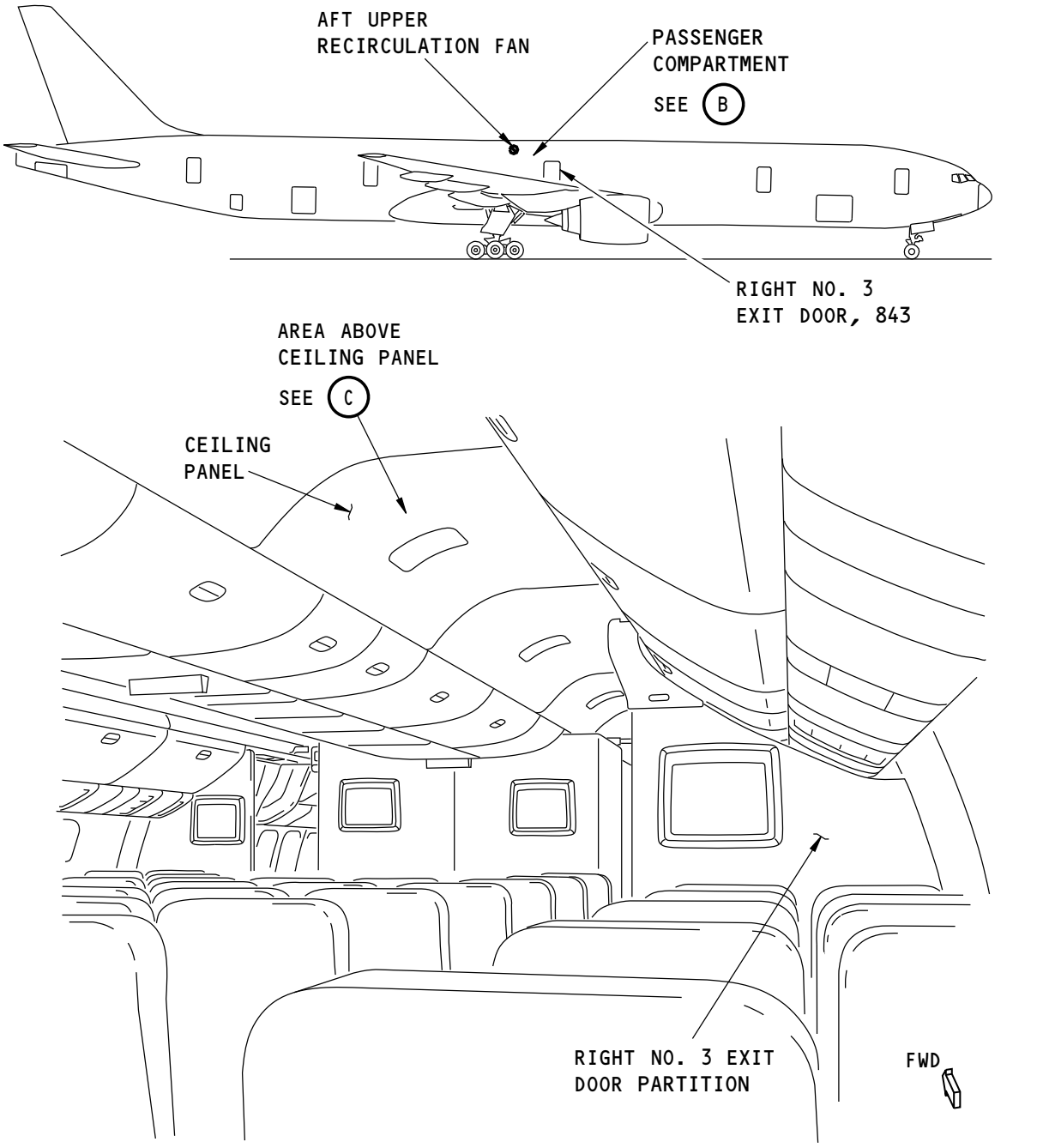

Upper Recirculation Fan
Figure 201/21-25-01-990-809 (Sheet 4 of 5)

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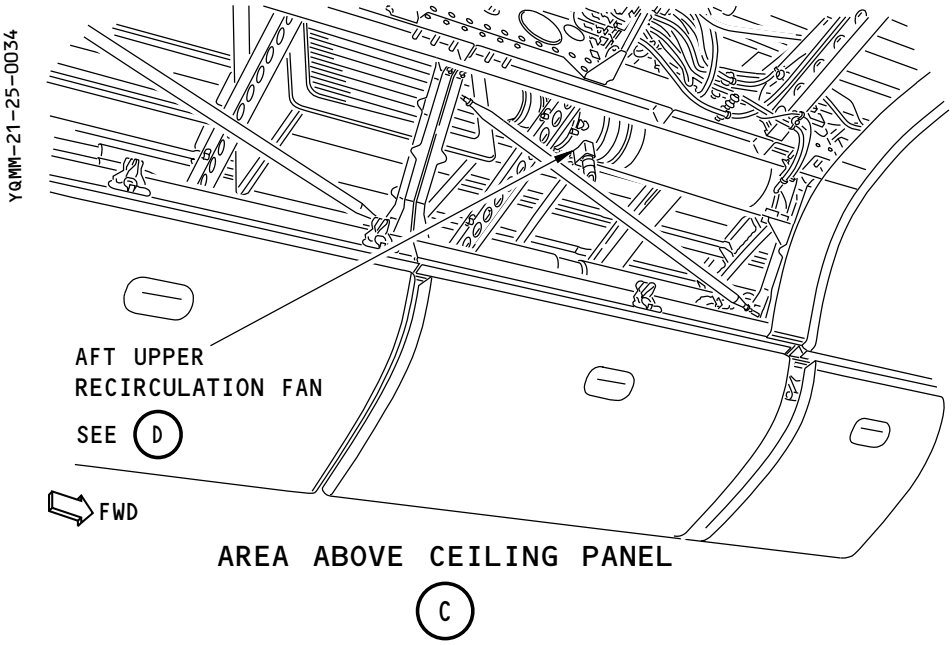

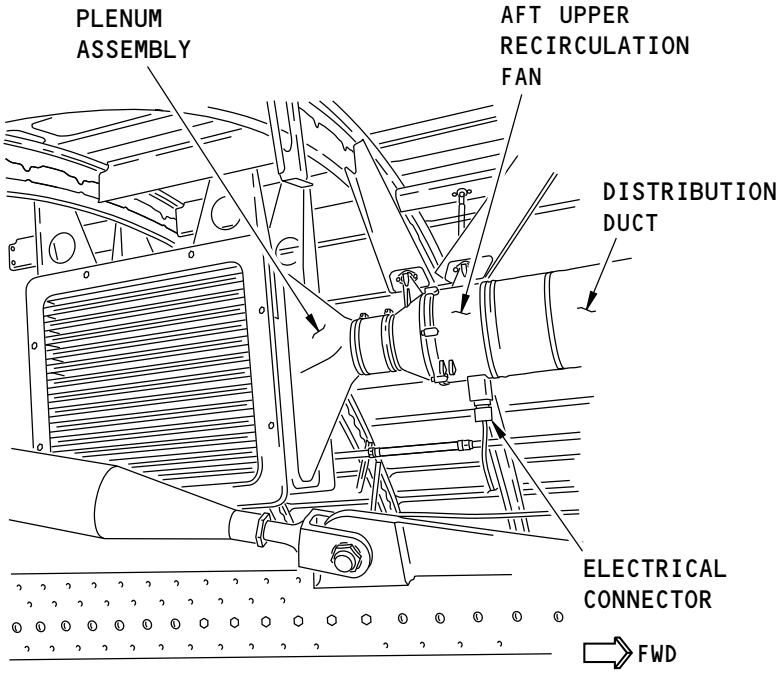

2406966 S0000557155_V1

Upper Recirculation Fan
Figure 201/21-25-01-990-809 (Sheet 5 of 5)

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TASK 21-25-01-440-801

3. Upper Recirculation Fans - Activation

(Figure 201)

A. General

(1) This task will activate the upper recirculation fans.

B. References

Reference	Title
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-400-801	Center Stowage Bin Diagonal Brace Installation (P/B 401)

C. Location Zones

Zone	Area
234	Area Above Passenger Compartment Ceiling, Right - Section 43
254	Area Above Passenger Compartment Ceiling, Right - Section 46

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-25-01-410-007

(1) Do these steps to close the access to the forward upper recirculation fan:

(a) Install the inboard main cabin ceiling panel above the center stowage bins (PAGEBLOCK 25-21-06/401).

(b) As necessary, install the center stowage bin diagonal brace (TASK 25-28-06-400-801).

SUBTASK 21-25-01-410-008

(2) Do these steps to close the access to the aft upper recirculation fan:

(a) Install the inboard main cabin ceiling panel above the center stowage bins (PAGEBLOCK 25-21-06/401).

(b) As necessary, install the center stowage bin diagonal brace (TASK 25-28-06-400-801).

SUBTASK 21-25-01-420-012

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	21	C21313	FWD UPR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

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Right Power Management Panel, P210

Row	Col	Number	Name
B	5	C21314	AFT UPR RECIRC FAN
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-01-410-009

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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UPPER RECIRCULATION FANS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Forward upper recirculation fan removal.

(2) Forward upper recirculation fan installation.

ARO 001-016 POST SB 777-21-0189

(3) Forward upper recirculation fan vibration monitor removal.

(4) Forward upper recirculation fan vibration monitor installation.

ARO ALL

(5) Aft upper recirculation fan removal.

(6) Aft upper recirculation fan installation.

ARO 001-016 POST SB 777-21-0189

(7) Aft upper recirculation fan vibration monitor removal.

(8) Aft upper recirculation fan vibration monitor installation.

ARO ALL

B. The forward and aft upper recirculation fans are installed above the passenger compartment ceiling areas.

TASK 21-25-01-000-801

2. Forward Upper Recirculation Fan Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This procedure removes the Forward Upper Recirculation Fan.

B. References

Reference	Title
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-000-801	Center Stowage Bin Diagonal Brace Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
234	Area Above Passenger Compartment Ceiling, Right - Section 43

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-25-01-860-011

(1) Do these steps to make sure there is no conditioned air supplied to the passenger compartment:

NOTE: This will make sure there is no air flow in the distribution ducts when you remove the recirculation fan.

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(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

(b) Do not use a ground conditioned air source to supply conditioned air to the airplane from the ground conditioned air connector.

(c) Make sure the UPPER and LOWER RECIRC FANS switch-lights are set to the OFF position.

NOTE: The UPPER and LOWER RECIRC FANS switch-lights are on the Air Conditioning Module in the pilot's overhead panel, P5.

SUBTASK 21-25-01-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-25-01-860-001

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	21	C21313	FWD UPR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

SUBTASK 21-25-01-010-014

(4) Get access to the forward upper recirculation fan [1] above the passenger compartment ceiling area:

(a) Remove the inboard main cabin ceiling panel above the center stowage bins (PAGEBLOCK 25-21-06/401).

(b) As necessary, remove the center stowage bin diagonal brace (TASK 25-28-06-000-801).

F. Forward Upper Recirculation Fan Removal

SUBTASK 21-25-01-020-001

(1) Disconnect the electrical connector [4] from the forward upper recirculation fan [1].

ARO 001-016 POST SB 777-21-0189

SUBTASK 21-25-01-020-016

(2) Disconnect the fan electrical connector plug [33] from the fan vibration monitor [43].

(3) Remove the vibration monitor [43] from the fan housing (Forward Upper Recirculation Fan Vibration Monitor Removal, TASK 21-25-01-000-804).

ARO ALL

SUBTASK 21-25-01-020-002

(4) Remove the bolt [9], washer [10], and the nut [11] that attach the support rod to the forward upper recirculation fan [1].

SUBTASK 21-25-01-020-003

(5) Loosen the clamp [2] which attaches the sleeve [3] to the forward upper recirculation fan [1].

SUBTASK 21-25-01-020-004

(6) Loosen the clamp [6] which attaches the sleeve [5] to the forward upper recirculation fan [1].

SUBTASK 21-25-01-020-005

(7) Remove and discard the lockwire [12] from the bolts [7] that attach the forward upper recirculation fan [1] to the upper mount.

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SUBTASK 21-25-01-020-006

(8) Hold the forward upper recirculation fan [1] while you remove the bolts [7] and the washers [8] from the upper mount.

SUBTASK 21-25-01-020-007

(9) Remove the forward upper recirculation fan [1] from the sleeve [3] and the sleeve [5].

——— END OF TASK ———

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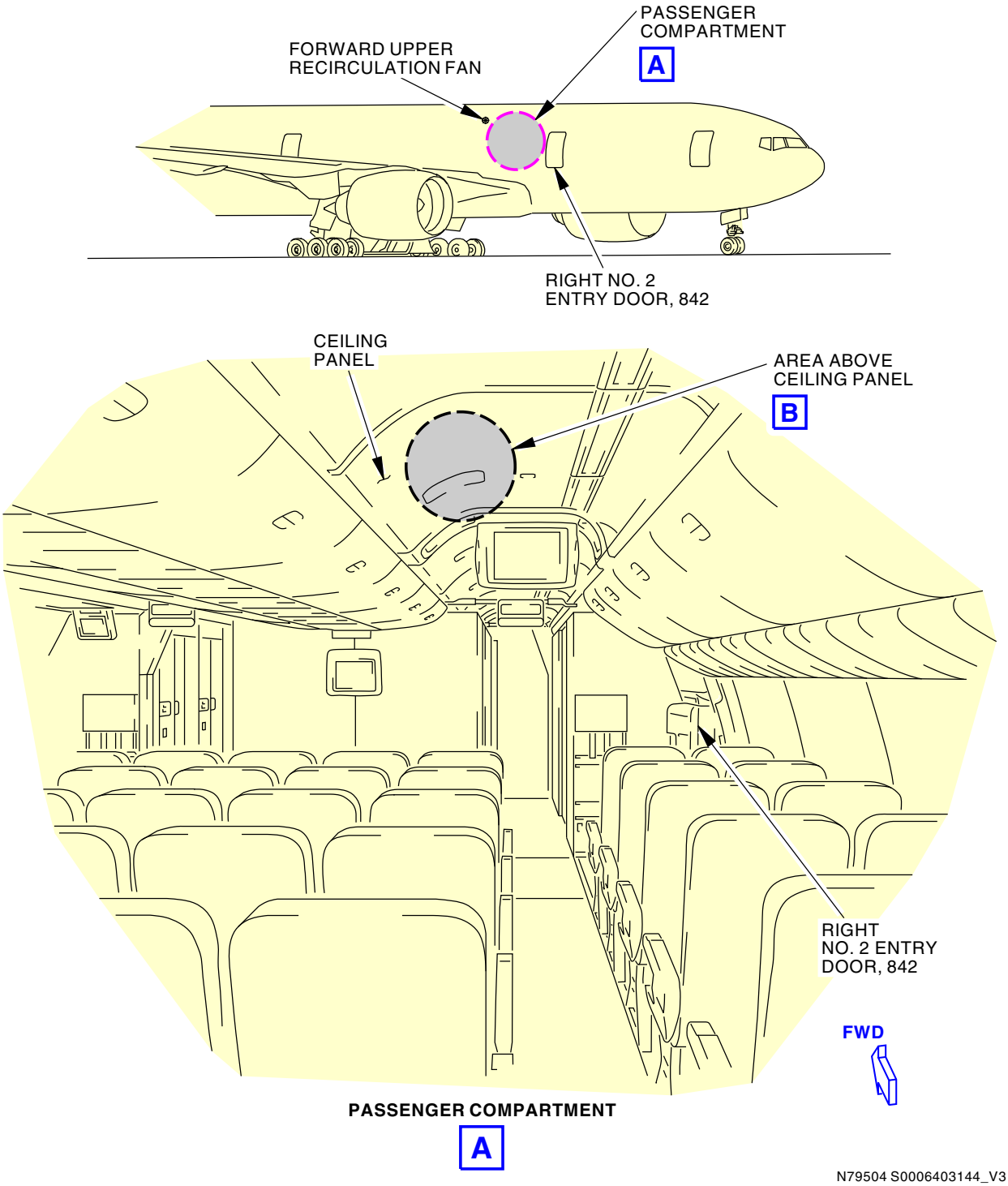

Forward Upper Recirculation Fan Installation
Figure 401/21-25-01-990-808 (Sheet 1 of 2)

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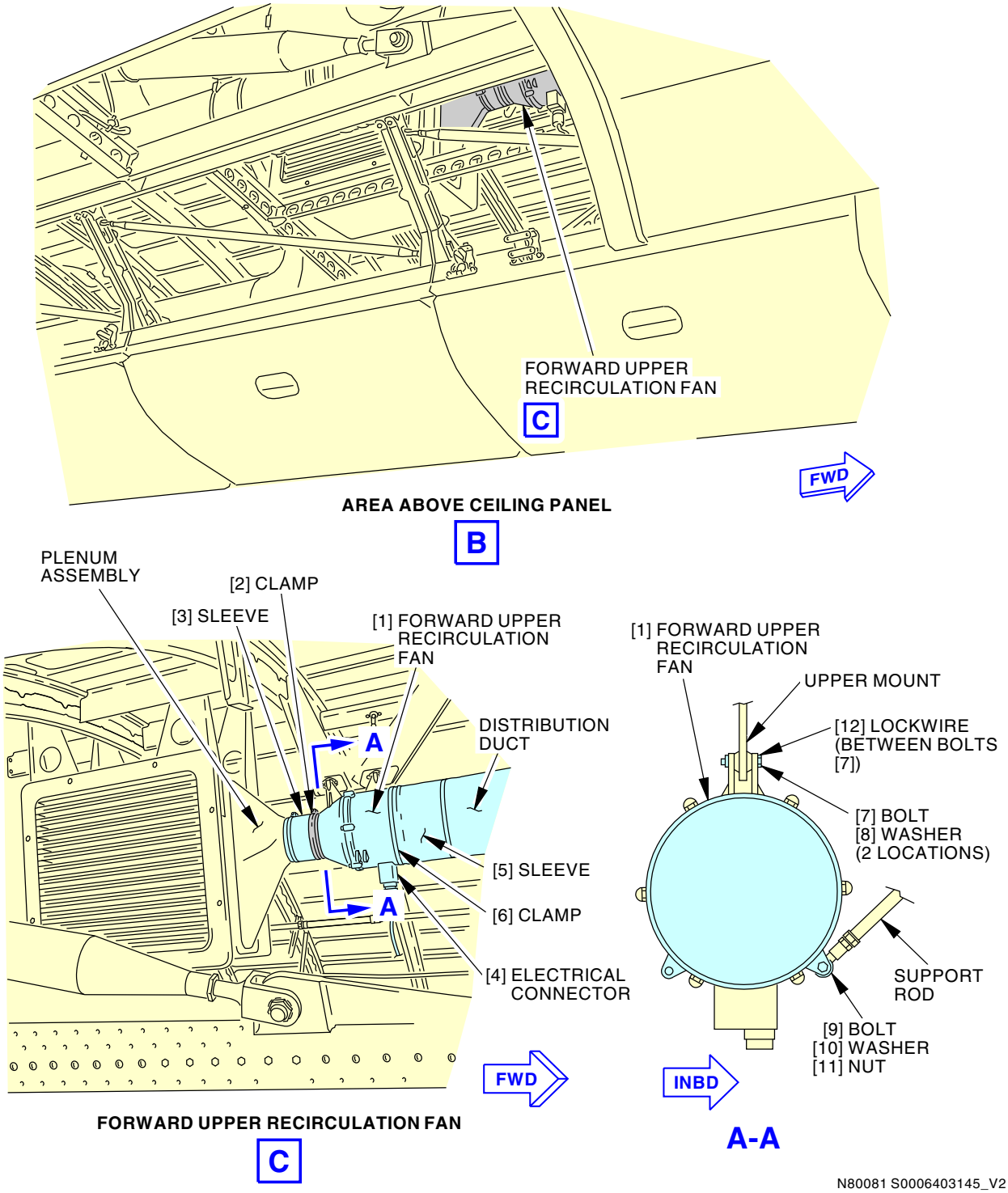

Forward Upper Recirculation Fan Installation
Figure 401/21-25-01-990-808 (Sheet 2 of 2)

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TASK 21-25-01-400-801

3. Forward Upper Recirculation Fan Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-400-801	Center Stowage Bin Diagonal Brace Installation (P/B 401)
45-10-00-740-819	How to Do a Ground Test (P/B 201)

B. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	21-25-01-13A-585	ARO 001-007
		21-25-01-13C-105	ARO 008-999

D. Location Zones

Zone	Area
234	Area Above Passenger Compartment Ceiling, Right - Section 43

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Forward Upper Recirculation Fan Installation

SUBTASK 21-25-01-420-001

(1) Put the forward upper recirculation fan [1] between the sleeve [3] and the sleeve [5].

SUBTASK 21-25-01-420-002

(2) Install the bolts [7] and the washers [8] to connect the forward upper recirculation fan [1] to the upper mount.

SUBTASK 21-25-01-820-002

(3) Install the bolt [9], washer [10], and the nut [11] to connect the support rod to the forward upper recirculation fan [1].

SUBTASK 21-25-01-420-003

(4) Tighten the clamp [2] which attaches sleeve [3] to the forward upper recirculation fan [1] to 15 in-lb (1.7 N·m)-18 in-lb (2.0 N·m).

SUBTASK 21-25-01-420-004

(5) Tighten the clamp [6] which attaches the sleeve [5] to the forward upper recirculation fan [1] to 15 in-lb (1.7 N·m)-18 in-lb (2.0 N·m).

SUBTASK 21-25-01-420-005

(6) Connect the electrical connector [4] to the forward upper recirculation fan [1].

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ARO 001-016 POST SB 777-21-0189

SUBTASK 21-25-01-420-013

(7) Install the vibration monitor [43] to the fan housing, and reconnect the fan electrical connector plug [33] to the vibration monitor [43].

(8) Do this task: Forward Upper Recirculation Fan Vibration Monitor Installation, TASK 21-25-01-400-804.

ARO ALL

SUBTASK 21-25-01-420-006

(9) Install a new MS20995C32 lockwire, G01048 [12] between the bolts [7].

SUBTASK 21-25-01-860-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	21	C21313	FWD UPR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

G. Forward Upper Recirculation Fan Installation Test

SUBTASK 21-25-01-860-003

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

SUBTASK 21-25-01-860-004

(2) Push the UPPER RECIRC FANS switch to the ON position.

NOTE: The UPPER RECIRC FANS switch is on the Air Conditioning Module in the pilot's overhead panel, P5.

(a) Make sure the recirculation fan operates without too much noise or vibration.

(b) Make sure there is no air leakage around the recirculation fan connections.

SUBTASK 21-25-01-740-001

(3) Use a maintenance access terminal (MAT) to do the System Test of the Recirculation Fan System (TASK 45-10-00-740-819).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Recirculation Fan 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.

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SUBTASK 21-25-01-860-005

(4) Push the UPPER RECIRC FANS switch to the OFF position.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-01-410-005

(1) Close up the access to the forward upper recirculation fan [1] above the passenger compartment ceiling area:

(a) If removed, install the center stowage bin diagonal brace (TASK 25-28-06-400-801).

(b) Install the inboard main cabin ceiling panel above the center stowage bins (PAGEBLOCK 25-21-06/401).

SUBTASK 21-25-01-410-001

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

ARO 001-016 POST SB 777-21-0189

TASK 21-25-01-000-804

4. Forward Upper Recirculation Fan Vibration Monitor Removal

(Figure 402)

A. General

(1) This procedure removes the Forward Upper Recirculation Fan Vibration Monitor.

B. References

Reference	Title
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-000-801	Center Stowage Bin Diagonal Brace Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
234	Area Above Passenger Compartment Ceiling, Right - Section 43

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-25-01-860-035

(1) Do these steps to make sure that there is no conditioned air supplied to the passenger compartment:

NOTE: This will make sure that there is no air flow in the distribution ducts when you remove the recirculation fan monitor.

(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

(b) Do not use a ground conditioned air source to supply conditioned air to the airplane from the ground conditioned air connector.

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ARO 001-016 POST SB 777-21-0189 (Continued)

(c) Make sure that the UPPER and LOWER RECIRC FANS switch-lights are set to the OFF position.

NOTE: The UPPER and LOWER RECIRC FANS switch-lights are on the Air Conditioning Module in the pilot's overhead panel, P5.

SUBTASK 21-25-01-010-019

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-25-01-860-036

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	21	C21313	FWD UPR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

SUBTASK 21-25-01-010-020

(4) Get access to the forward upper recirculation fan [1] above the passenger compartment ceiling area:

(a) Remove the inboard main cabin ceiling panel above the center stowage bins (MAIN CEILING PANEL - REMOVAL/INSTALLATION, PAGEBLOCK 25-21-06/401).

(b) As necessary, remove the center stowage bin diagonal brace (Center Stowage Bin Diagonal Brace Removal, TASK 25-28-06-000-801).

F. Forward Upper Recirculation Fan Vibration Monitor Removal

SUBTASK 21-25-01-020-018

(1) Disconnect the fan electrical connector plug [33] from the vibration monitor electrical receptacle [34].

SUBTASK 21-25-01-020-019

(2) Disconnect the vibration monitor electrical connector plug [35] from the fan electrical receptacle [36].

SUBTASK 21-25-01-020-020

(3) If installed, remove the screw [37], washers [38] and nut [39] to disconnect the vibration monitor bonding strap [40] from the fan ground lug [44].

NOTE: This step only applies to fans that have a bonding strap or ground stud.

SUBTASK 21-25-01-020-021

(4) Remove the two screws [41] from the L- brackets that hold the vibration monitor [43] to the fan [1].

SUBTASK 21-25-01-020-022

(5) Remove the band clamp [42] from the vibration monitor [43] and the fan [1].

SUBTASK 21-25-01-020-023

(6) Remove the vibration monitor [43].

END OF TASK

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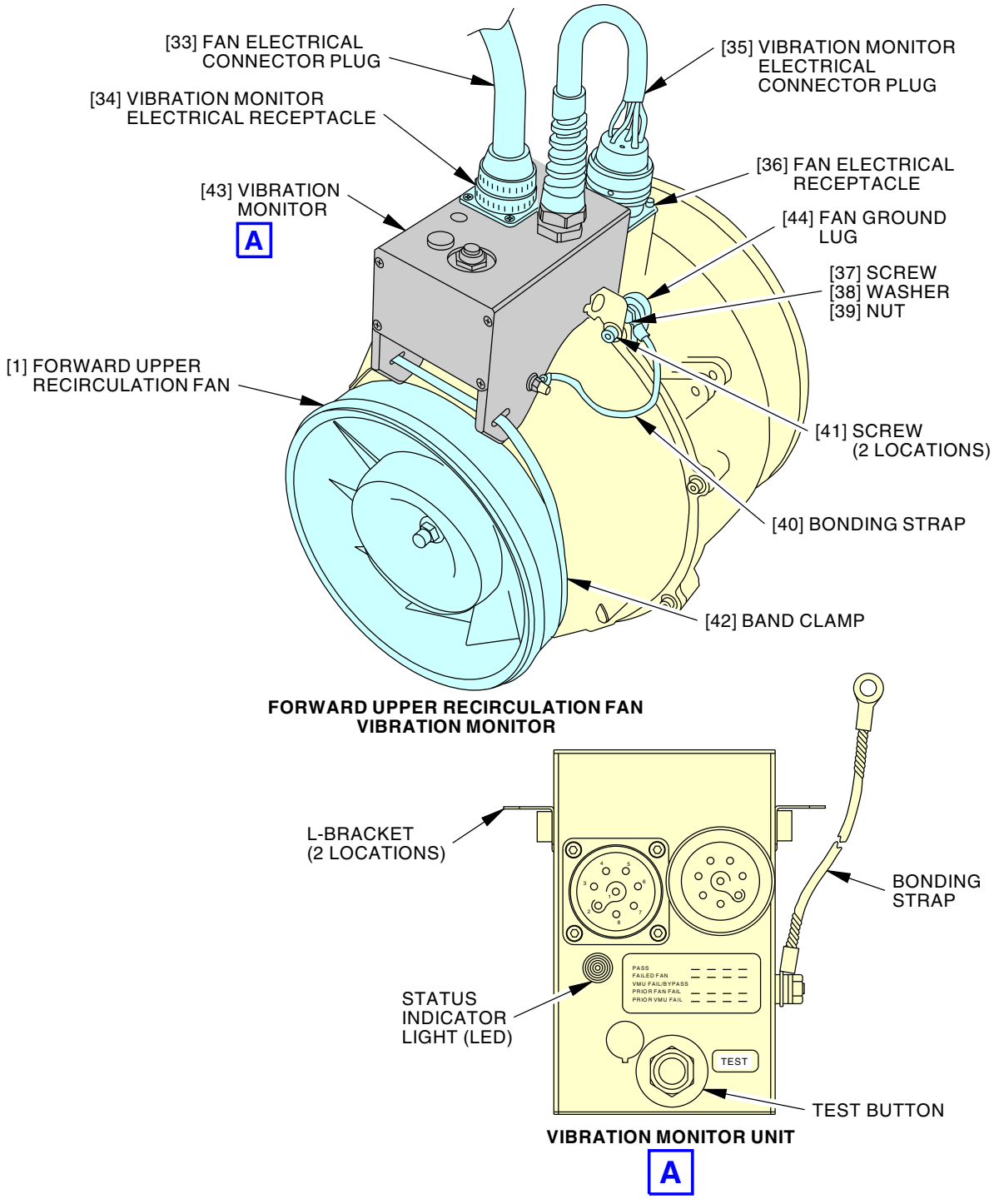

Forward Upper Recirculation Fan Vibration Monitor
Figure 402/21-25-01-990-810

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TASK 21-25-01-400-804

5. Forward Upper Recirculation Fan Vibration Monitor Installation

(Figure 402)

A. General

(1) This procedure installs the Forward Upper Recirculation Fan Vibration Monitor.

B. References

Reference	Title
24-22-00 P/B 201	AC GENERATION AND BUS CONTROL - MAINTENANCE PRACTICES
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-400-801	Center Stowage Bin Diagonal Brace Installation (P/B 401)

C. Location Zones

Zone	Area
234	Area Above Passenger Compartment Ceiling, Right - Section 43

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Forward Upper Recirculation Fan Vibration Monitor Installation

SUBTASK 21-25-01-420-015

(1) Put the band clamp [42] thru the slots in the legs of the vibration monitor [43].

SUBTASK 21-25-01-420-030

(2) Loosely install the band clamp [42] around the fan housing.

SUBTASK 21-25-01-820-004

(3) Align the L-brackets on each side of the vibration monitor [43] with the two split line holes on the fan housing.

SUBTASK 21-25-01-420-019

(4) Install the two screws [41] to secure the vibration monitor L-brackets to the fan housing.

(a) Tighten each screw to 51-56 pound-inches (5.76-6.32 newton-meters).

SUBTASK 21-25-01-420-020

(5) Tighten the band clamp [42] to 12-15 pound-inches (1.35-1.69 newton-meters).

(a) Make sure that the band clamp [42] engages fully around the entire circumference of the fan housing.

(b) Make sure that both legs of the vibration monitor [43] are in full contact with the fan housing.

SUBTASK 21-25-01-420-022

(6) If applicable, reconnect the vibration monitor bonding strap [40] to the fan ground lug [44] with the screw [37], washer [38], and nut [39].

NOTE: This step only applies to fans that have a bonding strap or ground stud.

(a) Make sure that the fan ground lug [44] is positioned with the bolt head on the monitor side.

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ARO 001-016 POST SB 777-21-0189 (Continued)

(b) Do an electrical bonding and resistance check of the fan and vibration monitor (SWPM 20-20-00, Electrical Bonds and Grounds, Standard Wiring Practice Manual, D6-54446).

SUBTASK 21-25-01-420-029

(7) Reconnect the vibration monitor electrical connector plug [35] to the fan electrical receptacle [36].

SUBTASK 21-25-01-420-023

(8) Reconnect the fan electrical connector plug [33] to the vibration monitor electrical receptacle [34].

F. Forward Upper Recirculation Fan Vibration Monitor Installation Test

SUBTASK 21-25-01-860-032

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	21	C21313	FWD UPR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

SUBTASK 21-25-01-860-026

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

SUBTASK 21-25-01-860-027

(3) Do these steps for installation test:

(a) Make sure that fan [1] is operating normally.

(b) Make sure that the STATUS LED is blinking GREEN after 2 minutes.

(4) Do these steps for aircraft logic test:

(a) Press and hold monitor test button for 15 seconds.

NOTE: Fan should turn off and aircraft latch will engage after time delay.

(b) Release TEST button.

(c) Make sure that the fan [1] is OFF.

(d) Disconnect the electrical connector [45] from the fan vibration monitor [46] to remove power from the fan [1].

(e) Re-connect the electrical connector [45].

1) Make sure that the fan [1] restarts and operates as normal.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-01-410-014

(1) Close up the access to the forward upper recirculation fan [1] above the passenger compartment ceiling area:

(a) If removed, install the center stowage bin diagonal brace (Center Stowage Bin Diagonal Brace Installation, TASK 25-28-06-400-801).

(b) Install the inboard main cabin ceiling panel above the center stowage bins (MAIN CEILING PANEL - REMOVAL/INSTALLATION, PAGEBLOCK 25-21-06/401).

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ARO 001-016 POST SB 777-21-0189 (Continued)

SUBTASK 21-25-01-410-015

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-25-01-860-037

(3) Remove electrical power if no longer required (AC GENERATION AND BUS CONTROL - MAINTENANCE PRACTICES, PAGEBLOCK 24-22-00/201).

ARO ALL

——— END OF TASK ———

TASK 21-25-01-000-802

6. Aft Upper Recirculation Fan Removal

(Figure 403)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This procedure removes the Aft Upper Recirculation Fan.

B. References

Reference	Title
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-000-801	Center Stowage Bin Diagonal Brace Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
254	Area Above Passenger Compartment Ceiling, Right - Section 46

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-25-01-860-014

(1) Do these steps to make sure there is no conditioned air supplied to the passenger compartment:

NOTE: This will make sure there is no air flow in the distribution ducts when you remove the recirculation fan.

(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

(b) Do not use a ground conditioned air source to supply conditioned air to the airplane from the ground conditioned air connector.

(c) Make sure the UPPER and LOWER RECIRC FANS switch-lights are set to the OFF position.

NOTE: The UPPER and LOWER RECIRC FANS switch-lights are on the Air Conditioning Module in the pilot's overhead panel, P5.

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SUBTASK 21-25-01-010-003

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-25-01-860-007

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

Right Power Management Panel, P210

Row	Col	Number	Name
B	5	C21314	AFT UPR RECIRC FAN
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-01-010-015

(4) Get access to the aft upper recirculation fan [21] above the passenger compartment ceiling area:

(a) Remove the inboard main cabin ceiling panel above the center stowage bins (PAGEBLOCK 25-21-06/401).

(b) As necessary, remove the center stowage bin diagonal brace (TASK 25-28-06-000-801).

F. Aft Upper Recirculation Fan Removal

SUBTASK 21-25-01-020-008

(1) Disconnect the electrical connector [26] from the aft upper recirculation fan [21].

ARO 001-016 POST SB 777-21-0189

SUBTASK 21-25-01-020-017

(2) Disconnect the fan electrical connector plug [45] from the vibration monitor [55].

(3) Remove the vibration monitor [55] from the fan housing (Aft Upper Recirculation Fan Vibration Monitor Removal, TASK 21-25-01-000-803).

ARO ALL

SUBTASK 21-25-01-020-009

(4) Loosen the clamp [22] which attaches the sleeve [23] to the aft upper recirculation fan [21].

SUBTASK 21-25-01-020-010

(5) Loosen the clamp [24] which attaches the flexible hose [25] to the aft upper recirculation fan [21].

SUBTASK 21-25-01-020-014

(6) Remove the bolt [29], washer [30], and the nut [31] that attaches the support rod to the aft upper recirculation fan [21].

SUBTASK 21-25-01-020-011

(7) Remove and discard the lockwire [32] from the bolts [27] at the upper mount.

SUBTASK 21-25-01-020-012

(8) Hold the aft upper recirculation fan [21] while you remove the bolts [27] and the washers [28] from the upper mount.

SUBTASK 21-25-01-020-013

(9) Remove the aft upper recirculation fan [21] from the sleeve [23] and the flexible hose [25].

END OF TASK

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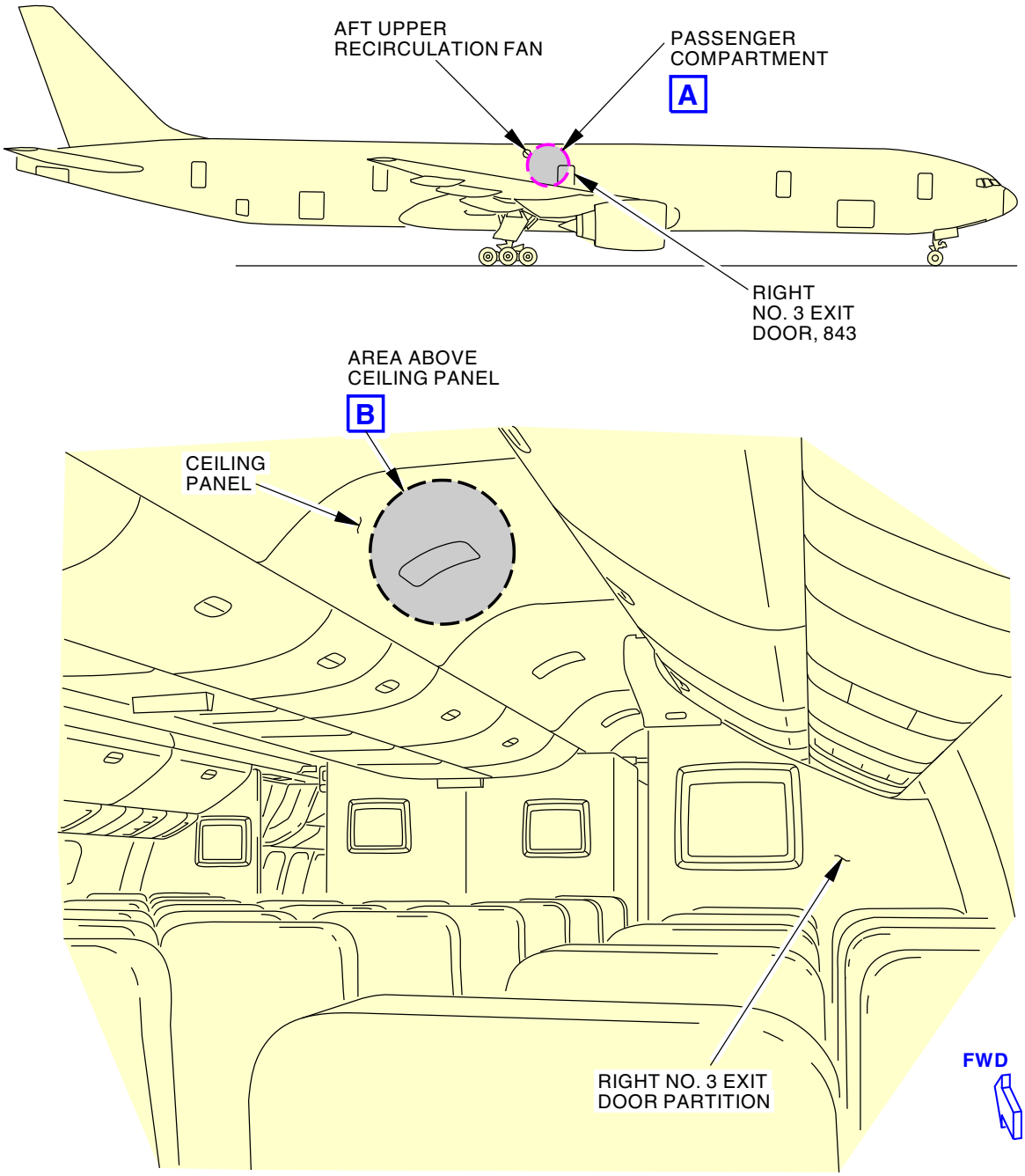

Aft Upper Recirculation Fan Installation
Figure 403/21-25-01-990-806 (Sheet 1 of 2)

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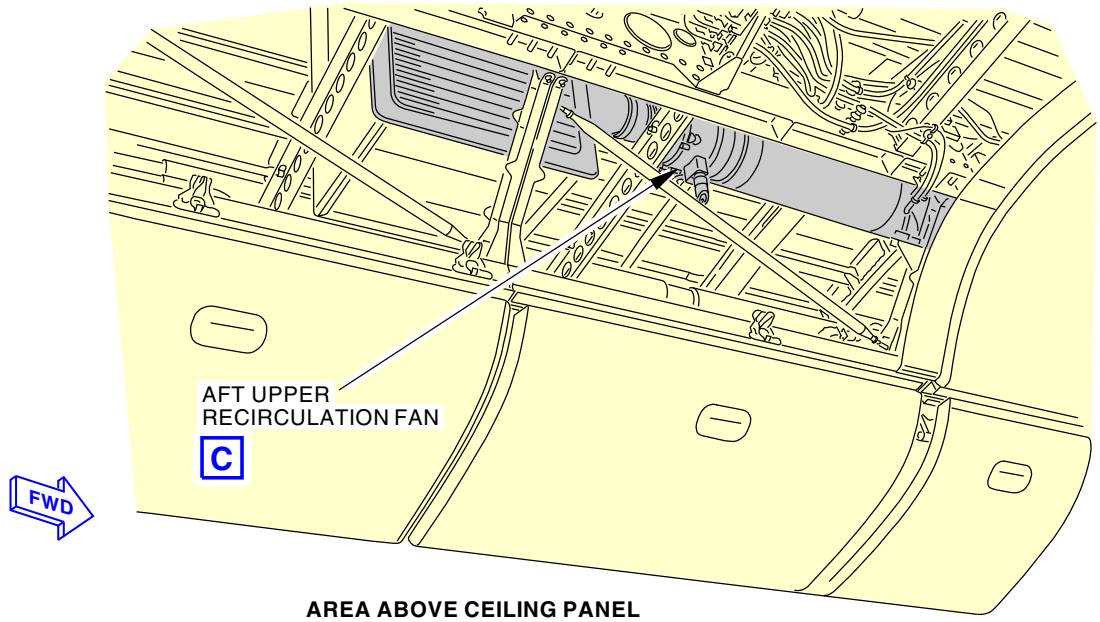
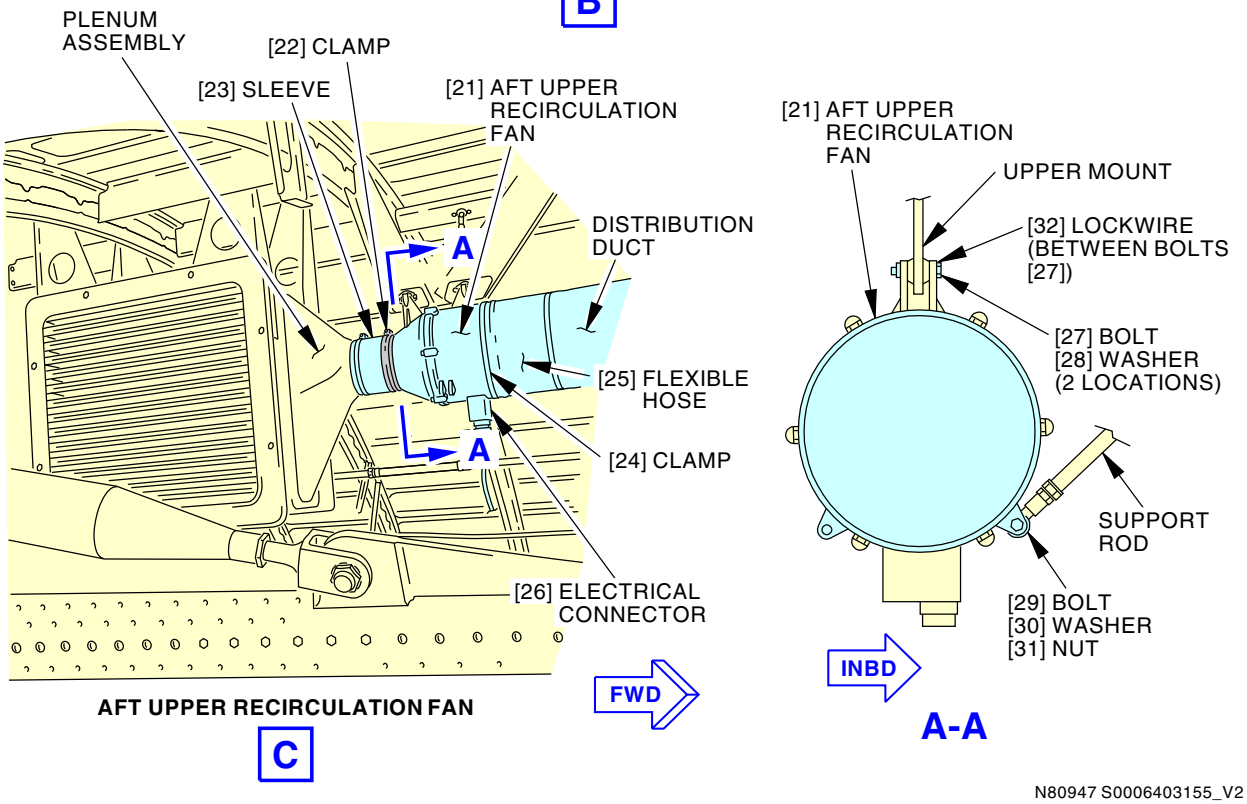


AREA ABOVE CEILING PANEL

B



AFT UPPER RECIRCULATION FAN

C

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Aft Upper Recirculation Fan Installation
Figure 403/21-25-01-990-806 (Sheet 2 of 2)

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TASK 21-25-01-400-802

7. Aft Upper Recirculation Fan Installation

(Figure 403)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-400-801	Center Stowage Bin Diagonal Brace Installation (P/B 401)
45-10-00-740-819	How to Do a Ground Test (P/B 201)

B. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Fan	21-25-01-14-695	ARO 001-007
		21-25-01-14A-105	ARO 008-999

D. Location Zones

Zone	Area
254	Area Above Passenger Compartment Ceiling, Right - Section 46

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Aft Upper Recirculation Fan Installation

SUBTASK 21-25-01-820-001

(1) Put the aft upper recirculation fan [21] into the sleeve [23] and the flexible hose [25].

SUBTASK 21-25-01-420-011

(2) Install the bolts [27] and the washers [28] to connect the aft upper recirculation fan [21] to the upper mount.

SUBTASK 21-25-01-820-003

(3) Install the bolt [29], washer [30], and the nut [31] to connect the support rod to the aft upper recirculation fan [21].

SUBTASK 21-25-01-420-007

(4) Tighten the clamp [22] which attaches the sleeve [23] to the aft upper recirculation fan [21] to 15 in-lb (1.7 N·m)-18 in-lb (2.0 N·m).

SUBTASK 21-25-01-420-008

(5) Tighten the clamps [24] which attaches the flexible hose [25] to the aft upper recirculation fan [21] to 15 in-lb (1.7 N·m)-18 in-lb (2.0 N·m).

SUBTASK 21-25-01-420-009

(6) Connect the electrical connector [26] to the aft upper recirculation fan [21].

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ARO 001-016 POST SB 777-21-0189

SUBTASK 21-25-01-420-014

(7) Install the vibration monitor [55] to the fan housing, and reconnect the fan electrical connector plug [45] to the vibration monitor [55].

(8) Do this task: Aft Upper Recirculation Fan Vibration Monitor Installation, TASK 21-25-01-400-803.

ARO ALL

SUBTASK 21-25-01-420-010

(9) Install a new MS20995C32 lockwire, G01048 [32] to the bolts [27].

SUBTASK 21-25-01-860-008

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

Right Power Management Panel, P210

Row	Col	Number	Name
B	5	C21314	AFT UPR RECIRC FAN
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

G. Aft Upper Recirculation Fan Installation Test

SUBTASK 21-25-01-860-012

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

SUBTASK 21-25-01-860-009

(2) Push the UPPER RECIRC FANS switch to the ON position.

NOTE: The UPPER RECIRC FANS switch is on the Air Conditioning Module in the pilot's overhead panel, P5.

(a) Make sure the recirculation fan operates without too much noise or vibration.

(b) Make sure there is no air leakage around the recirculation fan connections.

SUBTASK 21-25-01-740-002

(3) Use a maintenance access terminal (MAT) to do the System Test of the Recirculation Fan System (TASK 45-10-00-740-819).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Recirculation Fan 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.

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SUBTASK 21-25-01-860-010

(4) Push the UPPER RECIRC FANS switch to the OFF position.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-01-410-006

(1) Close up the access to the aft upper recirculation fan [21] above the passenger compartment ceiling area:

(a) If removed, install the center stowage bin diagonal brace (TASK 25-28-06-400-801).

(b) Install the inboard main cabin ceiling panel above the center stowage bins (PAGEBLOCK 25-21-06/401).

SUBTASK 21-25-01-410-002

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

ARO 001-016 POST SB 777-21-0189

TASK 21-25-01-000-803

8. Aft Upper Recirculation Fan Vibration Monitor Removal

(Figure 404)

A. General

(1) This procedure removes the Aft Upper Recirculation Fan Monitor.

B. References

Reference	Title
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-000-801	Center Stowage Bin Diagonal Brace Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
254	Area Above Passenger Compartment Ceiling, Right - Section 46

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-25-01-860-033

(1) Do these steps to make sure that there is no conditioned air supplied to the passenger compartment:

NOTE: This will make sure that there is no air flow in the distribution ducts when you remove the recirculation fan.

(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

(b) Do not use a ground conditioned air source to supply conditioned air to the airplane from the ground conditioned air connector.

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ARO 001-016 POST SB 777-21-0189 (Continued)

(c) Make sure that the UPPER and LOWER RECIRC FANS switch-lights are set to the OFF position.

NOTE: The UPPER and LOWER RECIRC FANS switch-lights are on the Air Conditioning Module in the pilot's overhead panel, P5.

SUBTASK 21-25-01-010-017

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-25-01-860-034

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

Right Power Management Panel, P210

Row	Col	Number	Name
B	5	C21314	AFT UPR RECIRC FAN
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-01-010-018

(4) Get access to the aft upper recirculation fan [21] above the passenger compartment ceiling area:

(a) Remove the inboard main cabin ceiling panel above the center stowage bins (MAIN CEILING PANEL - REMOVAL/INSTALLATION, PAGEBLOCK 25-21-06/401).

(b) As necessary, remove the center stowage bin diagonal brace (Center Stowage Bin Diagonal Brace Removal, TASK 25-28-06-000-801).

F. Fan Vibration Monitor Removal

SUBTASK 21-25-01-020-024

(1) Disconnect the fan electrical connector plug [45] from the vibration monitor electrical receptacle [46].

SUBTASK 21-25-01-020-025

(2) Disconnect the vibration monitor electrical connector plug [47] from the fan electrical receptacle [48].

SUBTASK 21-25-01-020-026

(3) If installed, remove the screw [49], washers [50] and nut [51] to disconnect the vibration monitor bonding strap [52] from the fan ground lug [56].

NOTE: This step only applies to fans that have a bonding strap or ground stud.

SUBTASK 21-25-01-020-027

(4) Remove the two screws [53] from the L- brackets that hold the vibration monitor [55] to the fan [21].

SUBTASK 21-25-01-020-028

(5) Remove the band clamp [54] from the vibration monitor [55] and the fan [21].

SUBTASK 21-25-01-020-029

(6) Remove the vibration monitor [55].

END OF TASK

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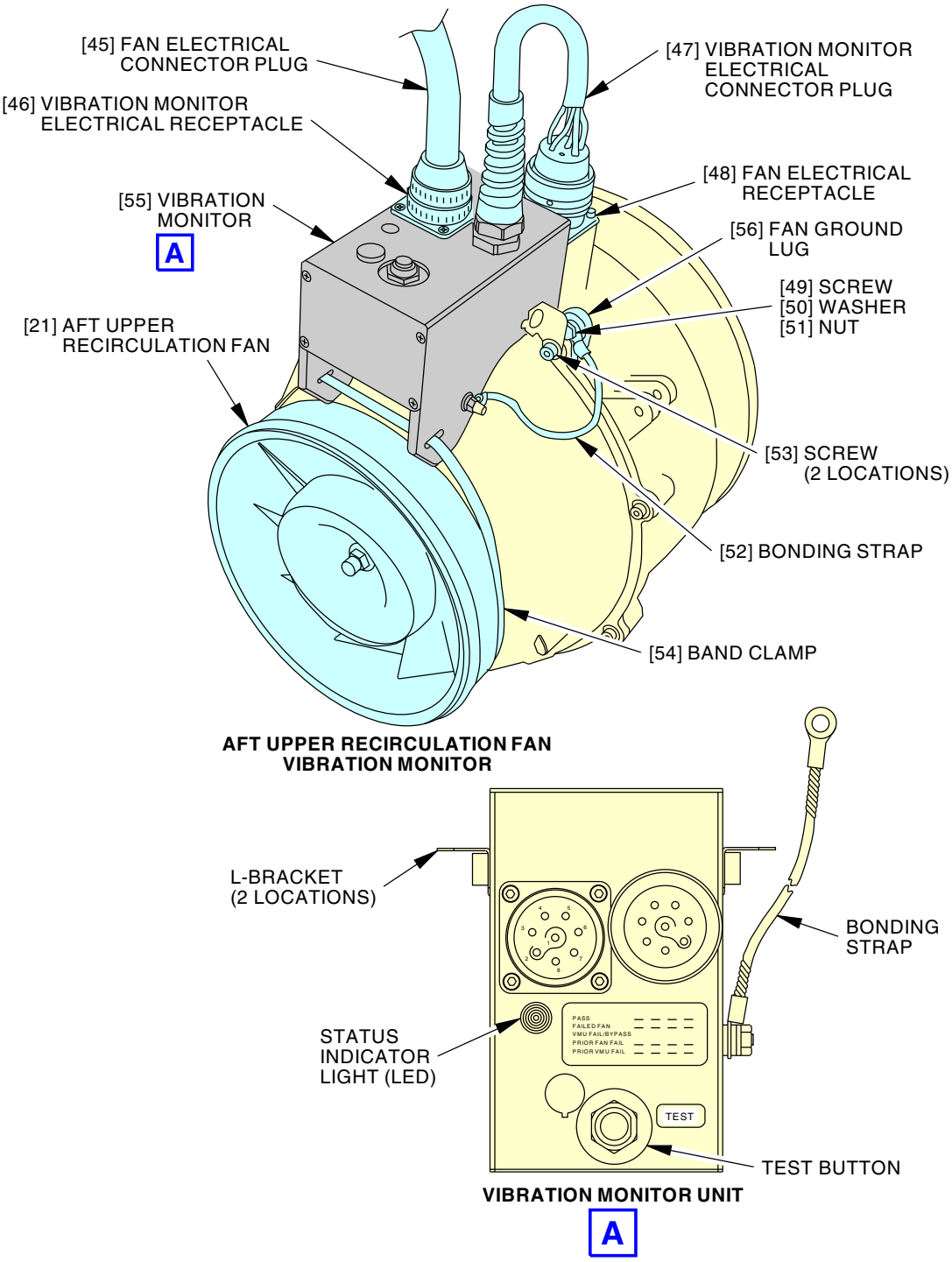

Aft Upper Recirculation Fan Vibration Monitor
Figure 404/21-25-01-990-811

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TASK 21-25-01-400-803

9. Aft Upper Recirculation Fan Vibration Monitor Installation

(Figure 404)

A. General

(1) This procedure removes the Aft Upper Recirculation Fan Vibration Monitor.

B. References

Reference	Title
24-22-00 P/B 201	AC GENERATION AND BUS CONTROL - MAINTENANCE PRACTICES
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-400-801	Center Stowage Bin Diagonal Brace Installation (P/B 401)

C. Location Zones

Zone	Area
254	Area Above Passenger Compartment Ceiling, Right - Section 46

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Aft Upper Recirculation Fan Vibration Monitor Installation

SUBTASK 21-25-01-420-017

(1) Put the band clamp [54] thru the slots in the legs of the vibration monitor [55], then loosely install the band clamp [54] around the fan housing.

SUBTASK 21-25-01-820-005

(2) Align the L-brackets on each side of the vibration monitor [55] with the two split line holes on the fan housing.

SUBTASK 21-25-01-420-024

(3) Install the two screws [53] to secure the vibration monitor L-brackets to the fan housing.

(a) Tighten each screw[53] to 51-56 pound-inches (5.76-6.32 newton-meters).

SUBTASK 21-25-01-420-025

(4) Tighten the band clamp [54] to 12-15 pound-inches (1.35-1.69 newton-meters).

(a) Make sure that the band clamp [54] engages fully around the entire circumference of the fan housing.

(b) Make sure that both legs of the vibration monitor [55] are in full contact with the fan housing.

SUBTASK 21-25-01-420-026

(5) If applicable, reconnect the vibration monitor bonding strap [52] to the fan ground lug [26] with the screw [49], washers [50] and nut [51].

NOTE: This step only applies to fans that have a bonding strap or ground stud.

(a) Make sure that the fan ground lug [26] is positioned with the bolt head on the monitor side.

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ARO 001-016 POST SB 777-21-0189 (Continued)

(b) Do an electrical bonding and resistance check of the fan and vibration monitor (SWPM 20-20-00, Electrical Bonds and Grounds, Standard Wiring Practice Manual, D6-54446).

SUBTASK 21-25-01-420-027

(6) Reconnect the vibration monitor electrical connector plug [47] to the fan electrical receptacle [48].

SUBTASK 21-25-01-420-028

(7) Reconnect the fan electrical connector plug [45] to the vibration monitor electrical receptacle [46].

F. Aft Upper Recirculation Fan Vibration Installation Test

SUBTASK 21-25-01-420-018

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

Right Power Management Panel, P210

Row	Col	Number	Name
B	5	C21314	AFT UPR RECIRC FAN
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-01-860-029

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

SUBTASK 21-25-01-860-030

(3) Do these steps for installation test:

(a) Make sure that fan [21] is operating.

(b) Make sure that the STATUS LED is blinking GREEN after 2 minutes.

(4) Do these steps for aircraft logic test:

(a) Press and hold monitor test button for 15 seconds.

NOTE: Fan should turn off and aircraft latch will engage after time delay.

(b) Release TEST button.

(c) Make sure the fan [21] is OFF.

(d) Disconnect the electrical connector [45] from the fan vibration monitor [55] to remove power from the fan [21].

(e) Re-connect the electrical connector [45].

1) Make sure that the fan restarts and operates as normal.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-01-410-016

(1) Close up the access to the aft upper recirculation fan [21] above the passenger compartment ceiling area:

(a) If removed, install the center stowage bin diagonal brace (Center Stowage Bin Diagonal Brace Installation, TASK 25-28-06-400-801).

(b) Install the inboard main cabin ceiling panel above the center stowage bins (MAIN CEILING PANEL - REMOVAL/INSTALLATION, PAGEBLOCK 25-21-06/401).

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ARO 001-016 POST SB 777-21-0189 (Continued)

SUBTASK 21-25-01-410-017

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-25-01-860-038

(3) Remove electrical power if no longer required (AC GENERATION AND BUS CONTROL - MAINTENANCE PRACTICES, PAGEBLOCK 24-22-00/201).

——— END OF TASK ———

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UPPER RECIRCULATION AIR FILTERS - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Upper recirculation air filters removal.

(2) Upper recirculation air filters installation.

C. The forward and aft upper recirculation air filters are installed above the passenger compartment ceiling areas. Two filters are installed in the filter plenum assembly upstream of each recirculation fan.

TASK 21-25-02-000-801

2. Upper Recirculation Air Filters Removal

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task has the instructions to remove the upper recirculation air filters (forward and aft) that are installed above the passenger compartment ceiling areas.

B. Equipment

(1) Plastic disposal bags - (38"x48", 1-2mil, 40-42 gal) commercially available

(2) Personal protective equipment & clothing (PPE/PPC) (disposable) - commercially available

(a) Particulate Respirator (NIOSH 42 CFR 84 Class N95, N99, N100) - 3M model 8210 (or equivalent)

(b) Safety Goggles - 3M model 1621 (or equivalent)

(c) Latex or Nitrile Gloves - Kimberly-Clark KleenGuard, SafeSkin, or ShieldMaster models (or equivalent)

(d) Coverall with hood - Dupont 'Tyvek' style S1428 or 01414 (or equivalent)

C. References

Reference	Title
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-000-801	Center Stowage Bin Diagonal Brace Removal (P/B 401)

D. Location Zones

Zone	Area
234	Area Above Passenger Compartment Ceiling, Right - Section 43
254	Area Above Passenger Compartment Ceiling, Right - Section 46

E. Prepare for the Removal

SUBTASK 21-25-02-860-001

(1) Make sure the UPPER RECIRC FANS switch is set to the OFF position and attach DO-NOT-OPERATE tag.

NOTE: The UPPER RECIRC FANS switch is on the Air Conditioning Module in the pilot's overhead panel, P5.

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SUBTASK 21-25-02-010-013

(2) Get access to the forward upper recirculation air filters [1] and aft upper recirculation air filters [21] above the passenger compartment ceiling areas:

NOTE: The forward upper recirculation air filter locations are shown in Figure 401.

NOTE: The aft upper recirculation filter locations are shown in Figure 402.

(a) Remove the inboard main cabin ceiling panel above the center stowage bins (PAGEBLOCK 25-21-06/401).

(b) As necessary, remove the center stowage bin diagonal brace (TASK 25-28-06-000-801).

(c) Make sure that the recirculation fans are off before you remove the filters.

SUBTASK 21-25-02-941-001

WARNING PUT ON THE PERSONAL PROTECTIVE EQUIPMENT BEFORE YOU TOUCH THE FILTER. THE FILTER REMOVES SMALL PARTICLES (SMOKE, DUST, LINT, FIBERS, POLLEN) AND INFECTIOUS MATERIALS (BACTERIA, VIRUSES, MOLD SPORES, FUNGI) FROM THE AIR WHICH CAN CAUSE ILLNESSES AND INJURIES TO PERSONS.

(3) Put on the personal protective equipment before you touch the filter.

F. Forward Upper Recirculation Air Filters Removal

(Figure 401)

SUBTASK 21-25-02-020-001

(1) Remove the eight bolts [3] and the eight washers [4] from the retainer assembly [5].

SUBTASK 21-25-02-020-002

(2) Remove the retainer assembly [5].

SUBTASK 21-25-02-020-003

WARNING DO NOT LET THE FILTER TOUCH YOUR SKIN. DO NOT SHAKE OR HIT THE FILTER. DO NOT LET THE FILTER FALL. DO NOT USE COMPRESSED AIR TO CLEAN THE FILTER OR FILTER HOUSING. THIS CAN CAUSE THE INFECTIOUS MATERIAL TO BECOME AIRBORNE. DISCARD THE FILTER IN A PLASTIC DISPOSAL BAG. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(3) Remove the first filter [1].

WARNING OBEY THE AIRLINE POLICY, LOCAL HEALTH DEPARTMENT, AND LAW ENFORCEMENT REGULATIONS WHEN YOU DISCARD THIS MATERIAL. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(a) Put the filter in a plastic disposal bag and discard in accord with airline, local health, safety and regulatory procedures for disposal of material.

SUBTASK 21-25-02-020-004

(4) Remove the spacer assembly [2].

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SUBTASK 21-25-02-020-005

WARNING DO NOT LET THE FILTER TOUCH YOUR SKIN. DO NOT SHAKE OR HIT THE FILTER. DO NOT LET THE FILTER FALL. DO NOT USE COMPRESSED AIR TO CLEAN THE FILTER OR FILTER HOUSING. THIS CAN CAUSE THE INFECTIOUS MATERIAL TO BECOME AIRBORNE. DISCARD THE FILTER IN A PLASTIC DISPOSAL BAG. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(5) Remove the second filter [1].

WARNING OBEY THE AIRLINE POLICY, LOCAL HEALTH DEPARTMENT, AND LAW ENFORCEMENT REGULATIONS WHEN YOU DISCARD THIS MATERIAL. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(a) Put the filter in a plastic disposal bag and discard in accord with airline, local health, safety and regulatory procedures for disposal of material.

G. Aft Upper Recirculation Air Filters Removal

(Figure 402)

SUBTASK 21-25-02-020-006

(1) Remove the eight bolts [22] and the eight washers [23] from the retainer assembly [25].

SUBTASK 21-25-02-020-007

(2) Remove the retainer assembly [25].

SUBTASK 21-25-02-020-008

WARNING DO NOT LET THE FILTER TOUCH YOUR SKIN. DO NOT SHAKE OR HIT THE FILTER. DO NOT LET THE FILTER FALL. DO NOT USE COMPRESSED AIR TO CLEAN THE FILTER OR FILTER HOUSING. THIS CAN CAUSE THE INFECTIOUS MATERIAL TO BECOME AIRBORNE. DISCARD THE FILTER IN A PLASTIC DISPOSAL BAG. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(3) Remove the first filter [21].

WARNING OBEY THE AIRLINE POLICY, LOCAL HEALTH DEPARTMENT, AND LAW ENFORCEMENT REGULATIONS WHEN YOU DISCARD THIS MATERIAL. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(a) Put the filter in a plastic disposal bag and discard in accord with airline, local health, safety and regulatory procedures for disposal of material.

SUBTASK 21-25-02-020-009

(4) Remove the spacer assembly [24].

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SUBTASK 21-25-02-020-010

WARNING DO NOT LET THE FILTER TOUCH YOUR SKIN. DO NOT SHAKE OR HIT THE FILTER. DO NOT LET THE FILTER FALL. DO NOT USE COMPRESSED AIR TO CLEAN THE FILTER OR FILTER HOUSING. THIS CAN CAUSE THE INFECTIOUS MATERIAL TO BECOME AIRBORNE. DISCARD THE FILTER IN A PLASTIC DISPOSAL BAG. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(5) Remove the second filter [21].

WARNING OBEY THE AIRLINE POLICY, LOCAL HEALTH DEPARTMENT, AND LAW ENFORCEMENT REGULATIONS WHEN YOU DISCARD THIS MATERIAL. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(a) Put the filter in a plastic disposal bag and discard in accord with airline, local health, safety and regulatory procedures for disposal of material.

H. Post-Filter Removal Cleanup

SUBTASK 21-25-02-020-011

WARNING DISCARD ALL PERSONAL PROTECTIVE EQUIPMENT AFTER YOU USE IT ONE TIME. DO NOT TRY TO CLEAN IT. DISCARD THE EQUIPMENT IN A PLASTIC DISPOSAL BAG. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(1) Remove the personal protective equipment and put them in a plastic disposal bag, and discard them in accord with airline, local health, safety and regulatory procedures for disposal of material.

SUBTASK 21-25-02-110-001

WARNING CLEAN YOUR HANDS WITH SOAP AND FLUSH WITH HOT WATER. DIRTY HANDS WITH CONTAMINATION CAN CAUSE DISEASE AND ILLNESSES TO PERSONS.

(2) Clean your hands with soap and running hot water.

END OF TASK

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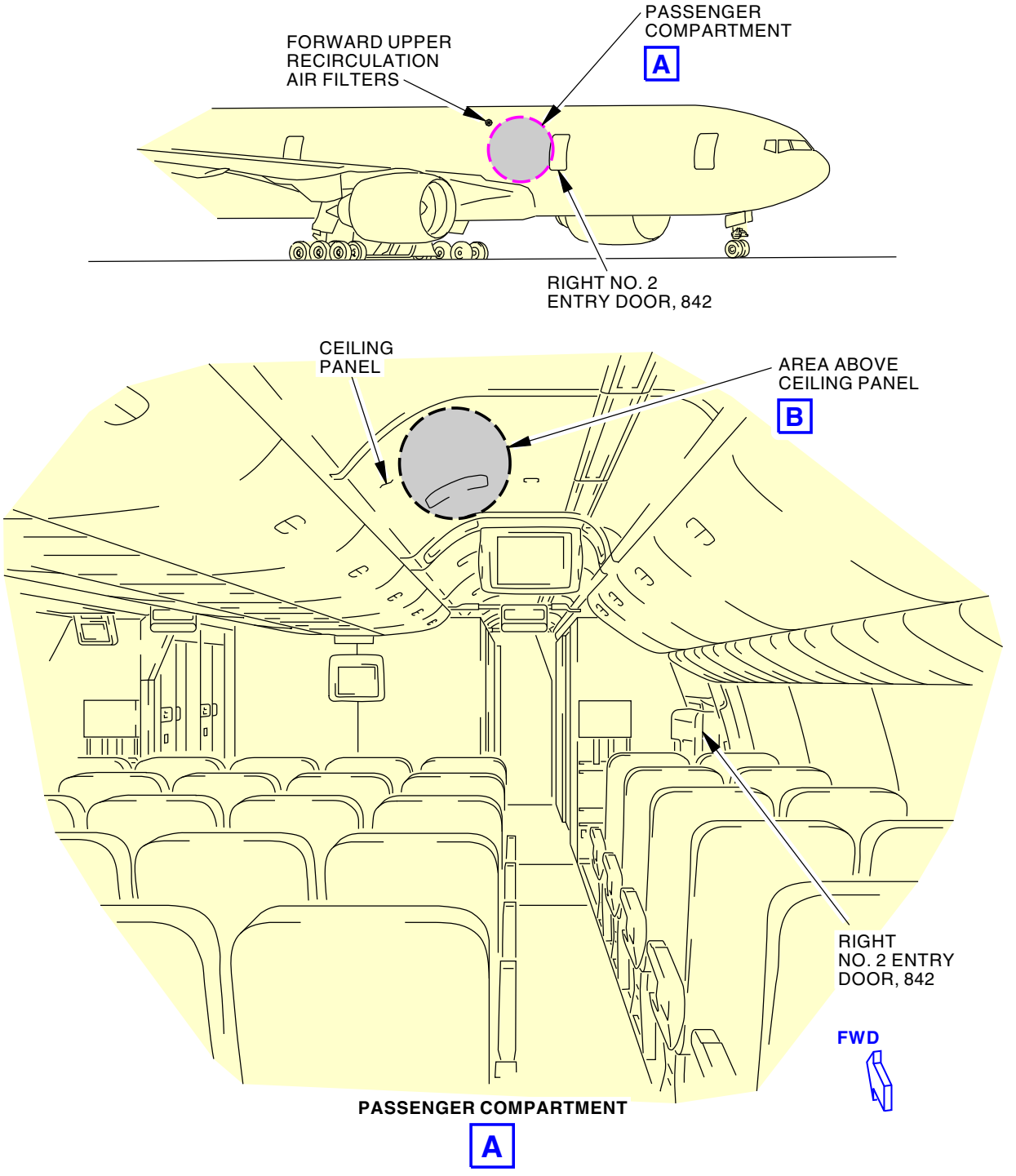

Forward Upper Recirculation Air Filters Installation
Figure 401/21-25-02-990-807 (Sheet 1 of 2)

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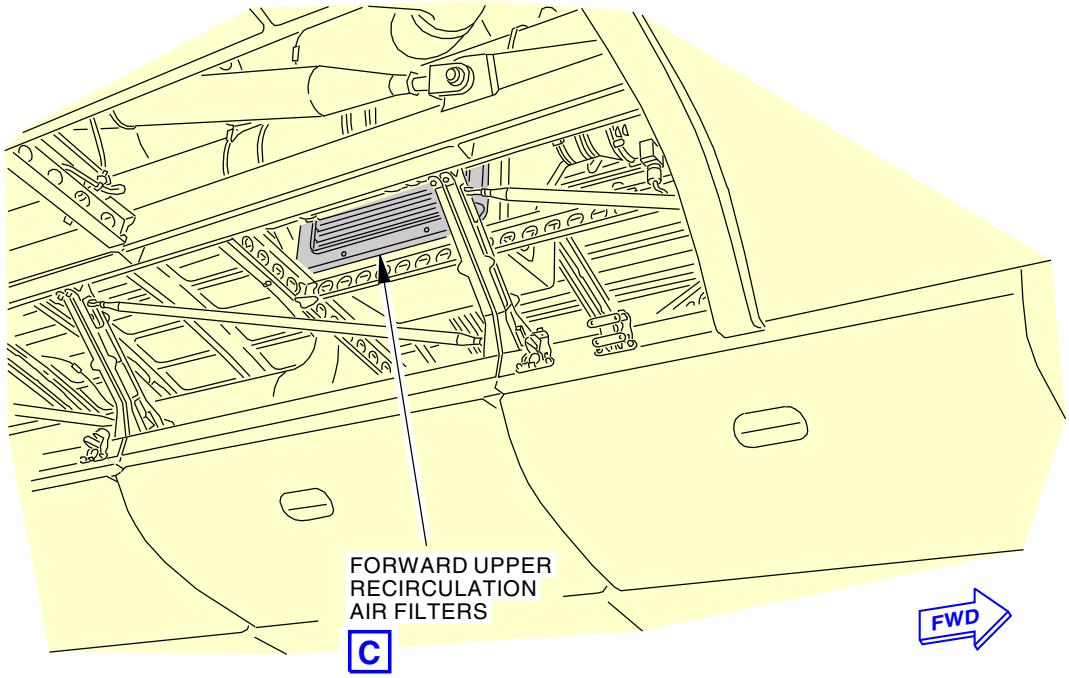

Forward Upper Recirculation Air Filters Installation
Figure 401/21-25-02-990-807 (Sheet 2 of 2)

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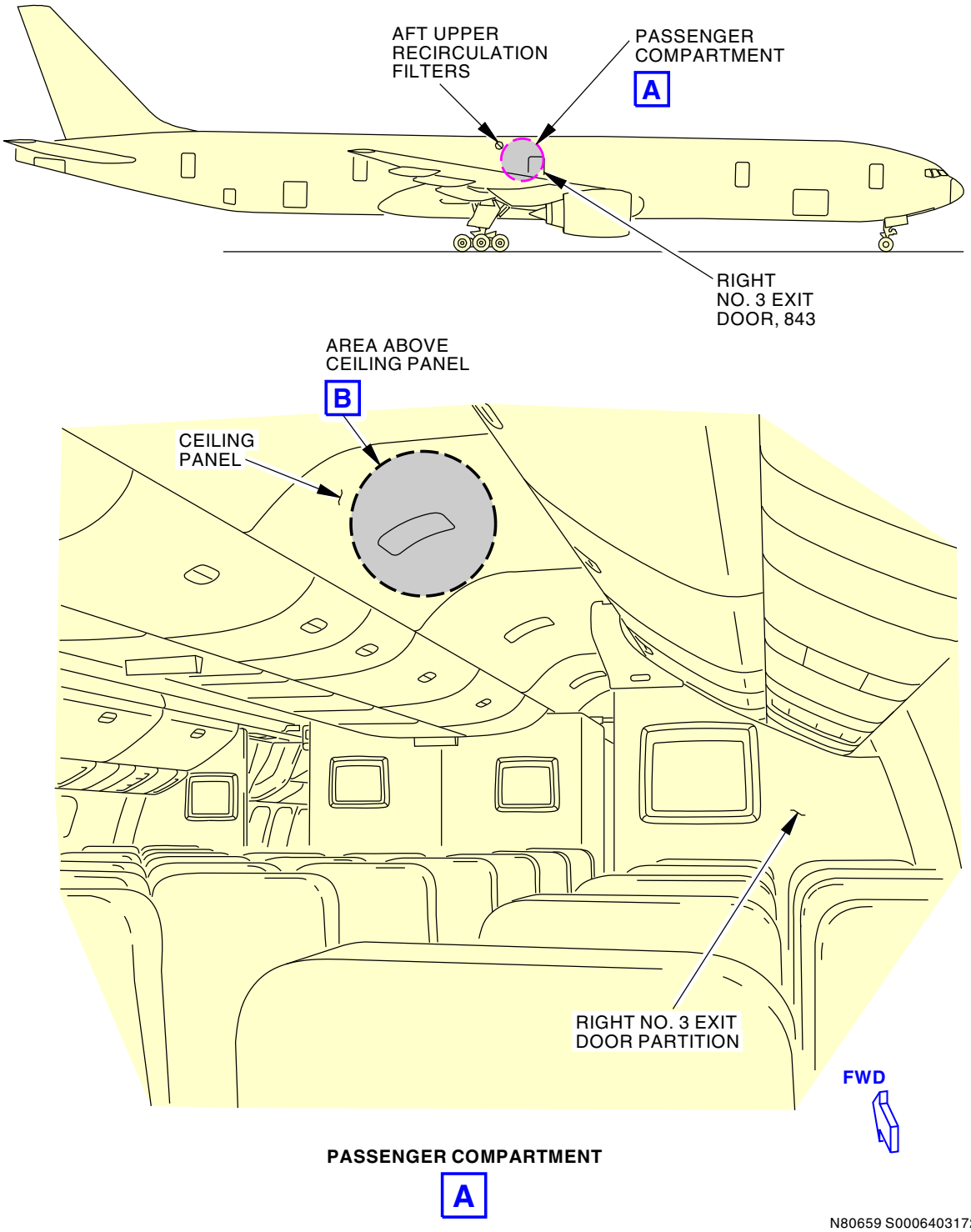

Aft Upper Recirculation Air Filters Installation
Figure 402/21-25-02-990-809 (Sheet 1 of 2)

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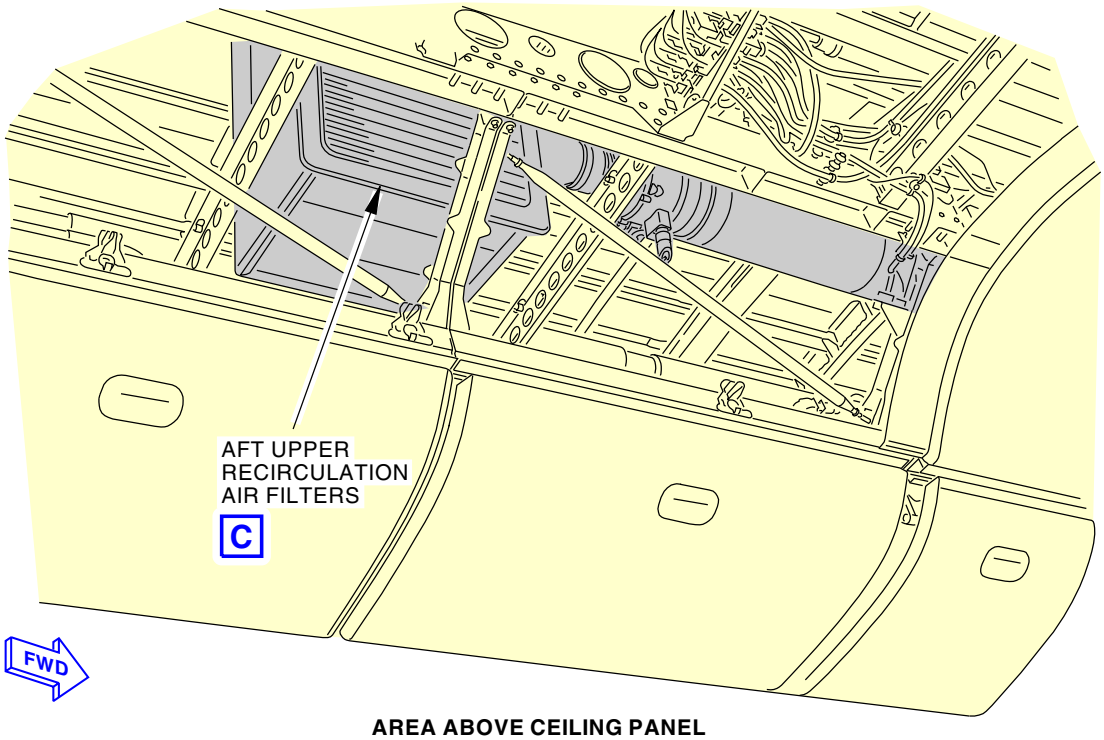
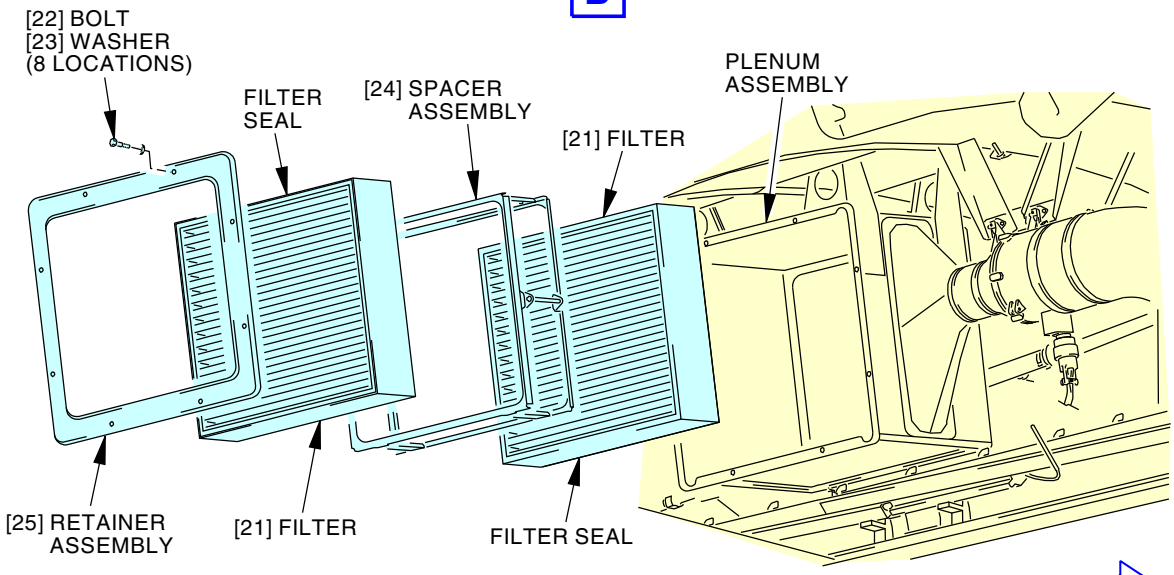


AREA ABOVE CEILING PANEL

B



AFT UPPER RECIRCULATION AIR FILTERS

C

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Aft Upper Recirculation Air Filters Installation
Figure 402/21-25-02-990-809 (Sheet 2 of 2)

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TASK 21-25-02-400-801

3. Upper Recirculation Air Filters Installation

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task has the instructions to install the upper recirculation air filters (forward and aft) that are installed above the passenger compartment ceiling areas.

B. References

Reference	Title
25-21-06 P/B 401	MAIN CEILING PANEL - REMOVAL/INSTALLATION
25-28-06-400-801	Center Stowage Bin Diagonal Brace Installation (P/B 401)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Filter	21-25-02-13-060	ARO 001-007
		21-25-02-13A-055	ARO 008-999
21	Filter	21-25-02-14-060	ARO 001-007
		21-25-02-14A-055	ARO 008-999

D. Location Zones

Zone	Area
234	Area Above Passenger Compartment Ceiling, Right - Section 43
254	Area Above Passenger Compartment Ceiling, Right - Section 46

E. Forward Upper Recirculation Air Filters Installation

(Figure 401)

SUBTASK 21-25-02-210-001

(1) Make sure there is no unwanted material or contamination in the plenum assembly which could cause damage to the forward upper recirculation fan.

SUBTASK 21-25-02-420-001

(2) Install a new filter [1] into the plenum assembly.

(a) Make sure the filter seal is adjacent to the plenum assembly.

SUBTASK 21-25-02-420-002

(3) Install the spacer assembly [2] into the plenum assembly.

SUBTASK 21-25-02-420-003

(4) Install a second new filter [1] into the plenum assembly.

(a) Make sure the filter seal points away from the spacer assembly [2].

SUBTASK 21-25-02-420-004

(5) Put the retainer assembly [5] onto the plenum assembly.

(a) Install the bolts [3] and the eight washers [4] to attach the retainer assembly [5] to the plenum assembly.

F. Aft Upper Recirculation Air Filters Installation

(Figure 402)

SUBTASK 21-25-02-210-002

(1) Make sure there is no unwanted material or contamination in the plenum assembly which could cause damage to the aft upper recirculation fan.

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SUBTASK 21-25-02-420-005

(2) Install a new filter [21] into the plenum assembly.

(a) Make sure the filter seal is adjacent to the plenum assembly.

SUBTASK 21-25-02-420-006

(3) Install the spacer assembly [24] into the plenum assembly.

SUBTASK 21-25-02-420-007

(4) Install a second new filter [21] into the plenum assembly.

(a) Make sure the filter seal points away from the spacer assembly [24].

SUBTASK 21-25-02-420-008

(5) Put the retainer assembly [25] onto the plenum assembly.

(a) Install the eight bolts [22] and the eight washers [23] to attach the retainer assembly [25] to the plenum assembly.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-02-410-003

(1) Close up the access to the forward upper recirculation air filters [1] and aft upper recirculation air filters [21] above the passenger compartment ceiling areas:

(a) If removed, install the center stowage bin diagonal brace (TASK 25-28-06-400-801).

(b) Install the inboard main cabin ceiling panel above the center stowage bins (PAGEBLOCK 25-21-06/401).

SUBTASK 21-25-02-020-012

(2) Remove the DO-NOT-OPERATE tag from the UPPER RECIRC FANS switch, at the Air Conditioning module, on the pilot's P5 overhead panel.

END OF TASK

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LOWER RECIRCULATION FANS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Lower recirculation fans - deactivation.

(2) Lower recirculation fans - activation.

TASK 21-25-07-040-801

2. Lower Recirculation Fans - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the lower recirculation fans.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
52-34-00 P/B 201	FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right
821	Forward Large Cargo Door

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-25-07-860-008

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-25-07-860-013

(2) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-25-07-860-009

(3) Do not use a ground conditioned air source to supply conditioned air to the airplane from the ground conditioned air connector.

SUBTASK 21-25-07-210-005

(4) Make sure that the LOWER and UPPER RECIRC FANS switch-lights are set to the OFF position.

NOTE: The LOWER and UPPER RECIRC FANS switch-lights are on the Air Conditioning Module in the pilot's overhead panel, P5.

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SUBTASK 21-25-07-010-005

(5) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-25-07-020-008

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-07-860-014

(7) Do the applicable task to open the forward cargo compartment door (PAGEBLOCK 52-34-00/201).

SUBTASK 21-25-07-860-015

(8) To get access to the lower recirculation fans, remove the Station 998 end wall liner at the aft end of the forward cargo compartment. To remove the Station 998 end wall liner, do this task: Forward Cargo Compartment Aft End Wall Removal, TASK 25-52-17-000-801.

(a) Make sure that the lower recirculation fans are off.

F. Lower Recirculation Fans - Tryout

NOTE: This tryout is to make sure that the lower recirculation fans are in a zero energy state.

SUBTASK 21-25-07-860-011

(1) At the pilot's overhead panel, P5, put the LOWER RECIRC FAN switch-lights to the ON position.

SUBTASK 21-25-07-860-012

(2) Use a maintenance access terminal (MAT) to do an operational test of the lower recirculation fan.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System

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5) SYSTEM TEST
6) Recirculation Fan 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 that the LEFT and RIGHT lower recirculation fans DO NOT come on.

NOTE: An observer must be in voice contact with an operator in the flight deck at all times to complete this step.

(d) After the test, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

——— END OF TASK ———

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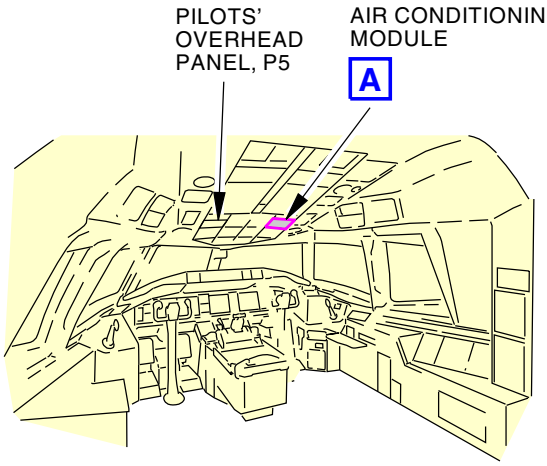
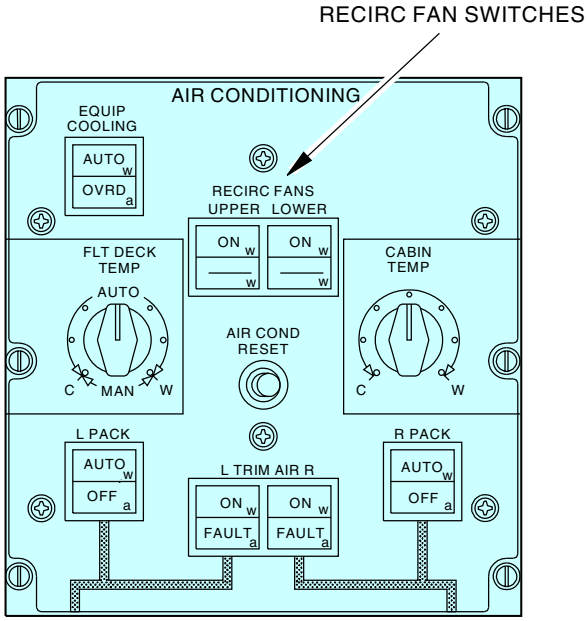


FLIGHT COMPARTMENT



AIR CONDITIONING MODULE

A

2406897 S0000557142_V2

Lower Recirculation Fans
Figure 201/21-25-07-990-803 (Sheet 1 of 3)

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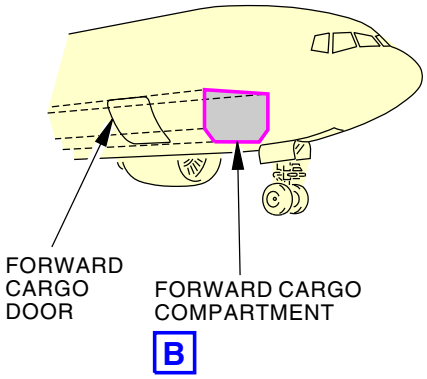

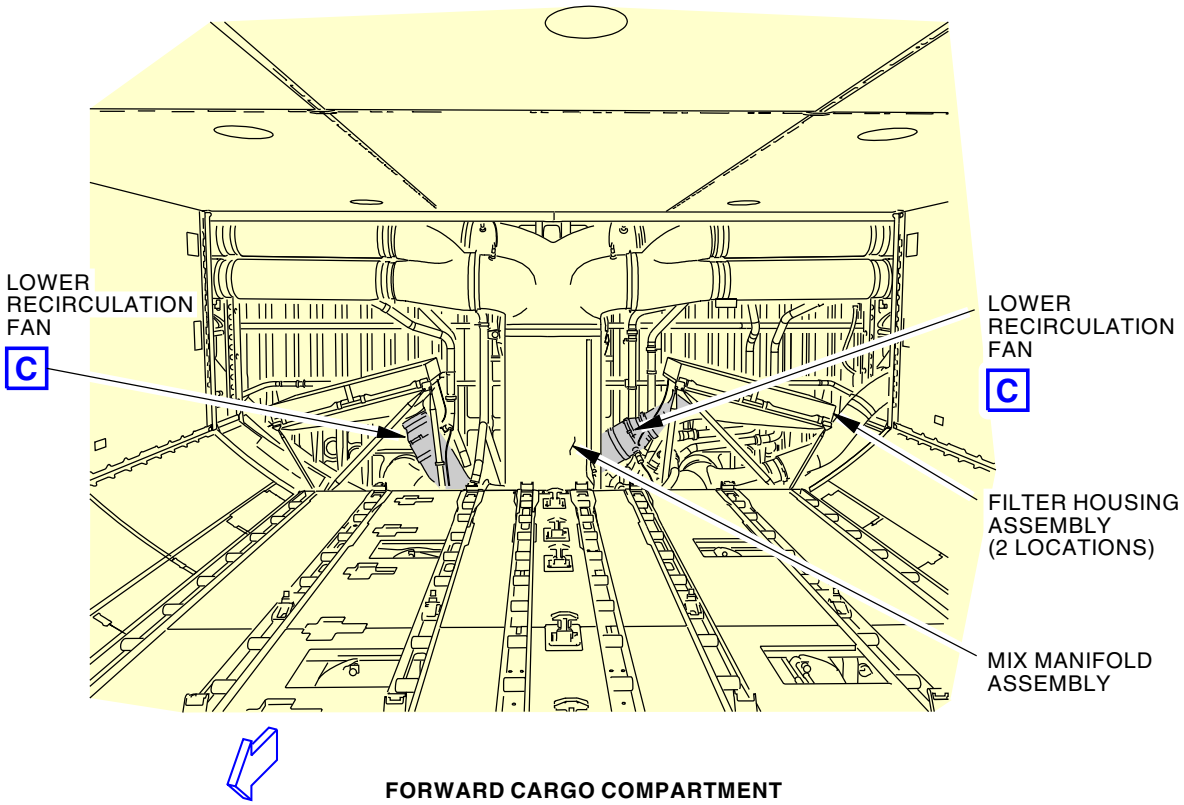

NOTE:

THE STATION 998
END WALL LINER IS NOT
SHOWN IN THIS VIEW.

2407661 S0000557345_V3

Lower Recirculation Fans
Figure 201/21-25-07-990-803 (Sheet 2 of 3)

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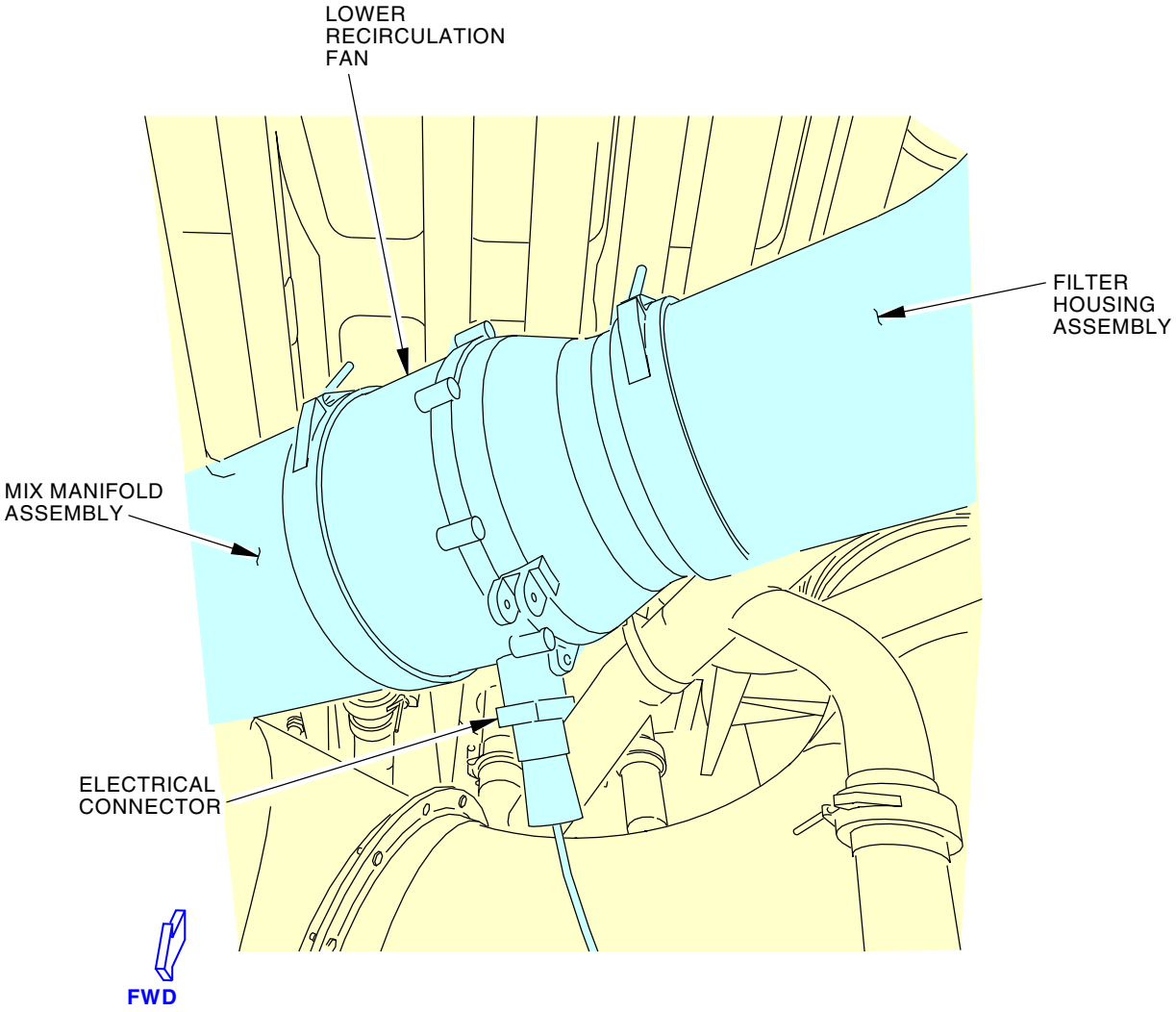

LOWER RECIRCULATION FAN

C

2407668 S0000557347_V2

Lower Recirculation Fans
Figure 201/21-25-07-990-803 (Sheet 3 of 3)

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TASK 21-25-07-440-801

3. Lower Recirculation Fans - Activation

(Figure 201)

A. General

(1) This task will activate the lower recirculation fans.

B. References

Reference	Title
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
52-34-00 P/B 201	FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right
821	Forward Large Cargo Door

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-25-07-410-004

(1) To close the access to the lower recirculation fans, install the Station 998 end wall liner at the aft end of the forward cargo compartment (TASK 25-52-17-400-801).

SUBTASK 21-25-07-410-003

(2) Do the applicable task to close the forward cargo compartment door (PAGEBLOCK 52-34-00/201).

SUBTASK 21-25-07-420-007

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

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Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-07-410-005

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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LOWER RECIRCULATION FANS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the lower recirculation fans.

(2) An installation of the lower recirculation fans.

ARO 001-016 POST SB 777-21-0189

(3) A removal of the lower recirculation fan vibration monitor.

(4) An installation of the lower recirculation fan vibration monitor.

ARO ALL

B. There are two lower recirculation fans installed behind the Station 998 end wall liner at the aft end of the forward cargo compartment.

C. The two fans are not interchangeable with each other. A standard capacity fan is installed in the left hand position. A high capacity fan is installed in the right hand position.

TASK 21-25-07-000-801

2. Lower Recirculation Fan Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
52-34-00 P/B 201	FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES

B. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
821	Forward Large Cargo Door

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-25-07-860-001

(1) Do these steps to make sure there is no air supplied to the mix manifold:

(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

(b) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

(c) Do not use a ground conditioned air source to supply conditioned air to the airplane from the ground conditioned air connector.

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(d) Make sure the LOWER and UPPER RECIRC FANS switch-lights are set to the OFF position.

NOTE: The LOWER and UPPER RECIRC FANS switch-lights are on the Air Conditioning Module in the pilot's overhead panel, P5.

SUBTASK 21-25-07-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-25-07-860-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-07-010-002

(4) Do the applicable task to open the forward cargo compartment door (PAGEBLOCK 52-34-00/201).

SUBTASK 21-25-07-860-007

(5) Remove electrical power as necessary (TASK 24-22-00-860-806).

SUBTASK 21-25-07-010-003

(6) To get access to the lower recirculation fans [1], remove the Station 998 end wall liner at the aft end of the forward cargo compartment (TASK 25-52-17-000-801).

(a) Make sure that the lower recirculation fans [1] are off.

E. Lower Recirculation Fan Removal

SUBTASK 21-25-07-020-001

(1) Disconnect the electrical connector [8] from the lower recirculation fan [1].

ARO 001-016 POST SB 777-21-0189

SUBTASK 21-25-07-020-009

(2) Disconnect the fan electrical connector plug [11] from the vibration monitor [21].

(3) Remove the vibration monitor [21] from the fan housing (Lower Recirculation Fan Vibration Monitor Removal, TASK 21-25-07-000-802).

ARO ALL

SUBTASK 21-25-07-020-002

(4) Do the steps that follow to remove the bonding jumper [4] from the lower recirculation fan [1]:

(a) Remove the nut [7], bolt [5] and the two washers [6].

(b) Remove the bonding jumper [4].

SUBTASK 21-25-07-020-003

(5) Remove the coupling [2] that connects the lower recirculation fan [1] to the filter housing assembly.

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SUBTASK 21-25-07-820-001

(6) Move the sleeve [3] away from the lower recirculation fan [1].

SUBTASK 21-25-07-020-004

(7) Remove the coupling [9] that connects the lower recirculation fan [1] to the mix manifold assembly.

SUBTASK 21-25-07-820-002

(8) Move the sleeve [10] away from the lower recirculation fan [1].

SUBTASK 21-25-07-020-005

(9) Remove the lower recirculation fan [1].

——— END OF TASK ———

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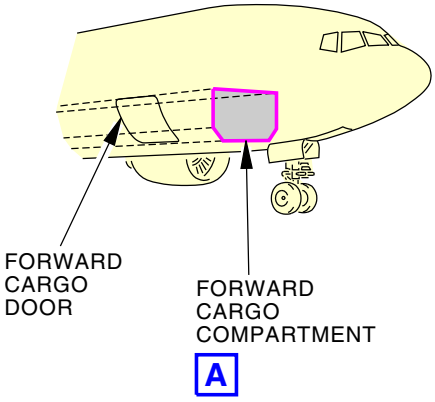

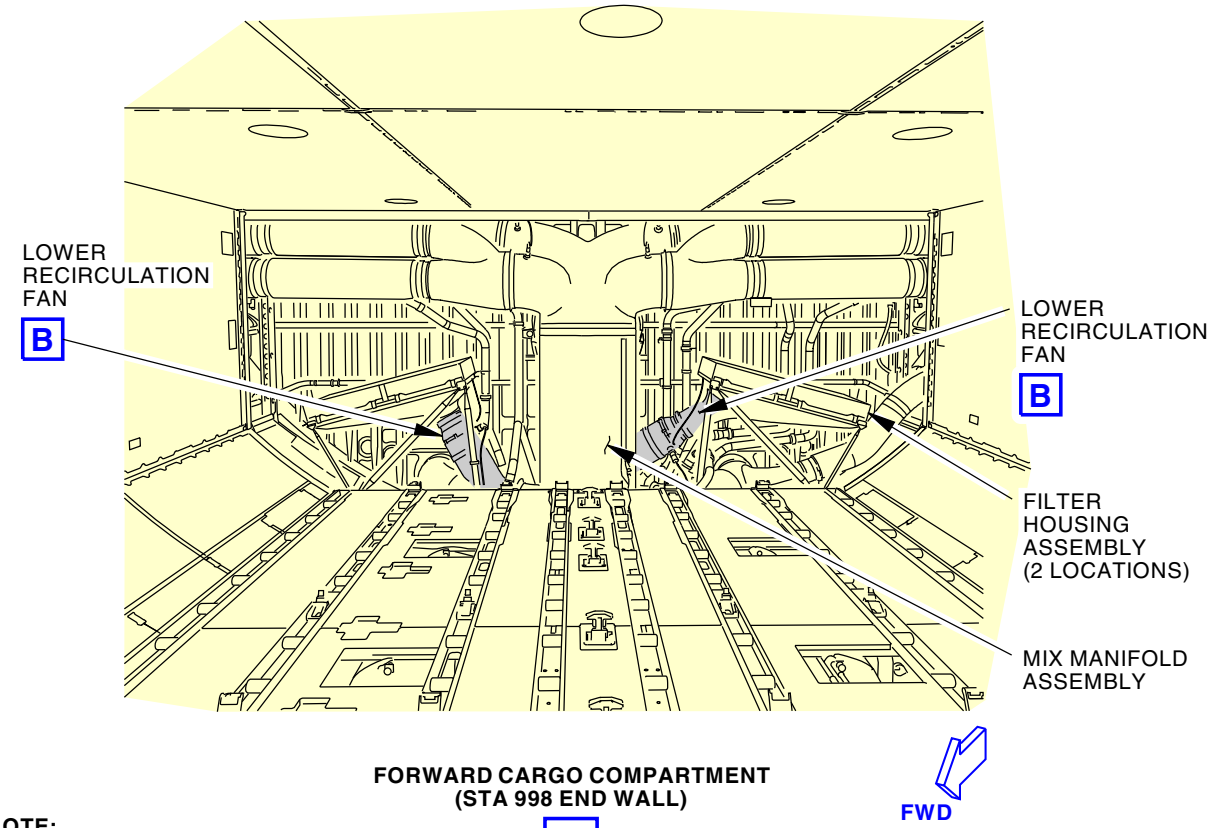

NOTE:

THE STATION 998 END WALL LINER IS NOT SHOWN IN THIS VIEW.

D17134 S0006403180_V2

Lower Recirculation Fans Installation
Figure 401/21-25-07-990-801 (Sheet 1 of 3)

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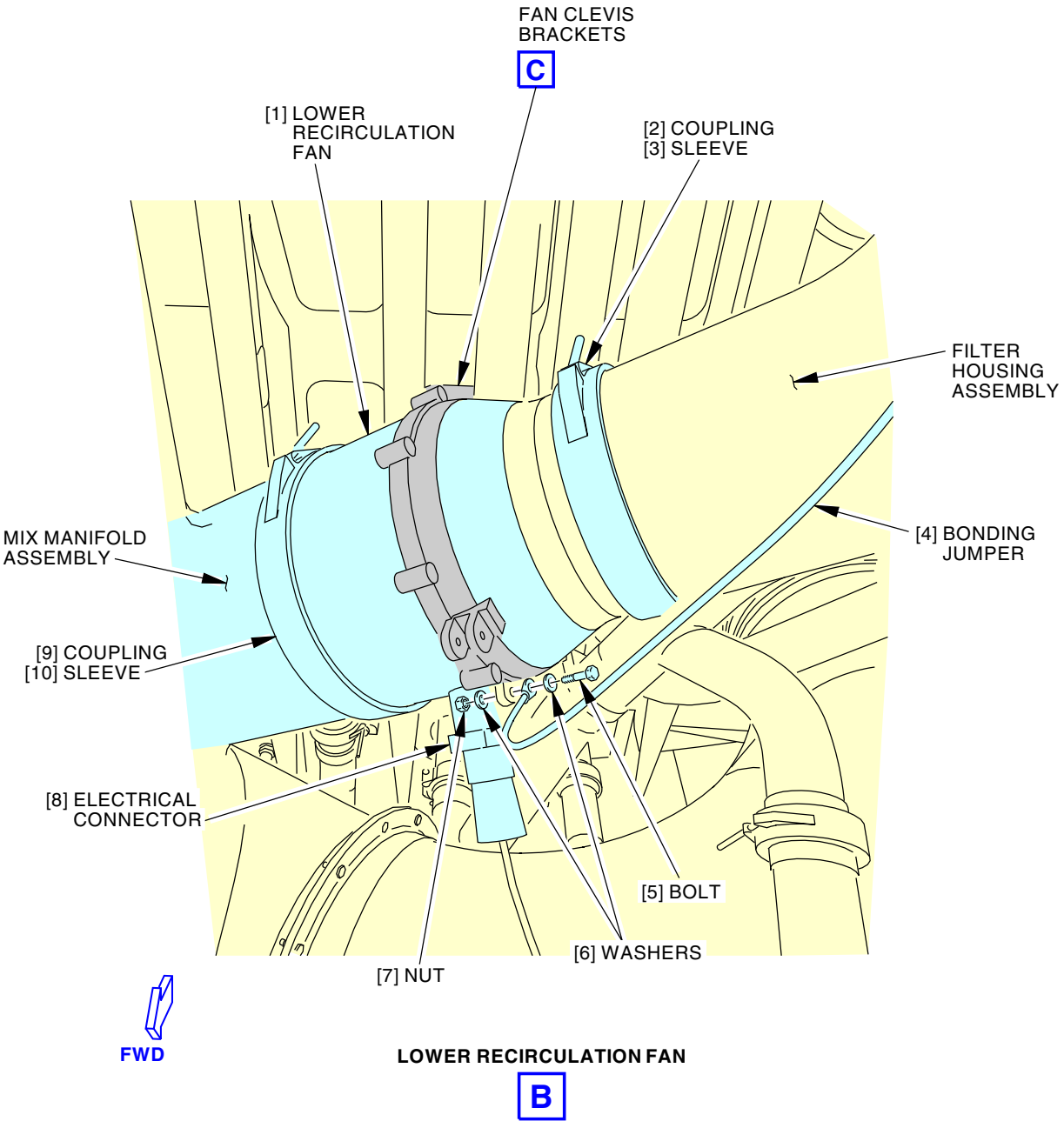

Lower Recirculation Fans Installation
Figure 401/21-25-07-990-801 (Sheet 2 of 3)

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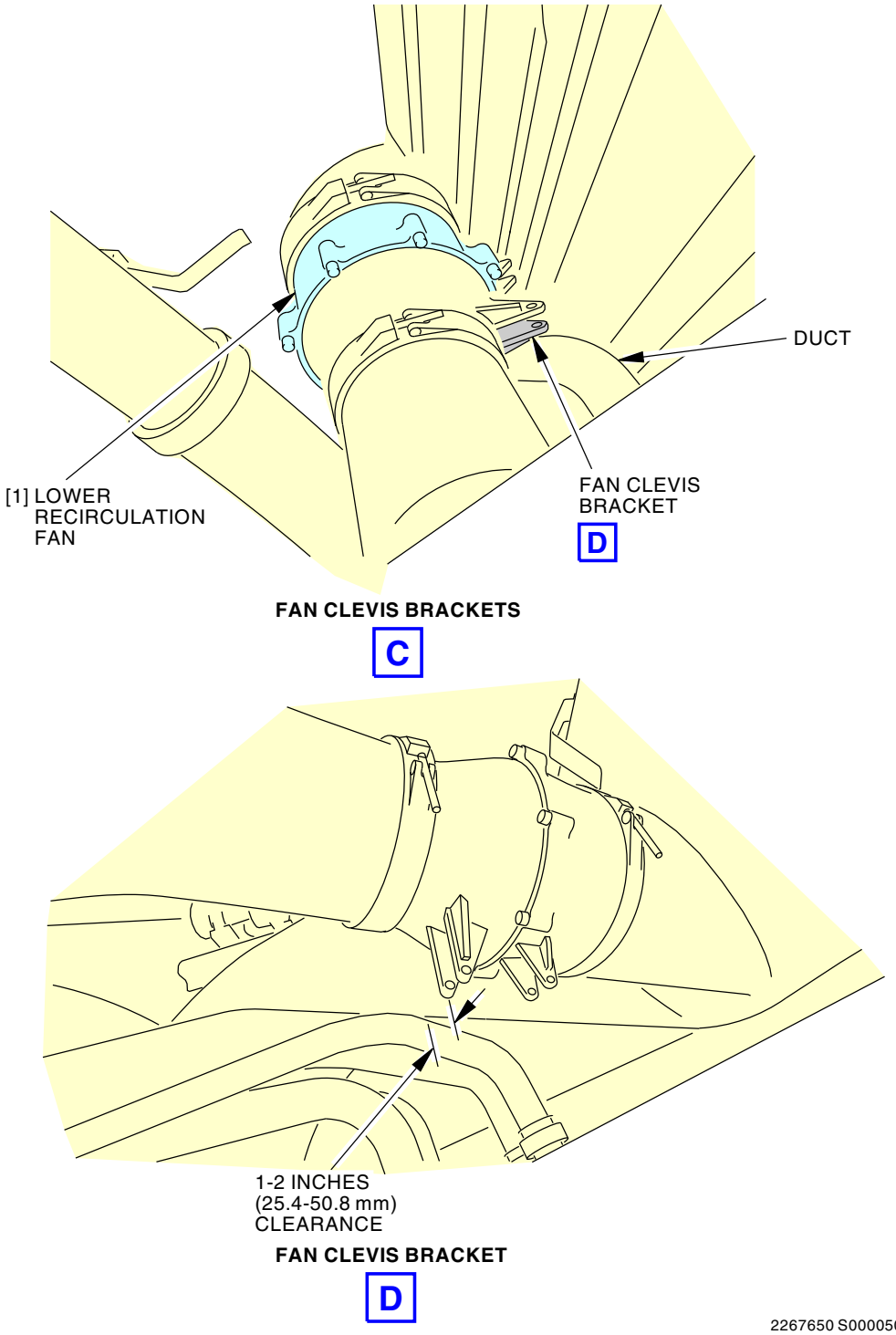

Lower Recirculation Fans Installation
Figure 401/21-25-07-990-801 (Sheet 3 of 3)

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TASK 21-25-07-400-801

3. Lower Recirculation Fan Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00 P/B 201	FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	21-25-07-03-025	ARO ALL
		21-25-07-03-175	ARO ALL

C. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
212	Flight Compartment, Right
821	Forward Large Cargo Door

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Lower Recirculation Fan Installation

SUBTASK 21-25-07-420-001

(1) Put the lower recirculation fan [1] into the sleeve [3] and the sleeve [10].

(a) Make sure that there is 1 in. (3 cm) to 2 in. (5 cm) of clearance between the fan clevis bracket and the trim duct.

SUBTASK 21-25-07-420-002

(2) Install the coupling [2] and the coupling [9].

SUBTASK 21-25-07-420-003

(3) Do the steps that follow to install the bonding jumper [4]:

(a) Make sure the bonding jumper [4], bolt [5], washers [6], and the nut [7] are clean.

(b) Put the bonding jumper [4] in its position.

(c) Install the bolt [5], washers [6], and nut [7].

SUBTASK 21-25-07-420-004

(4) Connect the electrical connector [8] to the lower recirculation fan [1].

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ARO 001-016 POST SB 777-21-0189

SUBTASK 21-25-07-420-008

(5) Install the fan vibration monitor [21] to the fan housing, and reconnect the fan electrical connector plug [11] to the vibration monitor [21].

(6) Do this task: Lower Recirculation Fan Vibration Monitor Installation, TASK 21-25-07-400-803.

ARO ALL

F. Lower Recirculation Fan Installation Test

SUBTASK 21-25-07-860-003

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-07-860-004

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

SUBTASK 21-25-07-860-006

(3) Push the LOWER RECIRC FANS switch to the ON position.

NOTE: The LOWER RECIRC FANS switch is on the Air Conditioning Module in the pilot's overhead panel, P5.

(a) Make sure the recirculation fan operates without too much noise or vibration.

SUBTASK 21-25-07-790-001

(4) Feel for leaks around the recirculation fan connections.

(a) If you find a leak you must repair it.

SUBTASK 21-25-07-740-001

(5) Use a maintenance access terminal (MAT) to do the System Test of the Recirculation Fan System (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Recirculation Fan System
7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE
2) START TEST

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(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.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-07-410-001

(1) To install the Station 998 end wall liner, do this task: Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801.

SUBTASK 21-25-07-410-002

(2) Do the applicable task to close the forward cargo compartment door (PAGEBLOCK 52-34-00/201).

SUBTASK 21-25-07-010-004

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

ARO 001-016 POST SB 777-21-0189

TASK 21-25-07-000-802

4. Lower Recirculation Fan Vibration Monitor Removal

(Figure 402)

A. General

(1) This procedure removes the Lower Recirculation Fan Vibration Monitor.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
52-34-00 P/B 201	FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES

C. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
821	Forward Large Cargo Door

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for Removal

SUBTASK 21-25-07-860-019

(1) Do these steps to make sure there is no air supplied to the mix manifold:

(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

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ARO 001-016 POST SB 777-21-0189 (Continued)

(b) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

(c) Do not use a ground conditioned air source to supply conditioned air to the airplane from the ground conditioned air connector.

(d) Make sure the LOWER and UPPER RECIRC FANS switch-lights are set to the OFF position.

NOTE: The LOWER and UPPER RECIRC FANS switch-lights are on the Air Conditioning Module in the pilot's overhead panel, P5.

SUBTASK 21-25-07-010-006

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-25-07-860-025

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-07-010-007

(4) Do the applicable task to open the forward cargo compartment door (FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES, PAGEBLOCK 52-34-00/201).

SUBTASK 21-25-07-860-020

(5) Remove electrical power as necessary (Remove Electrical Power, TASK 24-22-00-860-806).

SUBTASK 21-25-07-010-008

(6) To get access to the lower recirculation fans [1], remove the Station 998 end wall liner at the aft end of the forward cargo compartment (Forward Cargo Compartment Aft End Wall Removal, TASK 25-52-17-000-801).

(a) Make sure that the lower recirculation fans [1] are OFF.

F. Fan Vibration Monitor Removal

SUBTASK 21-25-07-020-010

(1) Disconnect the fan electrical connector plug [11] from the vibration monitor electrical receptacle [12].

SUBTASK 21-25-07-020-011

(2) Disconnect the vibration monitor electrical connector plug [13] from the fan electrical receptacle [14].

SUBTASK 21-25-07-020-012

(3) If installed, remove the screw [15], washer [16], and nut [17] to disconnect the vibration monitor bonding strap [18] from the fan ground lug [22].

NOTE: This step only applies to fan that have ground stud or use bonding strap.

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ARO 001-016 POST SB 777-21-0189 (Continued)

SUBTASK 21-25-07-020-013

(4) Remove the two screws [19] from the L-brackets that hold the vibration monitor [21] to the fan [1].

SUBTASK 21-25-07-020-014

(5) Remove the band clamp [20] from the vibration monitor [21] and the fan [1].

SUBTASK 21-25-07-020-015

(6) Remove the vibration monitor [21].

——— END OF TASK ———

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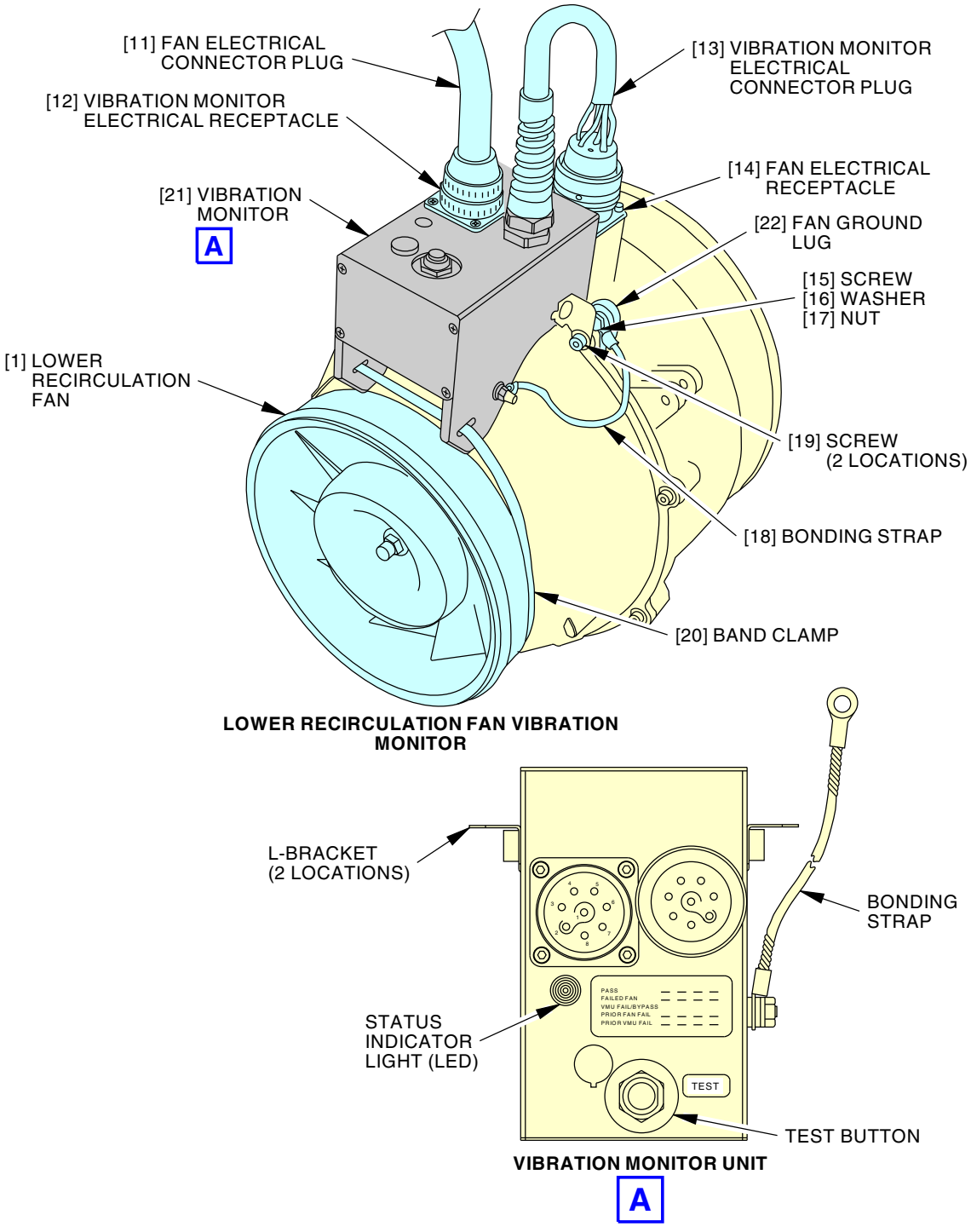

Fan Vibration Monitor
Figure 402/21-25-07-990-804

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TASK 21-25-07-400-803

5. Lower Recirculation Fan Vibration Monitor Installation

(Figure 402)

A. General

(1) This procedure installs the Lower Recirculation Fan Vibration Monitor.

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)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)

C. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
212	Flight Compartment, Right
821	Forward Large Cargo Door

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Lower recirculation Fan Vibration Monitor Installation

SUBTASK 21-25-07-420-010

(1) Put the band clamp [20] thru the slots in the legs of the vibration monitor [21].

SUBTASK 21-25-07-420-016

(2) Loosely install the band clamp [20] around the fan housing.

SUBTASK 21-25-07-820-003

(3) Align the L-brackets on each side of the vibration monitor [21] with the two split line holes on the fan housing.

SUBTASK 21-25-07-420-011

(4) Install the two screws [19] to secure the vibration monitor L-brackets to the fan housing.

(a) Tighten each screw [19] to 51-56 pound-inches (5.76-6.32 newton-meters).

SUBTASK 21-25-07-420-012

(5) Tighten the band clamp [20] to 12-15 pound-inches (1.35-1.69 newton-meters).

(a) Make sure that the band clamp [20] engages fully around the entire circumference of the fan housing.

(b) Make sure that both legs of the vibration monitor [21] are in full contact with the fan housing.

SUBTASK 21-25-07-420-013

(6) If applicable, reconnect the vibration monitor bonding strap [18] to the fan ground lug [22] with the screw [15], washer [16] and nut [17].

NOTE: This step only applies to fans that have a bonding strap or ground stud.

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ARO 001-016 POST SB 777-21-0189 (Continued)

(a) Make sure that the fan ground lug [22] is positioned with the bolt head on the monitor side.

(b) Do an electrical bonding and resistance check of the fan and vibration monitor (SWPM 20-20-00, Electrical Bonds and Grounds, Standard Wiring Practice Manual, D6-54446).

SUBTASK 21-25-07-420-014

(7) Reconnect the vibration monitor electrical connector plug [13] to the fan electrical receptacle [14].

SUBTASK 21-25-07-420-015

(8) Reconnect the fan electrical connector plug [11] to the vibration monitor electrical receptacle [12].

F. Lower Recirculation Fan Vibration Monitor Installation Test

SUBTASK 21-25-07-860-026

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	18	C21315	L LWR RECIRC FAN
G	20	C21625	FWD UPR/L LWR RECIRC FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	5	C21626	AFT UPR/R LWR RECIRC FAN CTRL

SUBTASK 21-25-07-860-027

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

SUBTASK 21-25-07-860-028

(3) Do these steps for installation test:

(a) Make sure that fan [1] is operating.

(b) Make sure that the STATUS LED is blinking GREEN after 2 minutes.

(4) Do these steps for aircraft logic test:

(a) Press and hold monitor test button for 15 seconds.

NOTE: Fan should turn off and aircraft latch will engage after time delay.

(b) Release TEST button.

(c) Make sure that the fan [1] is OFF.

(d) Disconnect the fan electrical connector plug [11] from the vibration monitor [21] to remove power from the fan [1].

(e) Re-connect the fan electrical connector plug [11].

1) Make sure that the fan [1] restarts and operates as normal.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-07-410-008

(1) To install the station 998 end wall liner, do this task: Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801.

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ARO 001-016 POST SB 777-21-0189 (Continued)

SUBTASK 21-25-07-410-009

(2) Do the applicable task to close the forward cargo compartment door (Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801).

SUBTASK 21-25-07-010-010

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-25-07-860-029

(4) Remove electrical power if no longer required (Remove Electrical Power, TASK 24-22-00-860-806).

——— END OF TASK ———

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LOWER RECIRCULATION FANS - INSPECTION/CHECK

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) An inspection of the lower recirculation fan check valve.

(2) The check valve components are integral to the recirculation fan. It is necessary to remove the lower recirculation fan to get access to the check valve.

TASK 21-25-07-200-801

2. Lower Recirculation Fan Check Valve Inspection

Figure 601

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-25-07-000-801	Lower Recirculation Fan Removal (P/B 401)
21-25-07-400-801	Lower Recirculation Fan Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
G01043	Cloth - Lint-free	

C. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right

D. Prepare for the Inspection

SUBTASK 21-25-07-020-006

(1) To remove the lower recirculation fan, do this task: (Lower Recirculation Fan Removal, TASK 21-25-07-000-801).

SUBTASK 21-25-07-100-001

(2) If necessary, clean the lower recirculation fan check valve area to be inspected.

(a) Clean the check valve area with a lint-free cloth, G01043 with water.

WARNING WHEN YOU USE THE COMPRESSED AIR TO CLEAN, TO COOL OR TO DRY, DO NOT USE EXCEED 30 PSIG (207 KPA). MAKE SURE YOU WEAR EYE PROTECTION AND DO NOT DIRECT COMPRESSED AIR AT YOURSELF AND OTHERS. INJURY TO PERSONNEL CAN OCCUR.

(b) Dry all parts with a clean, lint-free cloth, G01043 or clean dry compressed air.

E. Inspection

SUBTASK 21-25-07-210-004

(1) Examine the lower recirculation fan [1] for damage.

SUBTASK 21-25-07-210-001

(2) Examine the check valve flappers [2] for damage, distortion, or worn areas on the seating surfaces.

(a) Make sure that the check valve flappers [2] move freely.

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SUBTASK 21-25-07-210-002

(3) Examine the check valve plate [3] for damage or worn seating surfaces, cracks, or other damage.

SUBTASK 21-25-07-210-003

(4) Examine the torsion springs [4] for damage, distortion, or wear.

(a) Make sure that the torsion springs [4] tension closes the flappers.

SUBTASK 21-25-07-960-001

(5) If the damage or the component wear is unacceptable, or if the check valve does not operate properly, then you must install a new lower recirculation fan assembly.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-07-420-005

(1) To reinstall the lower recirculation fan or to install a new lower recirculation fan, do this task: (Lower Recirculation Fan Installation, TASK 21-25-07-400-801).

——— END OF TASK ———

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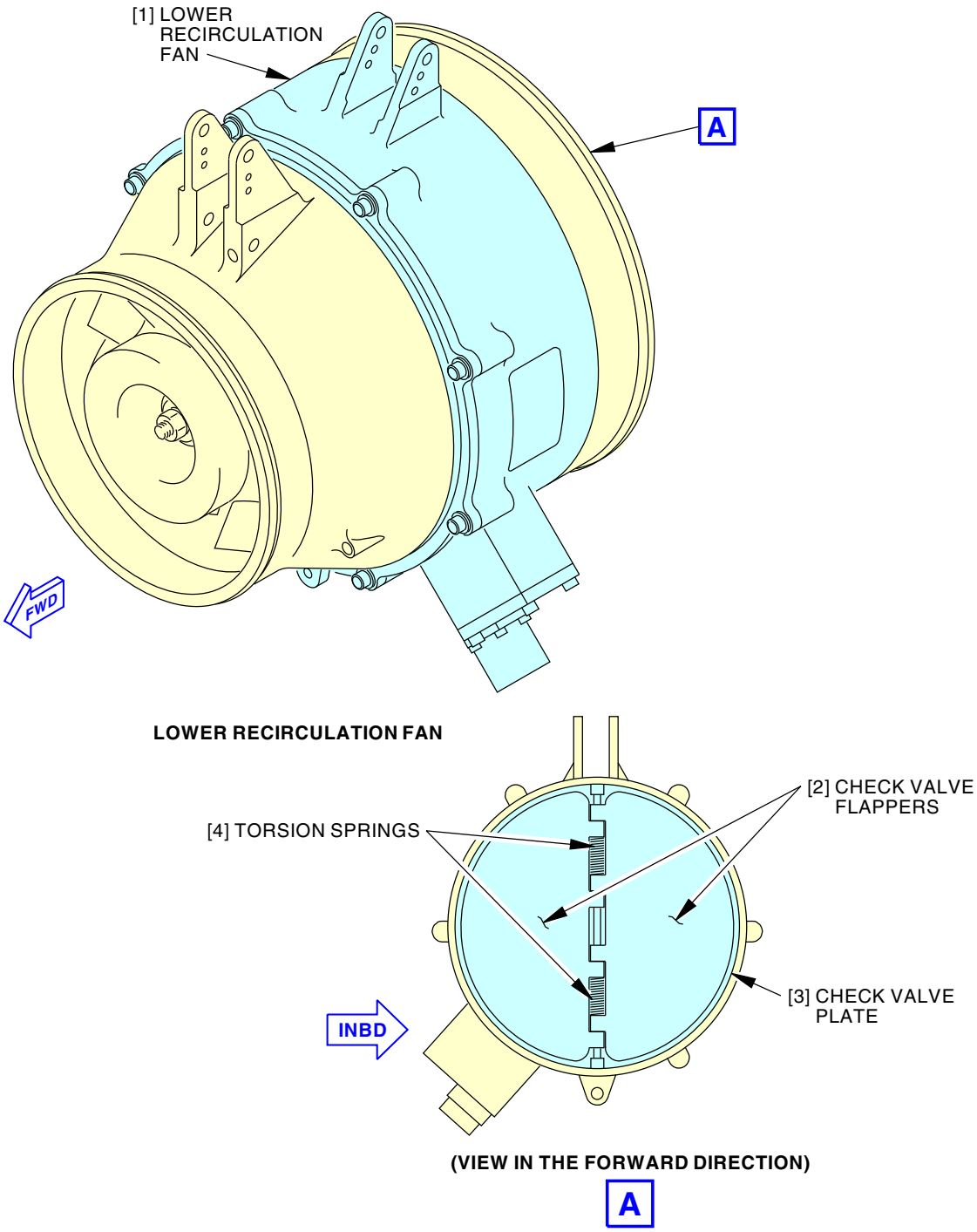

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Lower Recirculation Fan Check Valve Inspection
Figure 601/21-25-07-990-802

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LOWER RECIRCULATION AIR FILTERS - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A removal of the lower recirculation air filters

(2) An installation of the lower recirculation air filters

C. There are four lower recirculation air filters installed behind the Station 998 end wall liner at the aft end of the forward cargo compartment. Two air filters are on the left side of the cargo compartment and the other two air filters are on the right side of the cargo compartment.

D. The lower recirculation air filter [1] is referred to as the filter [1] in the procedure.

TASK 21-25-08-000-801

2. Lower Recirculation Air Filters Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. Equipment

(1) Plastic disposal bags - (38"x48", 1-2mil, 40-42 gal) commercially available

(2) Personal protective equipment & clothing (PPE/PPC) (disposable) - commercially available

(a) Particulate Respirator (NIOSH 42 CFR 84 Class N95, N99, N100) - 3M model 8210 (or equivalent)

(b) Safety Goggles - 3M model 1621 (or equivalent)

(c) Latex or Nitrile Gloves - Kimberly-Clark KleenGuard, SafeSkin, or ShieldMaster models (or equivalent)

(d) Coverall with hood - Dupont 'Tyvek' style S1428 or 01414 (or equivalent)

B. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
52-34-00 P/B 201	FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES

C. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
821	Forward Large Cargo Door

D. Prepare for the Removal

SUBTASK 21-25-08-860-003

(1) Make sure the LOWER RECIRC FANS switch is set to the OFF position, and attach DO-NOT-OPERATE tag.

NOTE: The LOWER RECIRC FANS switch is on the Air Conditioning Module in the pilot's overhead panel, P5.

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SUBTASK 21-25-08-010-002

(2) Do the applicable task to open the forward cargo compartment door (PAGEBLOCK 52-34-00/201).

SUBTASK 21-25-08-010-003

(3) To get access to each lower recirculation air filter [1], remove the Station 998 end wall liner at the aft end of the forward cargo compartment (TASK 25-52-17-000-801).

(a) Make sure that the lower recirculation fans are off.

SUBTASK 21-25-08-941-001

WARNING PUT ON THE PERSONAL PROTECTIVE EQUIPMENT BEFORE YOU TOUCH THE FILTER. THE FILTER REMOVES SMALL PARTICLES (SMOKE, DUST, LINT, FIBERS, POLLEN) AND INFECTIOUS MATERIALS (BACTERIA, VIRUSES, MOLD SPORES, FUNGI) FROM THE AIR WHICH CAN CAUSE ILLNESSES AND INJURIES TO PERSONS.

(4) Put on the personal protective equipment before you touch the filter [1].

E. Lower Recirculation Air Filters Removal

SUBTASK 21-25-08-020-005

(1) Release the latches on the forward side and the aft side of each air filter [1].

SUBTASK 21-25-08-020-002

WARNING DO NOT LET THE FILTER TOUCH YOUR SKIN. DO NOT SHAKE OR HIT THE FILTER. DO NOT LET THE FILTER FALL. DO NOT USE COMPRESSED AIR TO CLEAN THE FILTER OR FILTER HOUSING. THIS CAN CAUSE THE INFECTIOUS MATERIAL TO BECOME AIRBORNE. DISCARD THE FILTER IN A PLASTIC DISPOSAL BAG. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(2) Remove each air filter [1] from the filter housing assembly.

WARNING OBEY THE AIRLINE POLICY, LOCAL HEALTH DEPARTMENT, AND LAW ENFORCEMENT REGULATIONS WHEN YOU DISCARD THIS MATERIAL. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(a) Put the filter [1] in a plastic disposal bag and discard in accord with airline, local health, safety and regulatory procedures for disposal of material.

SUBTASK 21-25-08-020-003

WARNING DISCARD ALL PERSONAL PROTECTIVE EQUIPMENT AFTER YOU USE IT ONE TIME. DO NOT TRY TO CLEAN IT. DISCARD THE EQUIPMENT IN A PLASTIC DISPOSAL BAG. OBEY THESE INSTRUCTIONS TO PREVENT INJURIES TO PERSONNEL.

(3) Remove the personal protective equipment and put them in a plastic disposal bag, and discard them in accord with airline, local health, safety and regulatory procedures for disposal of material.

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SUBTASK 21-25-08-110-001

WARNING CLEAN YOUR HANDS WITH SOAP AND FLUSH WITH HOT WATER. DIRTY HANDS WITH CONTAMINATION CAN CAUSE DISEASE AND ILLNESSES TO PERSONS.

(4) Clean your hands with soap and running hot water.

END OF TASK

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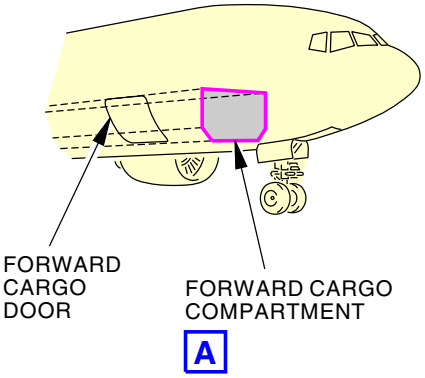

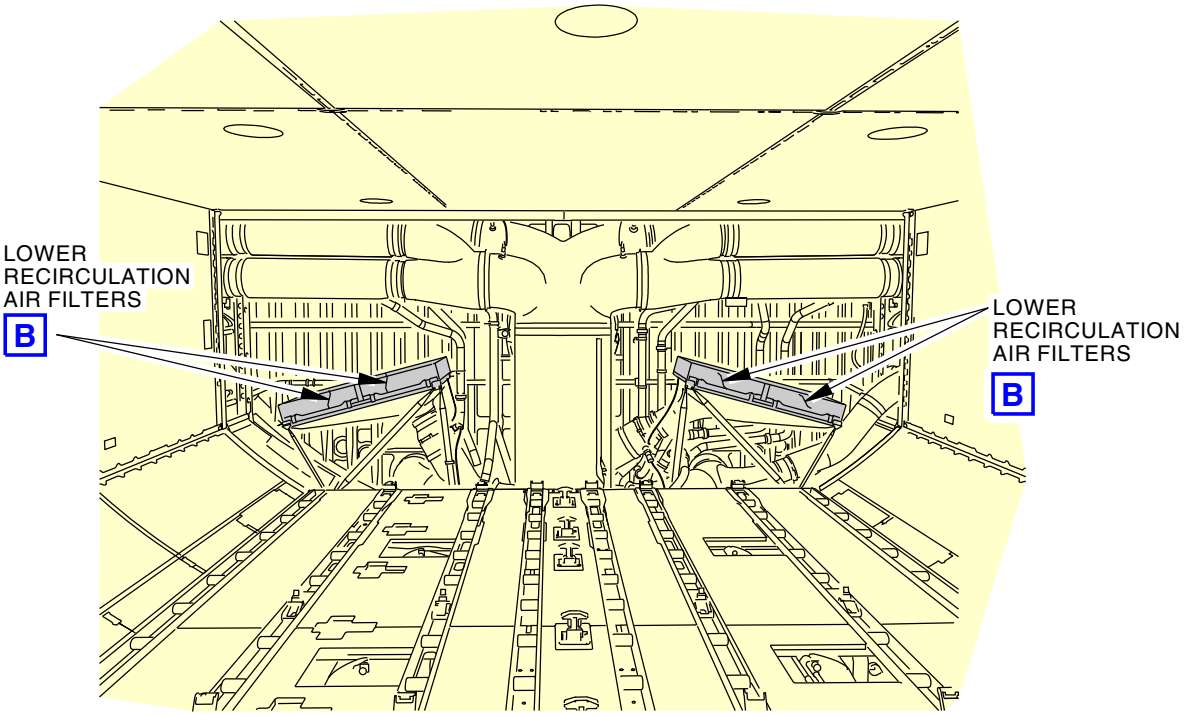

NOTE:

THE STATION 998 END WALL LINER IS NOT SHOWN.

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Lower Recirculation Air Filters Installation
Figure 401/21-25-08-990-801 (Sheet 1 of 2)

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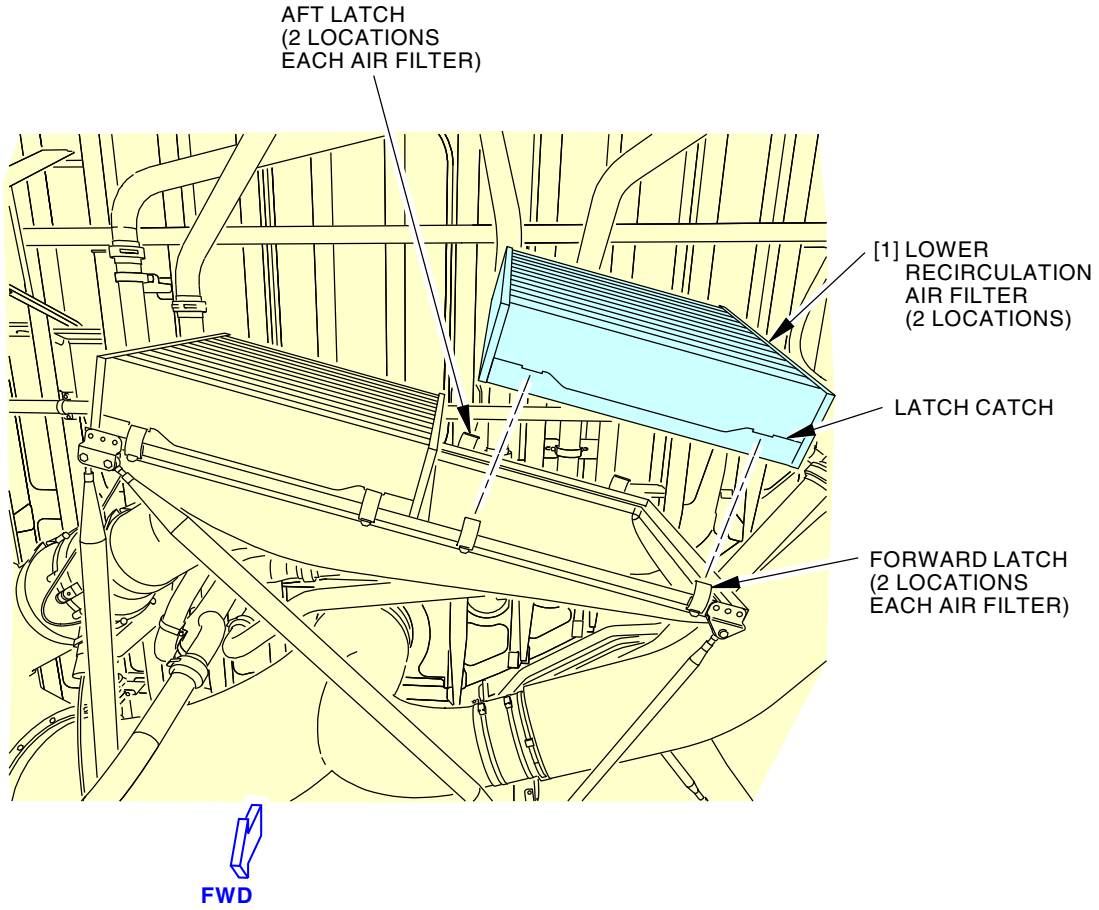

LOWER RECIRCULATION AIR FILTERS
(LEFT RECIRCULATION AIR FILTERS SHOWN,
RIGHT RECIRCULATION AIR FILTERS EQUIVALENT)

B

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Lower Recirculation Air Filters Installation
Figure 401/21-25-08-990-801 (Sheet 2 of 2)

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TASK 21-25-08-400-801

3. Lower Recirculation Air Filters Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
52-34-00 P/B 201	FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Filter	21-25-08-03-045	ARO ALL
		21-25-08-03-295	ARO ALL

C. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
821	Forward Large Cargo Door

D. Lower Recirculation Air Filters Installation

SUBTASK 21-25-08-210-001

(1) Make sure there is no unwanted material or contamination in the filter housing assembly which could cause damage to the lower recirculation fan.

SUBTASK 21-25-08-420-001

(2) Put each air filter [1] in the filter housing assembly.

(a) Make sure the latch catches on each air filter [1] are adjacent to the filter housing assembly.

SUBTASK 21-25-08-420-002

(3) Engage the latches on the forward side and the aft side of each air filter [1].

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-08-410-001

(1) To install the Station 998 end wall liner, do this task: Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801.

SUBTASK 21-25-08-410-002

(2) Do the applicable task to close the forward cargo compartment door (PAGEBLOCK 52-34-00/201).

SUBTASK 21-25-08-020-007

(3) Remove the DO-NOT-OPERATE tag from the LOWER RECIRC FANS switch at the Air Conditioning Module, on the pilot's overhead panel, P5.

——— END OF TASK ———

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VENTILATION SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) System Test - Lavatory/Galley Ventilation Fan.

(2) Operational Test - Bulk Cargo Ventilation Fan.

ARO ALL; AIRPLANES WITH THE CHILLER EXHAUST INSTALLED

(3) System Test - Chiller Exhaust System.

ARO ALL

NOTE: The chiller exhaust sytem is installed but does not operate. The test will check the operation of the chiller boost fan. The test will not check the chiller exhaust valves which are disconnected.

(4) System Test - Forward Cargo Air Conditioning Exhaust Fan.

C. To do a complete system test of the ventilation system, you must do each of the above tasks.

TASK 21-26-00-740-801

2. Lavatory/Galley Ventilation Fan - System Test

A. General

(1) This test makes sure that the left and right lavatory/galley ventilation fans 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
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. System Test - Lavatory/Galley Ventilation Fan

SUBTASK 21-26-00-860-001

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

SUBTASK 21-26-00-740-001

(2) Use a maintenance access terminal (MAT) to do the system test of the left and right lavatory/galley ventilation fans.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) GROUND TESTS

4) 21 Environmental Control System

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5) SYSTEM TEST

6) Lavatory/Galley Ventilation Fan

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 21-26-00-740-802

3. Bulk Cargo Ventilation Fan - Operational Test

A. General

(1) This test makes sure that the bulk cargo ventilation fan operates correctly.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

C. Location Zones

Zone	Area
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Operational Test - Bulk Cargo Ventilation Fan

SUBTASK 21-26-00-860-003

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

SUBTASK 21-26-00-010-001

(2) Open the bulk cargo door. To do this, do this task: Open the Door, TASK 52-36-00-860-801.

SUBTASK 21-26-00-860-010

(3) Make sure the EQUIP COOL switch is in the AUTO position.

NOTE: The EQUIP COOL switch is on the Air Conditioning Module which is on the Pilot's Overhead Panel, P5:

SUBTASK 21-26-00-860-004

(4) Put the BULK CARGO TEMP SELECT selector in the HIGH position.

NOTE: The BULK CARGO TEMP SELECT selector is found on the Maintenance Panel, P61.

SUBTASK 21-26-00-210-001

(5) Make sure the bulk cargo ventilation fan operates.

(a) Use your hand to feel for airflow from the plenum in the ceiling of the bulk cargo compartment.

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SUBTASK 21-26-00-860-005

(6) Put the BULK CARGO TEMP SELECT selector in the LOW position.

SUBTASK 21-26-00-210-002

(7) Make sure the bulk cargo ventilation fan does not operate.

(a) Make sure that you do not feel airflow from the plenum in the ceiling of the bulk cargo compartment.

SUBTASK 21-26-00-860-006

(8) Put the BULK CARGO TEMP SELECT selector in the OFF position.

SUBTASK 21-26-00-210-003

(9) Make sure the bulk cargo ventilation fan does not operate.

(a) Make sure that you do not feel airflow from the plenum in the ceiling of the bulk cargo compartment.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-26-00-410-001

(1) Close the bulk cargo door. To do this, do this task: Close the Door, TASK 52-36-00-860-802.

——— END OF TASK ———

ARO ALL; AIRPLANES WITH THE CHILLER EXHAUST INSTALLED

TASK 21-26-00-740-805

4. Chiller Exhaust System - System Test

A. General

(1) This test makes sure that the chiller boost fan and chiller exhaust valves 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
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. System Test - Chiller Exhaust System

SUBTASK 21-26-00-860-012

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

SUBTASK 21-26-00-740-004

(2) Use a maintenance access terminal (MAT) to do the system test of the chiller boost fan and chiller exhaust valves.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

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ARO ALL; AIRPLANES WITH THE CHILLER EXHAUST INSTALLED (Continued)

3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Chiller Exhaust 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.

——— END OF TASK ———

ARO ALL

TASK 21-26-00-740-804

5. Forward Cargo Air Conditioning Exhaust Fan - System Test

A. General

(1) This test makes sure that the forward cargo air conditioning (FCAC) exhaust fan 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)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. System Test - FCAC Exhaust Fan

SUBTASK 21-26-00-860-011

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

SUBTASK 21-26-00-740-003

(2) Use a maintenance access terminal (MAT) to do the system test of the FCAC exhaust fan.

(a) Make these selections on the MAT:
1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE

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3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Forward Cargo Air Conditioning
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 ———

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LAVATORY/GALLEY VENTILATION FANS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the lavatory/galley ventilation fans

(2) An installation of the lavatory/galley ventilation fans.

B. There are two lavatory/galley ventilation fans installed on the airplane. One of the two lavatory/galley ventilation fans automatically operates when electrical power is supplied on the airplane. The lavatory/galley ventilation fans supply ventilation of the lavatories and the galleys. They also supply draw through cooling for the aft electrical/electronic equipment.

TASK 21-26-01-000-801

2. Lavatory/Galley Ventilation Fan Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane before you remove either of the lavatory/galley ventilation fans. This will make sure the aft electrical/electronic equipment does not receive electrical power.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-19-000-801	Bulk Cargo Compartment Aft End Wall Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
165	Area Aft of Bulk Cargo Compartment, Left
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Prepare for the Removal

SUBTASK 21-26-01-860-001

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE LAVATORY/GALLEY VENTILATION SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-26-01-010-001

(2) To open the bulk cargo door, do this task: Open the Door, TASK 52-36-00-860-801.

SUBTASK 21-26-01-010-002

(3) To get access to the lavatory/galley ventilation fans, remove the left end wall at Station 2062 in the bulk cargo compartment (TASK 25-52-19-000-801).

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E. Lavatory/Galley Ventilation Fan Removal

SUBTASK 21-26-01-020-009

(1) Disconnect the electrical connector [9] from the lavatory/galley ventilation fan [1].

SUBTASK 21-26-01-020-001

(2) Loosen the aft clamp [5] at the forward end of the lavatory/galley ventilation fan [1], and remove the duct assembly [7], sleeve [6], and clamps [5] together as a single unit.

SUBTASK 21-26-01-020-002

(3) Loosen the forward clamp [11] which keeps the sleeve [10] on the aft end of the lavatory/galley ventilation fan [1].

SUBTASK 21-26-01-020-003

(4) Remove and discard the lockwire [4] from the bolt [8] and the bolt [13].

SUBTASK 21-26-01-020-004

(5) Remove bolt [8], bolt [13], and the washers [12].

SUBTASK 21-26-01-020-005

(6) Remove and discard the lockwire [4] from the bolts [2].

SUBTASK 21-26-01-020-006

(7) Hold the lavatory/galley ventilation fan [1] while you remove the bolts [2] and washers [3].

SUBTASK 21-26-01-020-007

(8) Remove the lavatory/galley ventilation fan [1] from the sleeve [10].

SUBTASK 21-26-01-210-001

(9) Examine the screen in the inlet duct for contamination or blockage.

(a) If necessary, do these steps to clean the inlet duct and screen:

1) Wash the Inlet Duct and Screen with soap and water.

2) Rinse the Inlet Duct and Screen with clean water.

3) Dry the Inlet Duct and Screen with a dry cloth or compressed air.

——— END OF TASK ———

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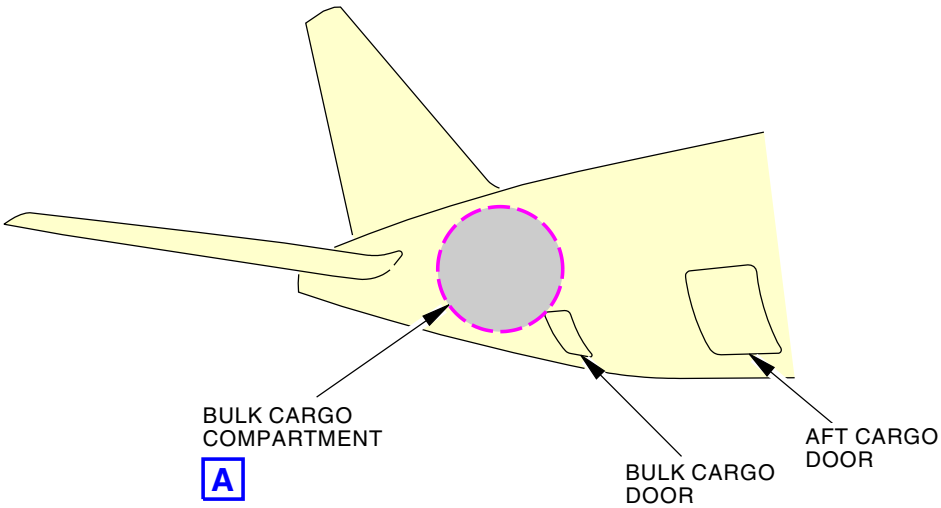

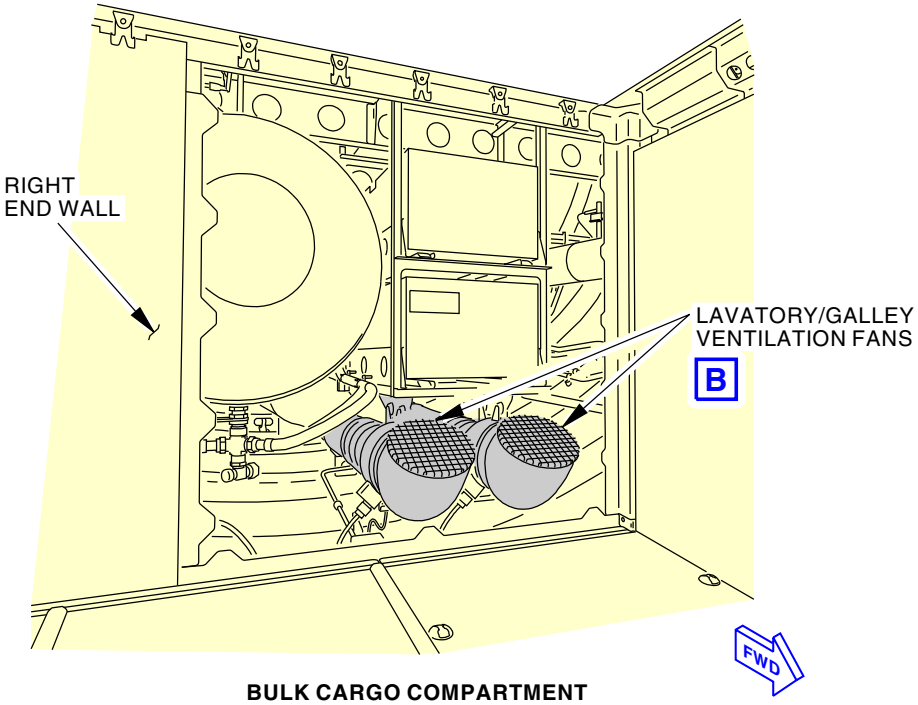

**BULK CARGO COMPARTMENT
(STA 2062 END WALL)**

A

NOTE:

THE LEFT END WALL IS NOT SHOWN.

C76141 S0006403200_V2

**Lavatory/Galley Ventilation Fan Installation
Figure 401/21-26-01-990-801 (Sheet 1 of 2)**

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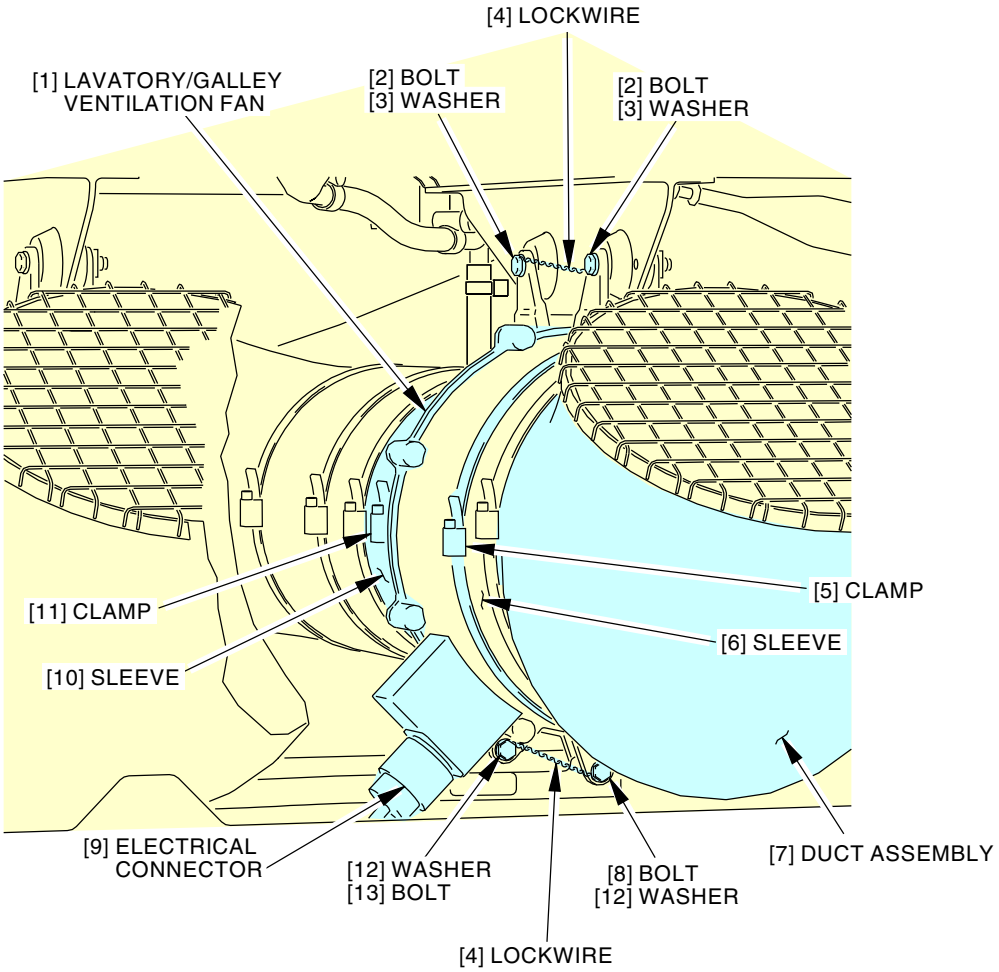

C76235 S0006403201_V2

Lavatory/Galley Ventilation Fan Installation
Figure 401/21-26-01-990-801 (Sheet 2 of 2)

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TASK 21-26-01-400-801

3. Lavatory/Galley Ventilation Fan Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-19-400-801	Bulk Cargo Compartment Aft End Wall Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	21-26-01-15-090	ARO ALL

C. Location Zones

Zone	Area
165	Area Aft of Bulk Cargo Compartment, Left
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Lavatory/Galley Ventilation Fan Installation

SUBTASK 21-26-01-420-001

(1) Put the lavatory/galley ventilation fan [1] into the sleeve [10] until the fan touches the inlet duct.

SUBTASK 21-26-01-820-001

(2) Hold the lavatory/galley ventilation fan [1] while you align the fan support brackets with the bolt holes in the structure.

SUBTASK 21-26-01-420-002

(3) Install the bolts [2] and washers [3].

SUBTASK 21-26-01-420-003

(4) Install the bolt [8] and bolt [13], and the washers [12].

SUBTASK 21-26-01-420-005

(5) Install a new lockwire [4] between the bolts [2].

SUBTASK 21-26-01-420-006

(6) Install a new lockwire [4] between the bolt [8] and the bolt [13].

SUBTASK 21-26-01-420-004

(7) Tighten the clamp [11] which keeps the sleeve [10] on the aft end of the lavatory/galley ventilation fan [1] approximately to 13 in-lb (1.5 N·m)-18 in-lb (2.0 N·m).

SUBTASK 21-26-01-020-008

(8) Install the duct assembly [7], sleeve [6], and clamps [5] together as a single unit on the lavatory/galley ventilation fan [1].

(a) Make sure the lavatory/galley ventilation fan [1] touches the duct assembly [7].

(b) Make sure the duct assembly [7] is aligned vertically.

(c) Tighten the aft clamp [5] which keeps the sleeve [6] on the forward end of the lavatory/galley ventilation fan [1] approximately to 13 in-lb (1.5 N·m)-18 in-lb (2.0 N·m).

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SUBTASK 21-26-01-420-007

(9) Connect the electrical connector [9] to the lavatory/galley ventilation fan [1].

E. Lavatory/Galley Ventilation Fan Installation Test

SUBTASK 21-26-01-860-004

(1) Keep out of the way of the airflow from the lavatory/galley ventilation fans when they operate during this test.

SUBTASK 21-26-01-860-002

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

SUBTASK 21-26-01-740-001

(3) Use a maintenance access terminal (MAT) to do the System test of the Lavatory/Galley Ventilation Fans (TASK 45-10-00-740-808):

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Lavatory/Galley Ventilation
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.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-26-01-410-001

(1) Install the left end wall at Station 2062 in the bulk cargo compartment (TASK 25-52-19-400-801).

SUBTASK 21-26-01-410-002

(2) Close the bulk cargo door (TASK 52-36-00-860-802).

——— END OF TASK ———

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LAVATORY/GALLEY VENTILATION INLET DUCT AND SCREEN - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A removal of the lavatory/galley ventilation inlet duct and screen

(2) An installation of the lavatory/galley ventilation inlet duct and screen.

C. The lavatory/galley ventilation inlet duct and screen will be called the inlet duct and screen in this procedure.

D. There is one inlet duct and screen installed upstream of each lavatory/galley ventilation fan. The inlet duct and screen keeps unwanted material from going through the lavatory/galley ventilation fan.

TASK 21-26-02-000-801

2. Lavatory/Galley Ventilation Inlet Duct and Screen Removal

(Figure 401)

A. General

(1) You must remove electrical power from the 115V AC Bus before you remove either of the inlet ducts and screens. This makes sure the electrical/electronic equipment does not receive electrical power.

(2) You can supply external ground service power to use the airplanes internal lighting.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-52-19-000-801	Bulk Cargo Compartment Aft End Wall Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
165	Area Aft of Bulk Cargo Compartment, Left

D. Prepare for the Removal

SUBTASK 21-26-02-860-004

CAUTION

MAKE SURE THAT YOU REMOVE ELECTRICAL POWER FROM THE 115V AC BUS. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE LAVATORY/GALLEY AIR FLOW SYSTEM IS NOT IN OPERATION, THE ELECTRICAL AND ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

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SUBTASK 21-26-02-860-005

(2) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-26-02-010-001

(3) Do this task to open the bulk cargo door: Open the Door, TASK 52-36-00-860-801.

SUBTASK 21-26-02-010-002

(4) Remove the Station 2062 end wall on the left side of the bulk cargo compartment (TASK 25-52-19-000-801).

E. Lavatory/Galley Ventilation Inlet Duct and Screen Removal

SUBTASK 21-26-02-020-001

(1) Loosen the clamps [2].

SUBTASK 21-26-02-020-002

(2) Pull sleeve [1] and sleeve [3] off of the inlet duct and screen [4].

SUBTASK 21-26-02-020-003

(3) Remove the inlet duct and screen [4].

——— END OF TASK ———

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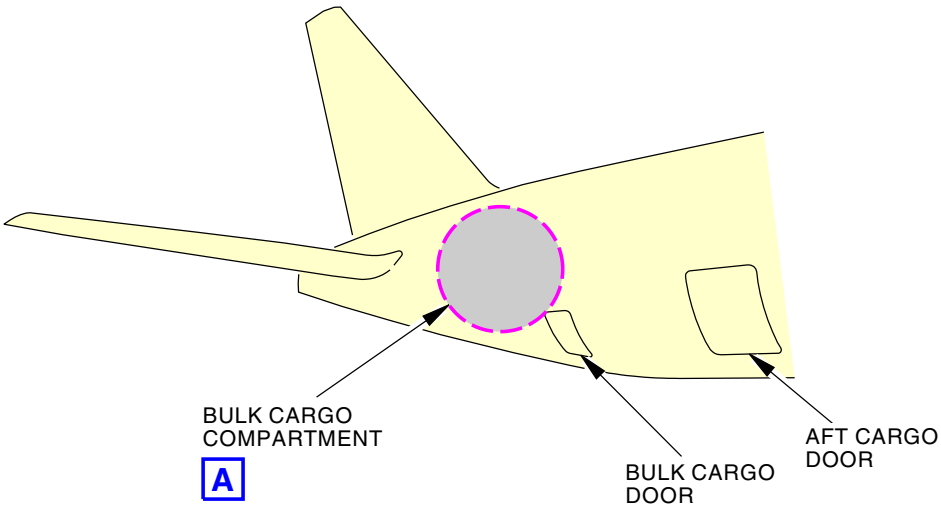

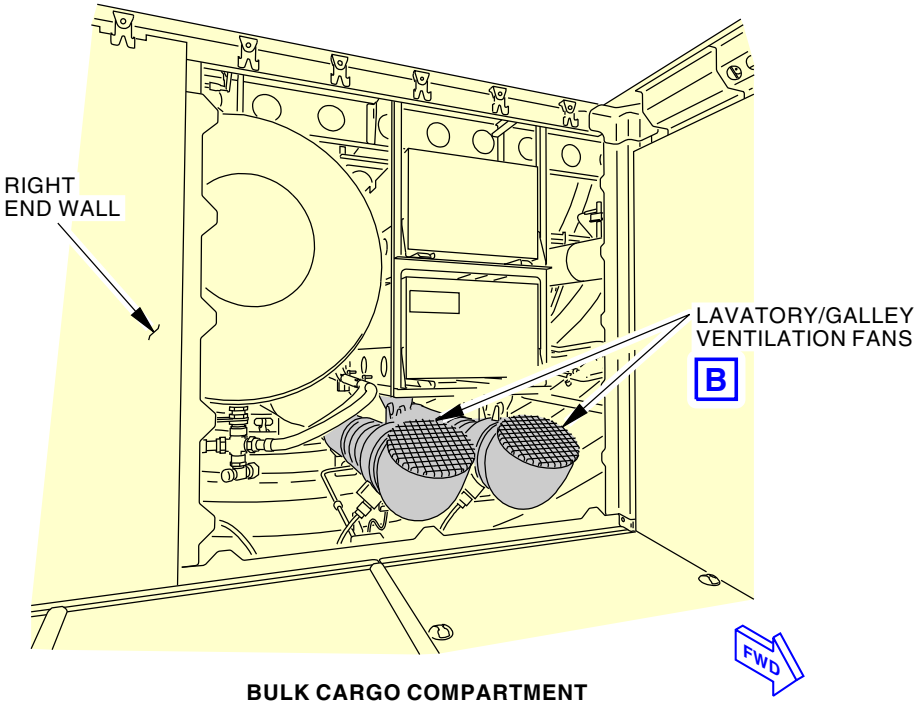

BULK CARGO COMPARTMENT
(STA 2062 END WALL)

A

NOTE:

THE LEFT END WALL IS NOT SHOWN.

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Lavatory/Galley Ventilation Inlet Duct and Screen Installation
Figure 401/21-26-02-990-801 (Sheet 1 of 2)

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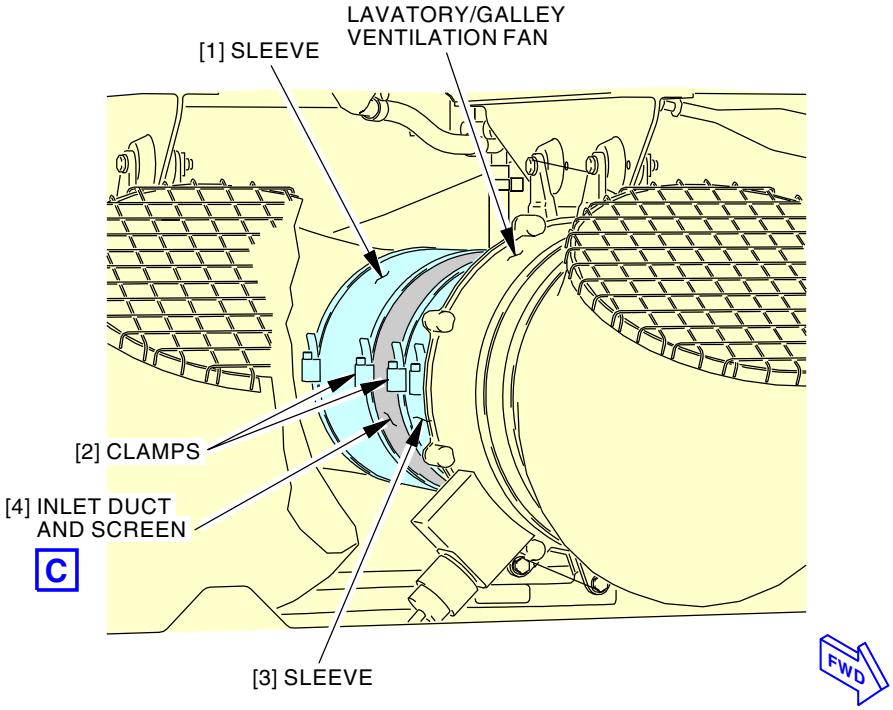
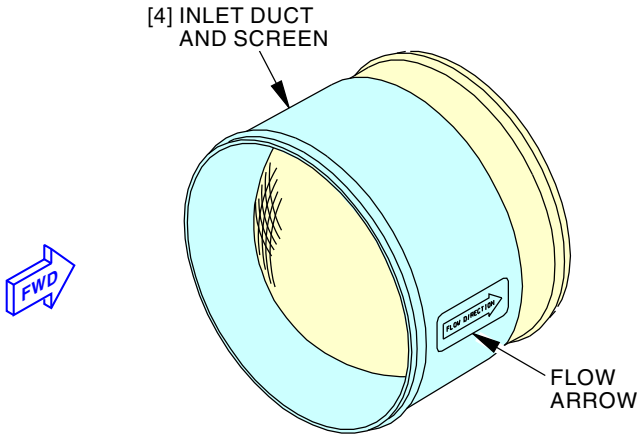


LAVATORY/GALLEY VENTILATION FANS

B



INLET DUCT AND SCREEN

C

C77933 S0006403207_V2

Lavatory/Galley Ventilation Inlet Duct and Screen Installation
Figure 401/21-26-02-990-801 (Sheet 2 of 2)

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TASK 21-26-02-400-801

3. Lavatory/Galley Ventilation Inlet Duct and Screen Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-814	Remove Primary External Power From the Ground Handling Bus (P/B 201)
24-22-00-860-815	Remove Primary External Power from the Ground Service Bus (P/B 201)
25-52-19-400-801	Bulk Cargo Compartment Aft End Wall Installation (P/B 401)
52-36-00-860-802	Close the Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Inlet duct and screen	21-26-02-01-020	ARO ALL

C. Location Zones

Zone	Area
165	Area Aft of Bulk Cargo Compartment, Left

D. Lavatory/Galley Ventilation Inlet Duct and Screen Installation

SUBTASK 21-26-02-420-001

(1) Install the inlet duct and screen [4] into sleeve [1] and sleeve [3].

SUBTASK 21-26-02-210-002

(2) Make sure that the flow arrow points forward.

SUBTASK 21-26-02-420-002

(3) Install the clamps [2].

E. Lavatory/Galley Ventilation Inlet Duct and Screen Installation Test

NOTE: Keep away from the outlet of the lavatory/galley ventilation fan before you supply electrical power. After you supply electrical power, the lavatory/galley ventilation fan will operate and will blow air at you if you are in the way.

SUBTASK 21-26-02-860-002

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

SUBTASK 21-26-02-210-001

(2) Make sure there is no air leakage where the inlet duct and screen [4] attaches to sleeve [1] and the sleeve [3].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-26-02-410-001

(1) Install the end wall at Station 2062 (TASK 25-52-19-400-801).

SUBTASK 21-26-02-410-002

(2) Do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-26-02-860-006

(3) If it is necessary, remove external power from the Ground Handling Bus and the Ground Service Bus:

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(a) Do this task: Remove Primary External Power From the Ground Handling Bus, TASK 24-22-00-860-814.

(b) Do this task: Remove Primary External Power from the Ground Service Bus, TASK 24-22-00-860-815.

——— END OF TASK ———

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LAVATORY/GALLEY VENTILATION INLET DUCT AND SCREEN - CLEANING/PAINTING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) A cleaning of the lavatory/galley ventilation inlet duct and screen.

C. The lavatory/galley ventilation inlet duct and screen will be called the inlet duct and screen in this procedure.

D. There is one inlet duct and screen installed upstream of each lavatory/galley ventilation fan. The inlet duct and screen keeps unwanted material from going through the lavatory/galley ventilation fan.

TASK 21-26-02-000-802

2. Lavatory/Galley Ventilation Inlet Duct and Screen Cleaning

(Figure 701)

A. References

Reference	Title
21-26-02-000-801	Lavatory/Galley Ventilation Inlet Duct and Screen Removal (P/B 401)
21-26-02-400-801	Lavatory/Galley Ventilation Inlet Duct and Screen Installation (P/B 401)

B. Location Zones

Zone	Area
165	Area Aft of Bulk Cargo Compartment, Left

C. Procedure

SUBTASK 21-26-02-020-004

(1) Do this task: Lavatory/Galley Ventilation Inlet Duct and Screen Removal, TASK 21-26-02-000-801.

SUBTASK 21-26-02-140-001

(2) Remove all dust and unwanted material from the inlet duct and screen [1].

SUBTASK 21-26-02-110-001

(3) Wash the inlet duct and screen [1] with soap and water.

SUBTASK 21-26-02-170-001

(4) Rinse the inlet duct and screen [1] with clean water.

SUBTASK 21-26-02-160-001

(5) Dry the inlet duct and screen [1] with a dry cloth or compressed air.

SUBTASK 21-26-02-420-003

(6) Do this task: Lavatory/Galley Ventilation Inlet Duct and Screen Installation, TASK 21-26-02-400-801.

——— END OF TASK ———

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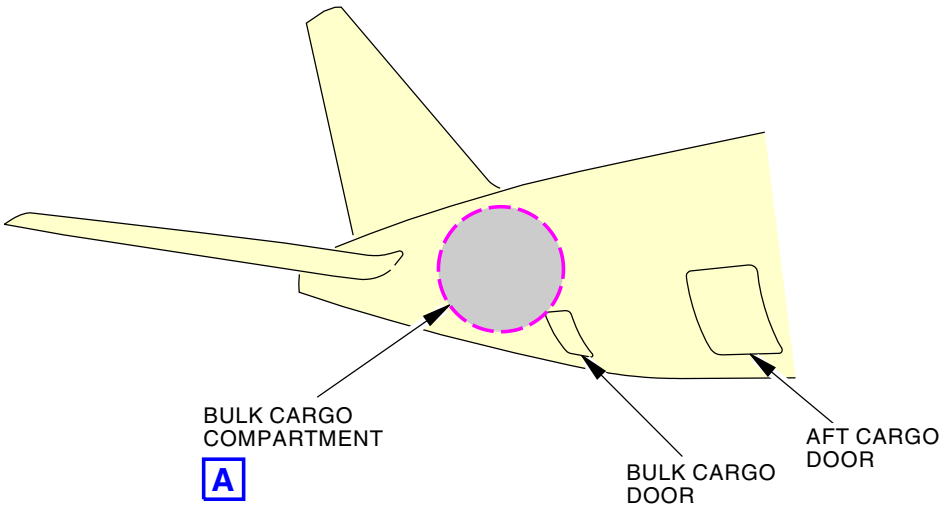

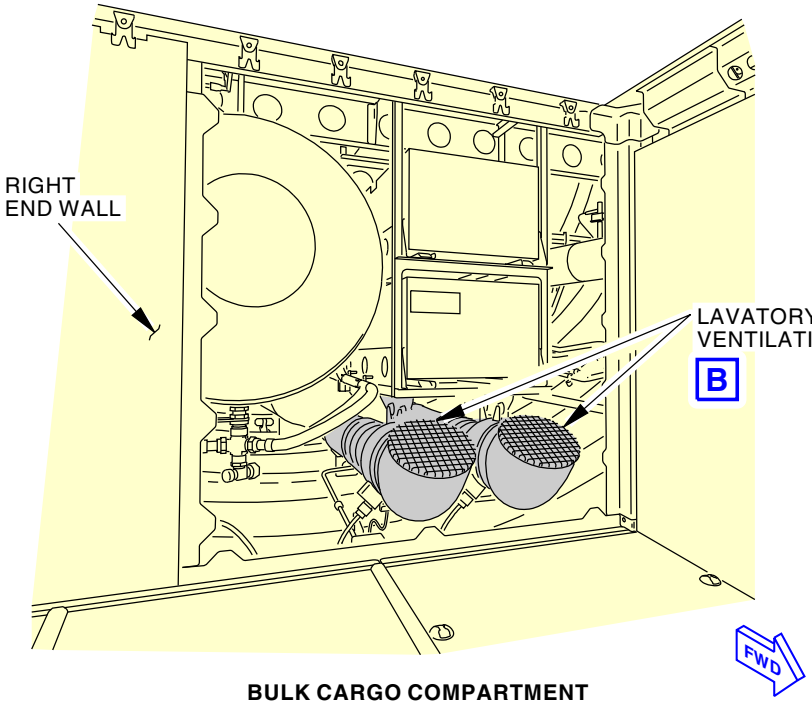

BULK CARGO COMPARTMENT
(STA 2062 END WALL)

A

NOTE:

THE LEFT END WALL IS NOT SHOWN.

C81811 S0006403211_V2

Lavatory/Galley Ventilation Inlet Duct and Screen Cleaning
Figure 701/21-26-02-990-802 (Sheet 1 of 2)

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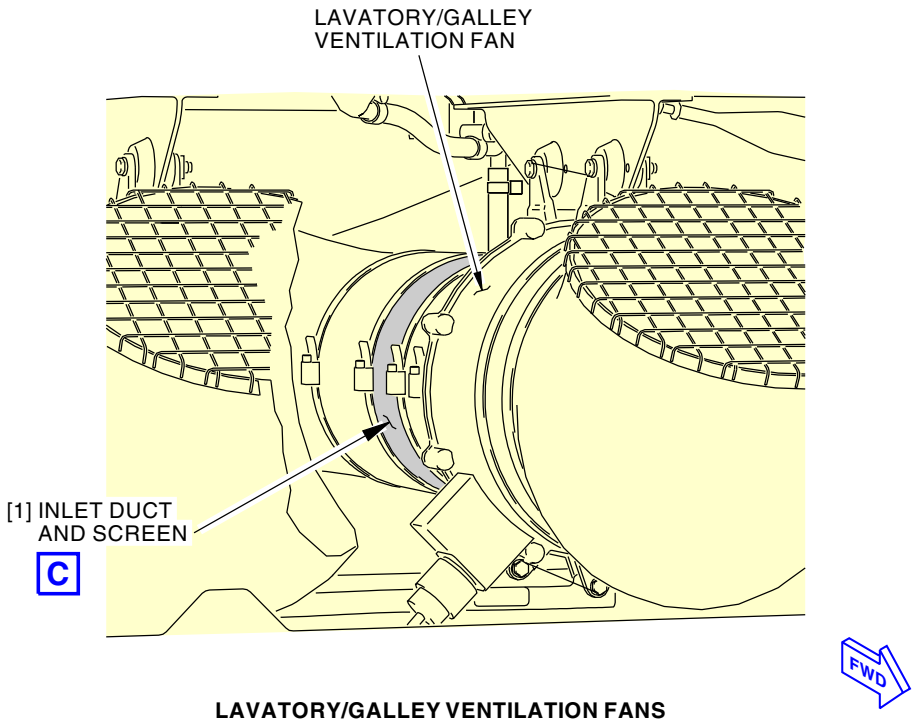
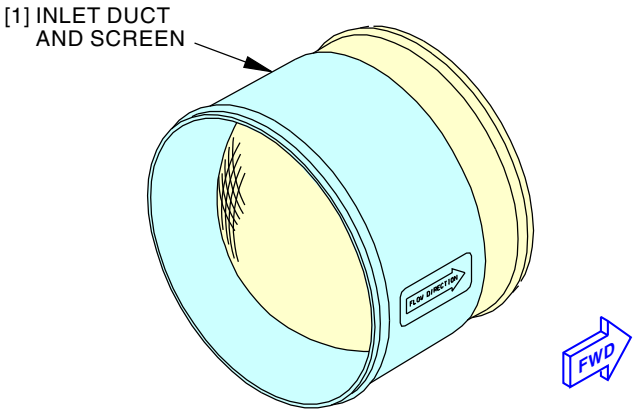


LAVATORY/GALLEY VENTILATION FANS

B



INLET DUCT AND SCREEN

C

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Lavatory/Galley Ventilation Inlet Duct and Screen Cleaning
Figure 701/21-26-02-990-802 (Sheet 2 of 2)

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GALLEY VENTILATION FILTER - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A removal of the galley ventilation filters

(2) An installation of the galley ventilation filters.

C. The lavatory/galley ventilation fans remove contaminated air from the galley areas in the airplane. The air that is removed from the galley areas first goes through the galley ventilation filters. The galley ventilation filters prevent lint, grease and small particles from going into the lavatory/galley ventilation ducts.

TASK 21-26-03-000-801

2. Galley Ventilation Filter Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) There is a galley ventilation filter installed in each of the galley vents.

NOTE: Figure 401 shows example installations of galley ventilation filters. There are equivalent galley ventilation filter installations in each of the galley areas in the airplane.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)

C. Tools/Equipment

Reference	Description
STD-12491	Wrench - Allen, 3/32 inch

D. Location Zones

Zone	Area
221	Passenger Compartment, Left - Section 41
222	Passenger Compartment, Right - Section 41
231	Passenger Compartment, Left - Section 43
232	Passenger Compartment, Right - Section 43
261	Passenger Compartment, Left - Section 47
262	Passenger Compartment, Right - Section 47

E. Prepare for the Removal

SUBTASK 21-26-03-860-001

CAUTION

REMOVE ELECTRICAL POWER FROM THE AIRPLANE. THE ELECTRONIC EQUIPMENT CAN BECOME TOO HOT WHEN THE LAVATORY/GALLEY VENTILATION SYSTEM IS NOT IN OPERATION. THIS CAN CAUSE DAMAGE TO THE ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

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F. Procedure

SUBTASK 21-26-03-010-005

(1) Do these steps to disconnect the lens assembly [3] from the galley light assembly:

(a) Use the 3/32 inch allen wrench, STD-12491, or rod to turn the quarter-turn fastener in each release hole in the lens assembly [3].

(b) Lower the lens assembly [3] and let it hang from the lanyards.

NOTE: To get better access to the galley ventilation filter, you can remove the lens assembly or you can disconnect those lanyards that are adjacent to the galley ventilation filter and let the lens assembly hang from the other lanyards.

SUBTASK 21-26-03-020-006

(2) Turn the two quarter-turn fastener to disengage the retainer [2] from the galley light assembly.

SUBTASK 21-26-03-020-007

(3) Remove the retainer [2].

SUBTASK 21-26-03-020-008

(4) Remove the galley ventilation filter [1].

——— END OF TASK ———

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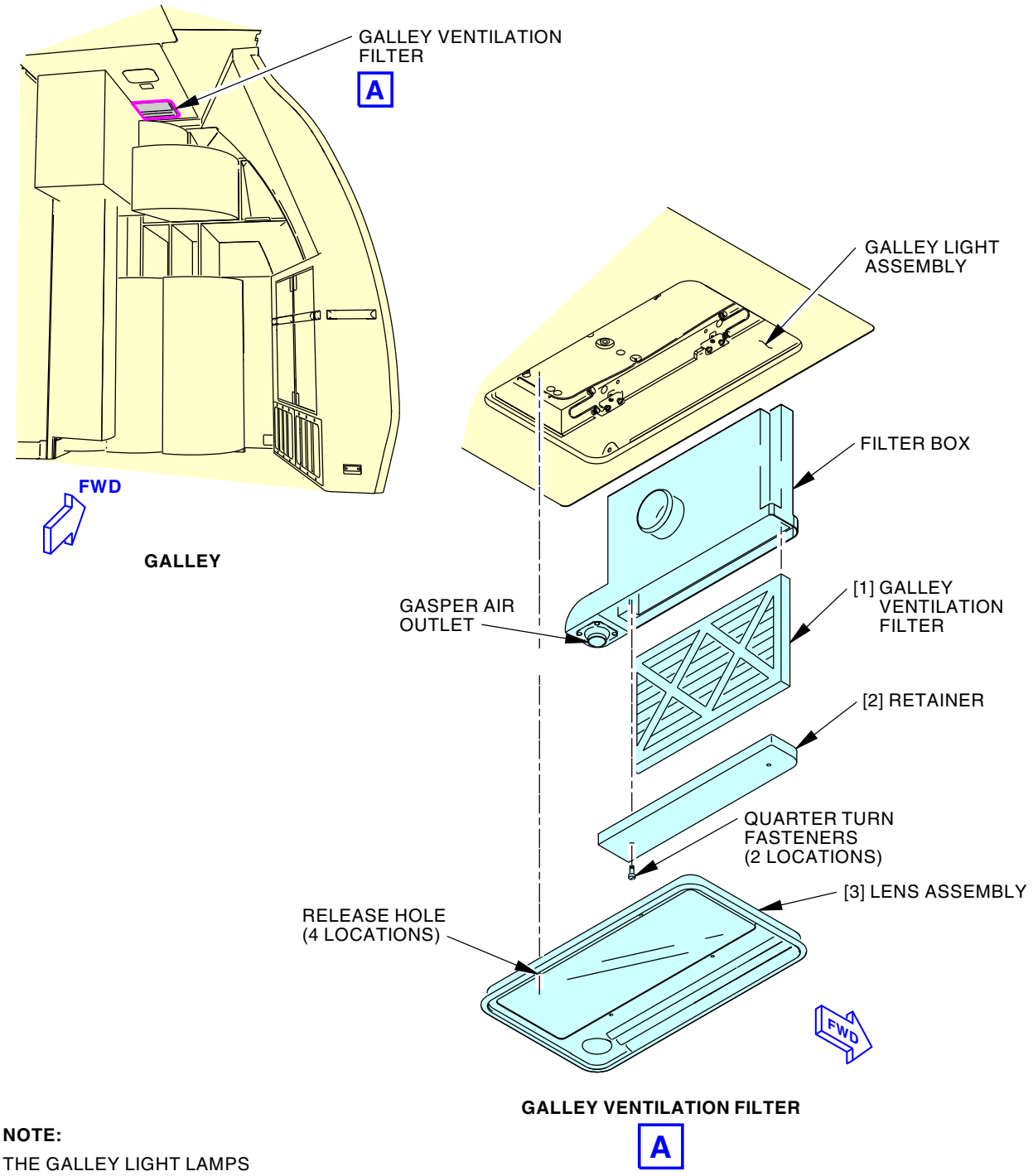

NOTE:

THE GALLEY LIGHT LAMPS ARE NOT SHOWN.

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Galley Ventilation Filter Installation
Figure 401/21-26-03-990-801

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TASK 21-26-03-400-801

3. Galley Ventilation Filter Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. Tools/Equipment

Reference	Description
STD-12491	Wrench - Allen, 3/32 inch

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Filter	21-26-03-01-130	ARO ALL
		21-26-03-01-260	ARO ALL
		21-26-03-01A-130	ARO ALL
		21-26-03-01A-230	ARO ALL
		21-26-03-10-030	ARO ALL

C. Location Zones

Zone	Area
221	Passenger Compartment, Left - Section 41
222	Passenger Compartment, Right - Section 41
231	Passenger Compartment, Left - Section 43
232	Passenger Compartment, Right - Section 43
261	Passenger Compartment, Left - Section 47
262	Passenger Compartment, Right - Section 47

D. Procedure

SUBTASK 21-26-03-420-005

(1) Put a new galley ventilation filter [1] into the galley light assembly.

(a) Make sure that the flow arrow on the galley ventilation filter [1] to the lamps.

SUBTASK 21-26-03-420-006

(2) Put the retainer [2] into its position on the galley light assembly.

SUBTASK 21-26-03-420-007

(3) Turn the two quarter-turn fasteners to engage the retainer [2] with the galley light assembly.

SUBTASK 21-26-03-010-006

(4) Put the lens assembly [3] into its position on the galley light assembly.

(a) Make sure that all the lanyards on the lens assembly [3] are connected to the galley light assembly.

SUBTASK 21-26-03-420-008

(5) Use the 3/32 inch allen wrench, STD-12491, or rod and turn the quarter-turn fasteners to engage the lens assembly [3] with the galley light assembly.

——— END OF TASK ———

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BULK CARGO VENTILATION FAN - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Bulk cargo ventilation fan - deactivation.

(2) Bulk cargo ventilation fan - activation.

TASK 21-26-06-040-801

2. Bulk Cargo Ventilation Fan - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the bulk cargo ventilation fan.

B. References

Reference	Title
25-52-09-000-801	Ceiling Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
118	Main Equipment Center, Right
161	Bulk Cargo Compartment, Left
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Procedure

SUBTASK 21-26-06-210-004

(1) On the Maintenance Panel, P61, make sure that the BULK CARGO TEMP SELECT selector is OFF.

SUBTASK 21-26-06-210-005

(2) On the Pilot's Overhead panel, P5, make sure that the EQUIP COOL switch is in the AUTO position.

SUBTASK 21-26-06-010-005

(3) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-26-06-020-011

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	10	C21308	BULK CG0 VENT FAN
H	1	C21640	BULK CGO VENT FAN CTRL

SUBTASK 21-26-06-860-013

(5) Do this task: Open the Door, TASK 52-36-00-860-801.

SUBTASK 21-26-06-860-014

(6) Remove the ceiling liner from the plenum assembly to get access to the bulk cargo ventilation fan (TASK 25-52-09-000-801).

G. Bulk Cargo Ventilation Fan - Tryout

NOTE: This tryout is to make sure that the bulk cargo ventilation fan is in a zero energy state.

SUBTASK 21-26-06-860-010

(1) On the Maintenance panel, P61, put the BULK CARGO TEMP SELECT selector to HIGH.

SUBTASK 21-26-06-210-006

(2) Make sure that the bulk cargo ventilation fan does not operate.

SUBTASK 21-26-06-860-011

(3) On the Maintenance panel, P61, put the BULK CARGO TEMP SELECT selector to OFF.

(a) Install a DO NOT OPERATE tag, STD-858 on the selector.

END OF TASK

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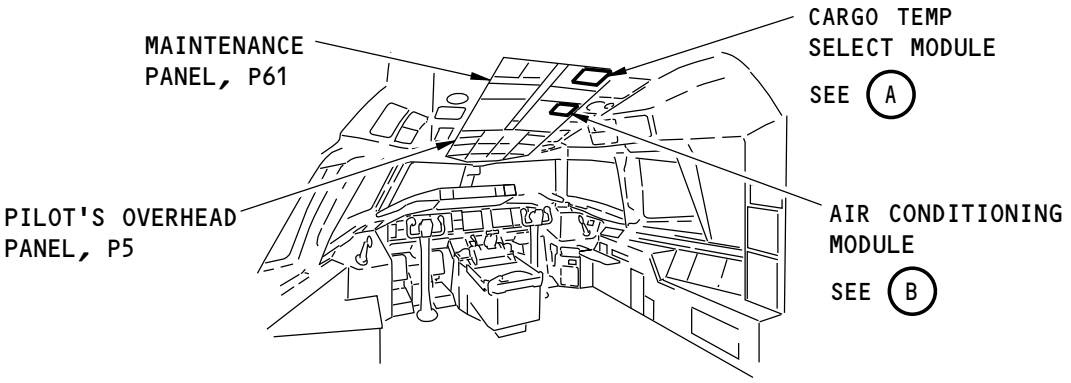
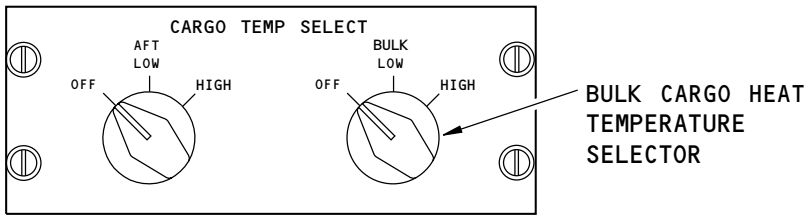
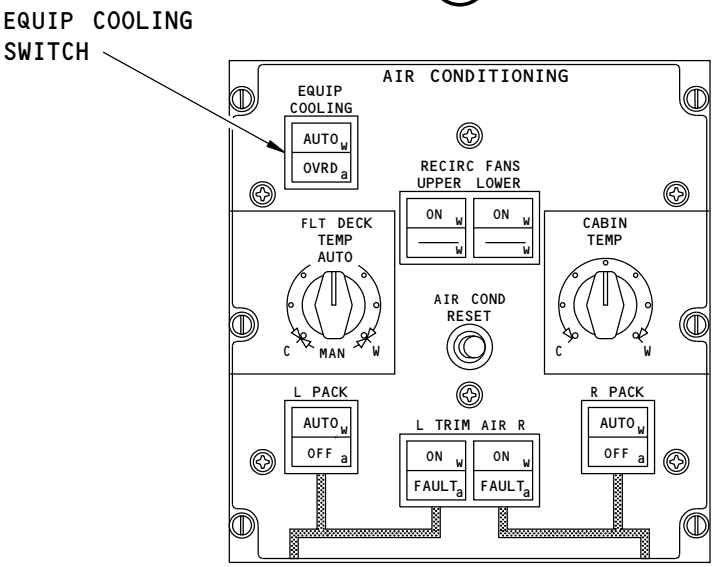


FLIGHT COMPARTMENT



CARGO TEMP SELECT MODULE

A



AIR CONDITIONING MODULE

B

2417894 S0000558393_V1

Bulk Cargo Ventilation Fan
Figure 201/21-26-06-990-802 (Sheet 1 of 3)

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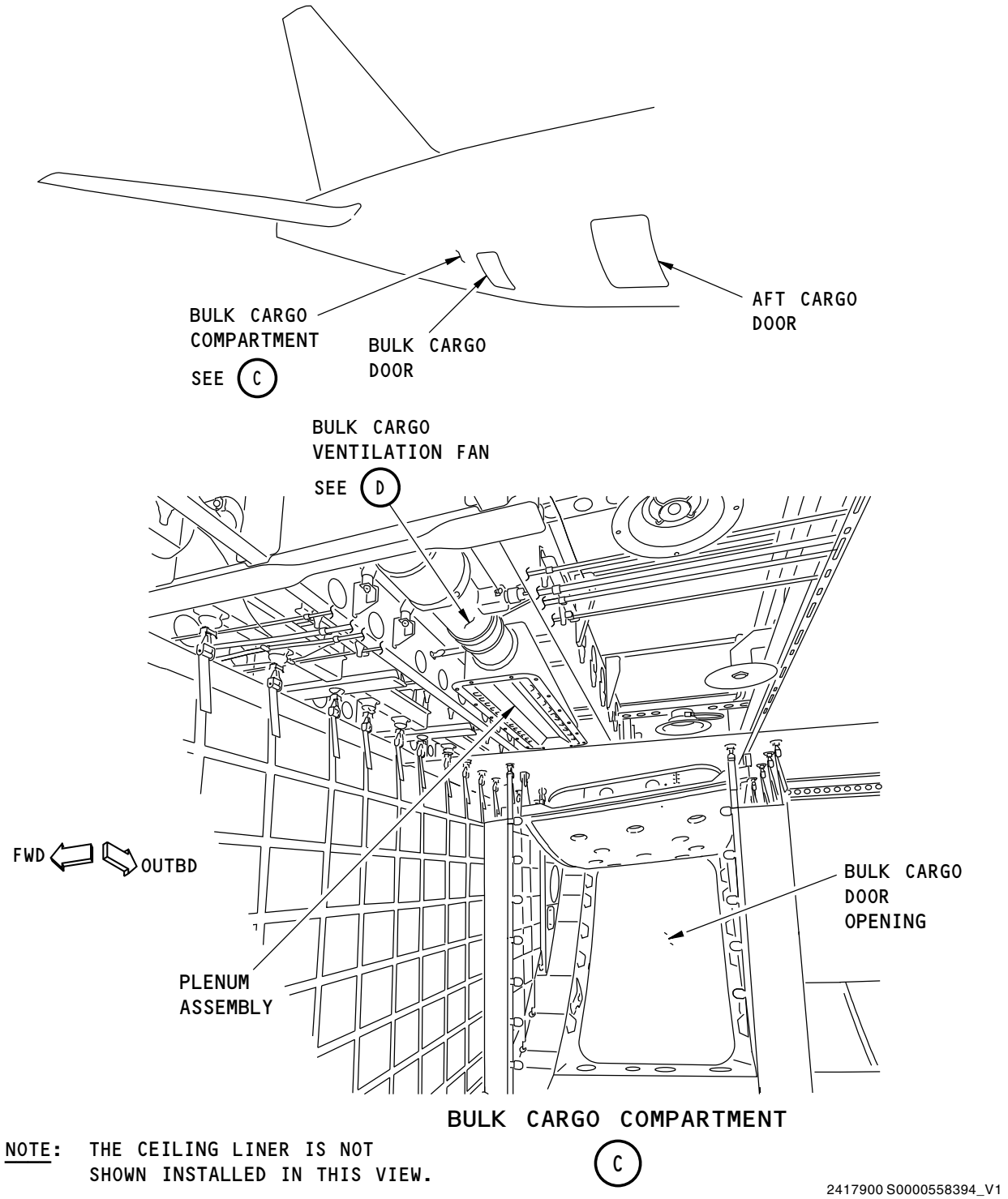

Bulk Cargo Ventilation Fan
Figure 201/21-26-06-990-802 (Sheet 2 of 3)

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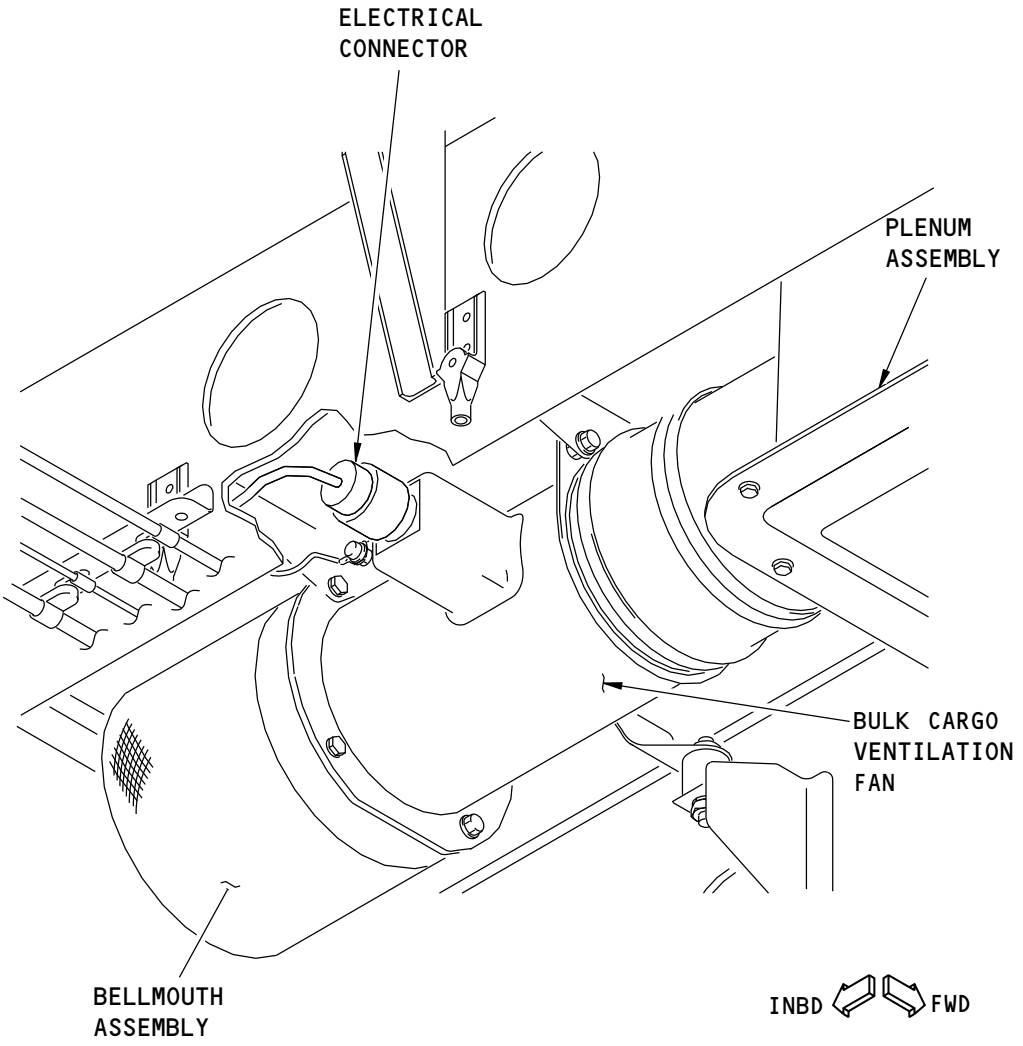

BULK CARGO VENTILATION FAN

D

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Bulk Cargo Ventilation Fan
Figure 201/21-26-06-990-802 (Sheet 3 of 3)

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TASK 21-26-06-440-801

3. Bulk Cargo Ventilation Fan - Activation

(Figure 201)

A. General

(1) This task will activate the bulk cargo ventilation fan.

B. References

Reference	Title
25-52-09-400-801	Ceiling Liner - Installation (P/B 401)
52-36-00-860-802	Close the Door (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
118	Main Equipment Center, Right
161	Bulk Cargo Compartment, Left
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Procedure

SUBTASK 21-26-06-410-001

(1) Install the ceiling liner from the plenum assembly (Ceiling Liner - Installation, TASK 25-52-09-400-801).

SUBTASK 21-26-06-860-017

(2) Do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-26-06-420-005

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-26-06-420-004

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

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(WARNING PRECEDES)

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	10	C21308	BULK CG0 VENT FAN
H	1	C21640	BULK CGO VENT FAN CTRL

SUBTASK 21-26-06-860-012

(5) Remove the DO NOT OPERATE tag, STD-858 from the BULK CARGO TEMP SELECT selector.

——— END OF TASK ———

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BULK CARGO VENTILATION FAN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the bulk cargo ventilation fan

(2) An installation of the bulk cargo ventilation fan.

B. The bulk cargo ventilation fan moves air from the aft lower lobe cheek area and supplies it to the bulk cargo compartment for live animal carriage. The bulk cargo ventilation fan operates continuously under this condition:

(1) The BULK CARGO TEMP SELECT selector on the Maintenance Panel, P61, is in the HIGH position.

NOTE: The bulk cargo ventilation fan does not operate when the BULK CARGO TEMP SELECT selector is in the LOW or the OFF position.

TASK 21-26-06-000-801

2. Bulk Cargo Ventilation Fan Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-09-000-801	Ceiling Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

B. Location Zones

Zone	Area
118	Main Equipment Center, Right
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-26-06-860-001

(1) Make sure the BULK CARGO TEMP SELECT selector is set to the OFF position.

NOTE: The BULK CARGO TEMP SELECT selector is found on the Maintenance Panel, P61.

SUBTASK 21-26-06-860-002

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-26-06-860-003

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	10	C21308	BULK CG0 VENT FAN

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(Continued)

Right Power Management Panel, P210

Row	Col	Number	Name
H	1	C21640	BULK CGO VENT FAN CTRL

SUBTASK 21-26-06-010-001

(4) Do this task: Open the Door, TASK 52-36-00-860-801.

SUBTASK 21-26-06-010-002

(5) Remove the ceiling liner from the plenum assembly [2] to get access to the bulk cargo ventilation fan [1] (TASK 25-52-09-000-801).

E. Bulk Cargo Ventilation Fan Removal

SUBTASK 21-26-06-020-001

(1) Disconnect the electrical connector [4] from the bulk cargo ventilation fan [1].

SUBTASK 21-26-06-020-006

(2) Remove the bolt [11], washers [12], and nut [8] which connect the bonding jumper [14] to the bulk cargo ventilation fan [1].

SUBTASK 21-26-06-020-002

(3) Remove and discard the strap [10] which connects the hose [9] to the bulk cargo ventilation fan [1].

SUBTASK 21-26-06-020-007

(4) Hold the bulk cargo ventilation fan [1] while you remove the bolts [6], washers [7], and nuts [8] which connect it to the support structure [3] and to the support structure [5].

SUBTASK 21-26-06-020-008

(5) Remove the bulk cargo ventilation fan [1] from the hose [9].

SUBTASK 21-26-06-020-009

(6) Remove the bolts [6], washers [7], and nuts [8] which connect the bellmouth assembly [13] to the bulk cargo ventilation fan [1].

SUBTASK 21-26-06-020-010

(7) Remove the bellmouth assembly [13] from the bulk cargo ventilation fan [1].

SUBTASK 21-26-06-100-001

(8) Clean the screen on the bellmouth assembly [13] if there is blockage or contamination.

NOTE: To clean the screen, you can use compressed air or a solution of soap and water.

——— END OF TASK ———

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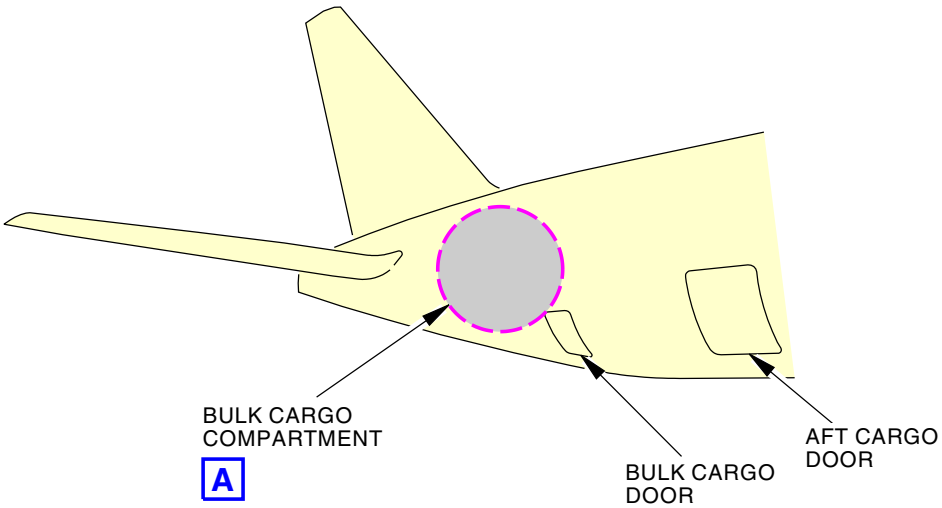

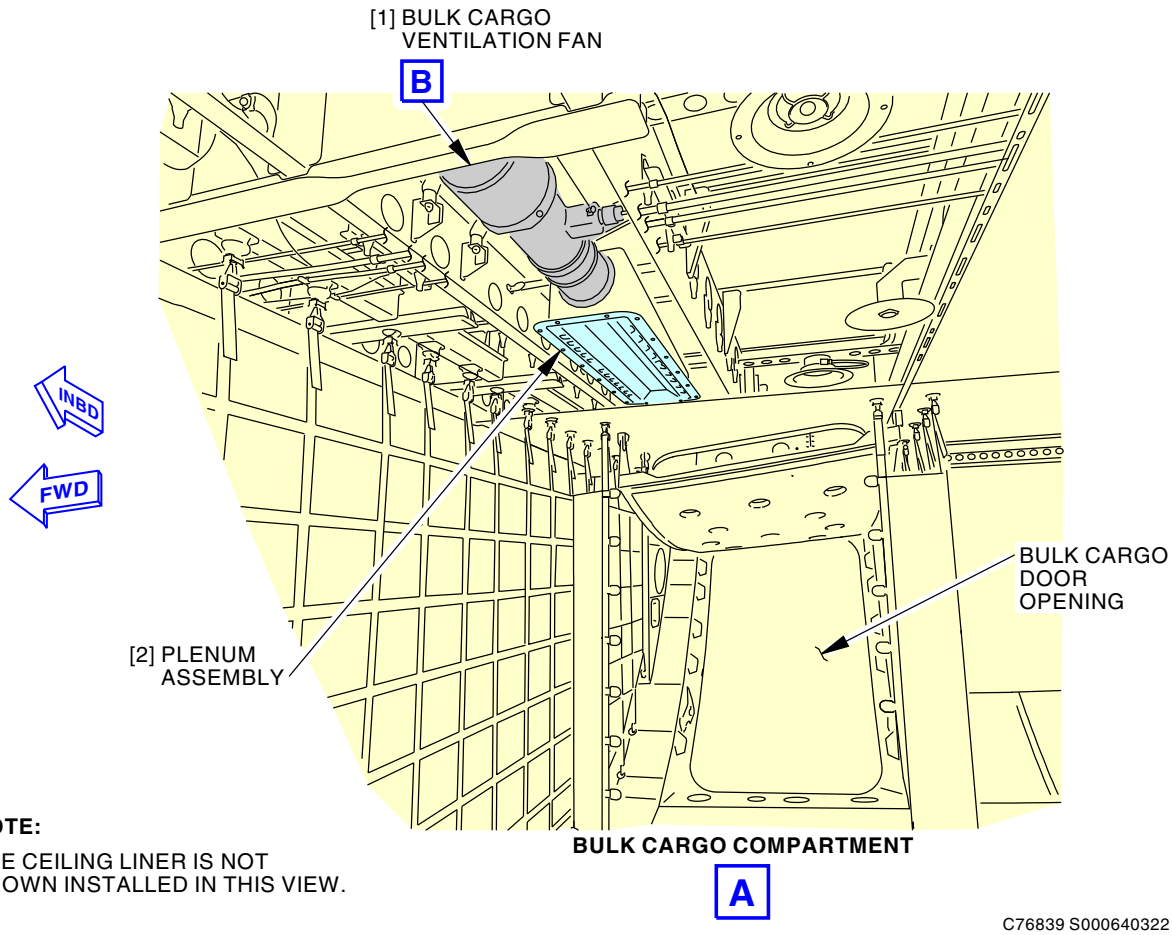

NOTE:

THE CEILING LINER IS NOT SHOWN INSTALLED IN THIS VIEW.

C76839 S0006403221_V2

Bulk Cargo Ventilation Fan Installation
Figure 401/21-26-06-990-801 (Sheet 1 of 2)

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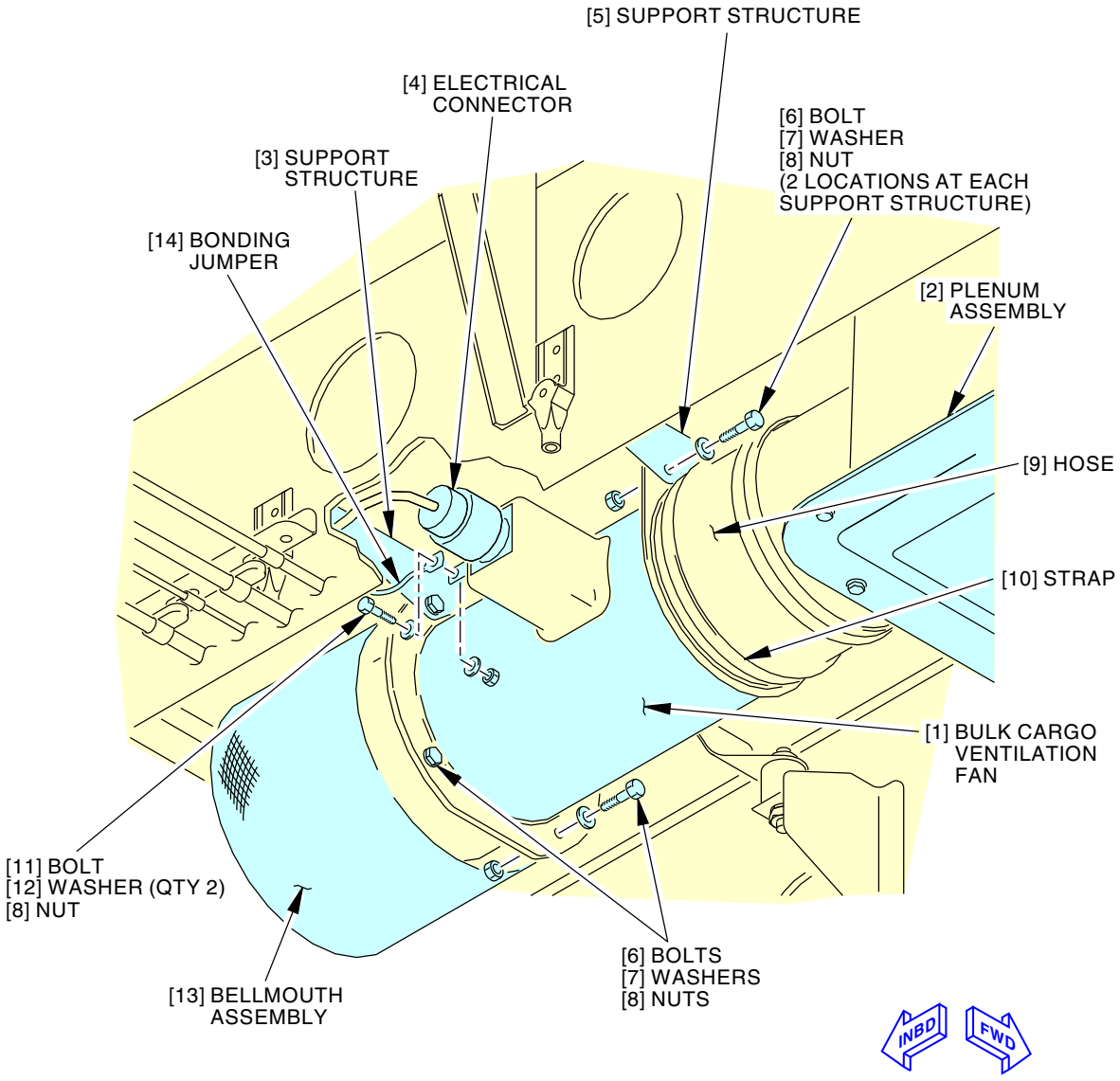

BULK CARGO VENTILATION FAN

B

C76843 S0006403222_V2

Bulk Cargo Ventilation Fan Installation
Figure 401/21-26-06-990-801 (Sheet 2 of 2)

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TASK 21-26-06-400-801

3. Bulk Cargo Ventilation Fan Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-09-400-801	Ceiling Liner - Installation (P/B 401)
52-36-00-860-802	Close the Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	21-26-06-01-130	ARO ALL
10	Strap	21-26-06-01-040	ARO ALL

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Bulk Cargo Ventilation Fan Installation

SUBTASK 21-26-06-420-003

(1) Install the bolts [6], washers [7], and nuts [8] to connect the bellmouth assembly [13] to the bulk cargo ventilation fan [1].

SUBTASK 21-26-06-420-001

(2) Install the bulk cargo ventilation fan [1] into the hose [9].

SUBTASK 21-26-06-820-001

(3) Align the bulk cargo ventilation fan [1] with the support structure [3] and the support structure [5].

SUBTASK 21-26-06-420-002

(4) Install the bolts [6], washers [7], and nuts [8] to connect the bulk cargo ventilation fan [1] to the support structure [3] and to the support structure [5].

SUBTASK 21-26-06-210-002

(5) Make sure the hose [9] is fully on the bulk cargo ventilation fan [1].

SUBTASK 21-26-06-020-003

(6) Install a new strap [10] to connect the hose [9] to the bulk cargo ventilation fan [1].

SUBTASK 21-26-06-210-003

(7) Make sure that the bonding jumper [14], bolt [11], washers [12], and nut [8] are clean.

SUBTASK 21-26-06-020-004

(8) Install the bolt [11], washers [12], and nut [8] to connect the bonding jumper [14] to the bulk cargo ventilation fan [1].

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SUBTASK 21-26-06-020-005

(9) Connect the electrical connector [4] to the bulk cargo ventilation fan [1].

SUBTASK 21-26-06-860-004

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	10	C21308	BULK CG0 VENT FAN
H	1	C21640	BULK CGO VENT FAN CTRL

F. Bulk Cargo Ventilation Fan Installation Test

SUBTASK 21-26-06-860-005

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

SUBTASK 21-26-06-860-006

(2) Put the BULK CARGO TEMP SELECT selector in the HIGH position.

NOTE: The BULK CARGO TEMP SELECT selector is found on the Maintenance Panel, P61.

SUBTASK 21-26-06-210-001

(3) Make sure the bulk cargo ventilation fan [1] operates.

SUBTASK 21-26-06-860-007

(4) Put the BULK CARGO TEMP SELECT selector in the OFF position.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-26-06-010-003

(1) Install the ceiling liner to the plenum assembly [2] (TASK 25-52-09-400-801).

SUBTASK 21-26-06-010-004

(2) Do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-26-06-860-009

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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CHILLER BOOST FAN - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Chiller boost fan - deactivation.

(2) Chiller boost fan - activation.

TASK 21-26-11-040-801

2. Chiller Boost Fan - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the chiller boost fan.

B. References

Reference	Title
24-00-00-040-805-001	Electrical Power/Power Panels - Deactivation (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)
25-28-06-000-801	Center Stowage Bin Diagonal Brace Removal (P/B 401)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-26-11-860-007

CAUTION

REMOVE ELECTRICAL POWER FROM THE AIRPLANE. WHILE THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THERE IS NO AIRFLOW. WITHOUT AIRFLOW, ELECTRICAL, AND ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-26-11-010-007

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-26-11-020-010

WARNING

KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

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(WARNING PRECEDES)

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	27	C21307	CHLR BOOST FAN
G	7	C21629	CHLR BOOST FAN CTRL

SUBTASK 21-26-11-860-008

(4) Remove the inboard ceiling panel on the right side of the passenger compartment to get access to the chiller boost fan (TASK 25-21-06-000-801).

SUBTASK 21-26-11-860-009

(5) Remove the diagonal brace on the center stowage bin to get access to the chiller boost fan (TASK 25-28-06-000-801).

F. Chiller Boost Fan - Tryout

NOTE: This tryout is to make sure that the chiller boost fan is in a zero energy state.

SUBTASK 21-26-11-210-003

(1) Make sure that the power to the airplane is removed (TASK 24-00-00-040-805-001).

SUBTASK 21-26-11-210-004

(2) Do a visual inspection of the chiller boost fan.

(a) Make sure that the fan is not on.

——— END OF TASK ———

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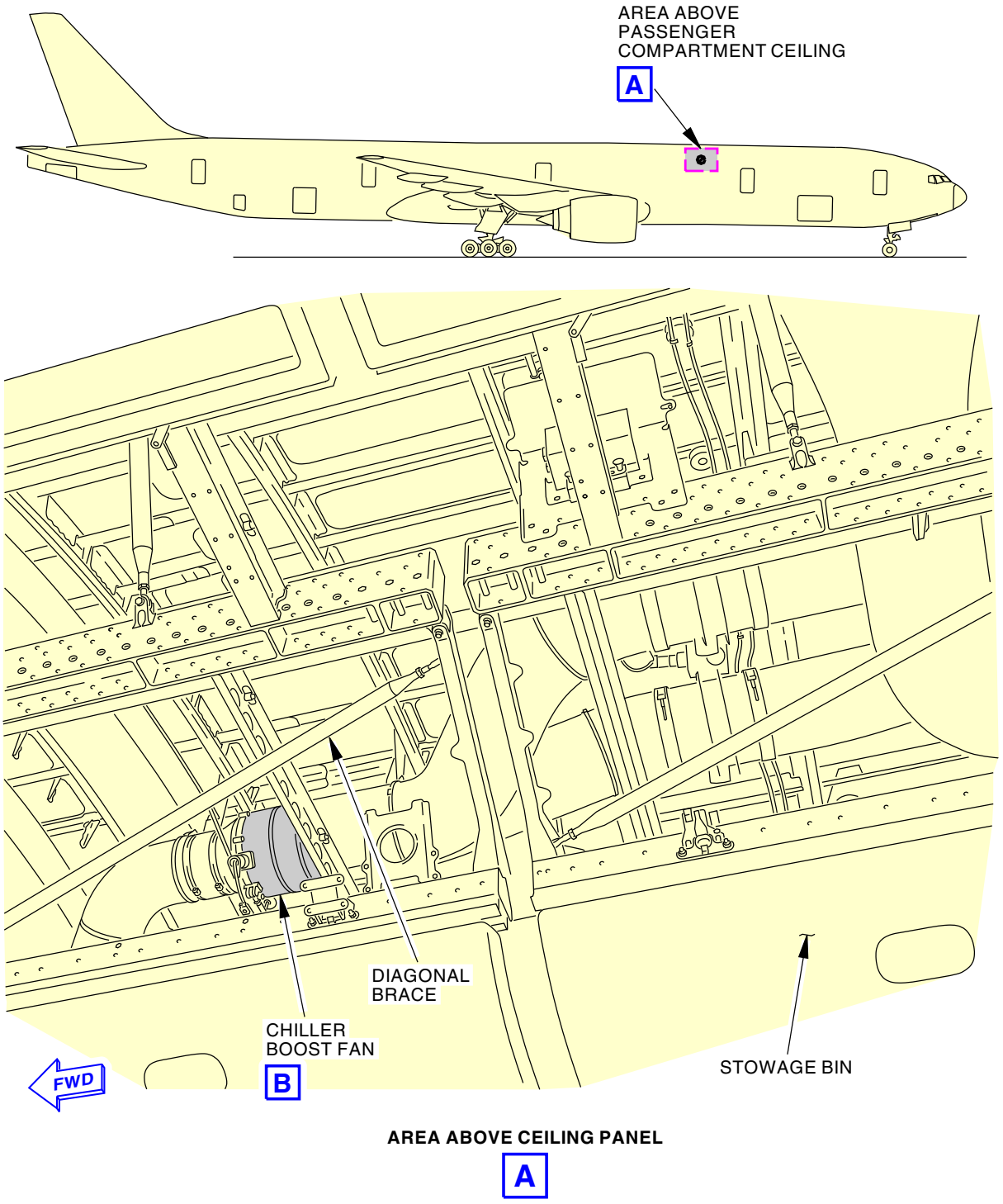

Chiller Boost Fan
Figure 201/21-26-11-990-805 (Sheet 1 of 2)

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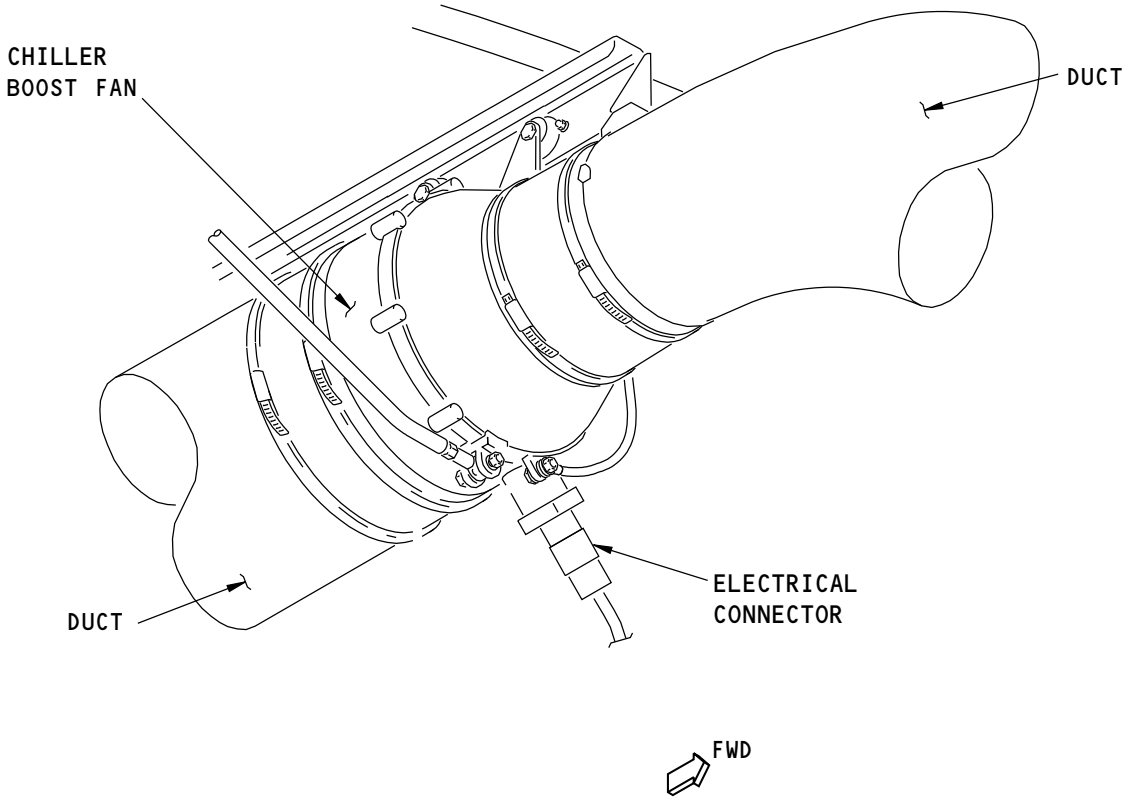

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Chiller Boost Fan
Figure 201/21-26-11-990-805 (Sheet 2 of 2)

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TASK 21-26-11-440-801

3. Chiller Boost Fan - Activation

(Figure 201)

A. General

(1) This task will activate the chiller boost fan.

B. References

Reference	Title
25-21-06-400-801	Main Ceiling Panel - Installation (P/B 401)
25-28-06-400-801	Center Stowage Bin Diagonal Brace Installation (P/B 401)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-26-11-860-014

(1) Install the diagonal brace on the center stowage bin (TASK 25-28-06-400-801).

SUBTASK 21-26-11-860-013

(2) Install the inboard ceiling panel on the right side of the passenger compartment (TASK 25-21-06-400-801).

SUBTASK 21-26-11-420-009

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	27	C21307	CHLR BOOST FAN
G	7	C21629	CHLR BOOST FAN CTRL

SUBTASK 21-26-11-410-002

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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CHILLER BOOST FAN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the chiller boost fan

(2) An installation of the chiller boost fan.

B. The chiller boost fan removes excess warm air from the forward galley chillers and the mid galley chillers. For ground operations the warm air goes through the galley chiller ducts and exits into the lower cheek area at the aft end of the forward cargo compartment. In flight the warm air exits into the crown area to be recirculated by the upper recirculation fans.

ARO 001-016 POST SB 777-21-0189

C. Chiller Boost Fan Vibration Monitor Removal.

D. Chiller Boost Fan Vibration Monitor Installation.

ARO ALL

TASK 21-26-11-000-801

2. Chiller Boost Fan Removal

(Figure 401)

A. References

Reference	Title
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)
25-28-06-000-801	Center Stowage Bin Diagonal Brace Removal (P/B 401)

B. Location Zones

Zone	Area
118	Main Equipment Center, Right
234	Area Above Passenger Compartment Ceiling, Right - Section 43

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-26-11-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-26-11-860-001

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	27	C21307	CHLR BOOST FAN

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Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
G	7	C21629	CHLR BOOST FAN CTRL

SUBTASK 21-26-11-010-002

(3) Remove the inboard ceiling panel on the right side of the passenger compartment to get access to the chiller boost fan [1] (TASK 25-21-06-000-801).

NOTE: You can use (Figure 401) to help you find the location of the inboard ceiling panel.

SUBTASK 21-26-11-010-004

(4) Remove the diagonal brace on the center stowage bin to get access to the chiller exhaust fan (TASK 25-28-06-000-801).

E. Chiller Boost Fan Removal

SUBTASK 21-26-11-020-001

(1) Disconnect the electrical connector [9] from the chiller boost fan [1].

ARO 001-016 POST SB 777-21-0189

SUBTASK 21-26-11-020-011

(2) Disconnect the fan electrical connector plug [15] from the vibration monitor [25].

(3) Remove the vibration monitor [25] from the fan housing (Chiller Boost Fan Vibration Monitor Removal, TASK 21-26-11-000-802).

ARO ALL

SUBTASK 21-26-11-020-002

(4) Do the steps that follow to remove the bonding jumper [7] from the chiller boost fan [1]:

(a) Remove the nut [5], washers [6], bolt [10] and lockwasher [8].

(b) Remove the bonding jumper [7].

SUBTASK 21-26-11-020-003

(5) Loosen clamp [3] which attaches the sleeve [4] to the chiller boost fan [1].

SUBTASK 21-26-11-020-004

(6) Loosen the clamp [14] which attaches the sleeve [13] to the chiller boost fan [1].

SUBTASK 21-26-11-020-009

(7) Move the sleeve [4] and the sleeve [13] away from the chiller boost fan [1].

SUBTASK 21-26-11-020-005

(8) Remove the nut [5], bolt [11], and lockwasher [8] which attach the rod assembly [12] to the chiller boost fan [1].

SUBTASK 21-26-11-020-006

(9) Remove the lockwire from the two bolts [2].

SUBTASK 21-26-11-020-007

(10) Hold the chiller boost fan [1] while you remove the two bolts [2].

SUBTASK 21-26-11-020-008

(11) Remove the chiller boost fan [1].

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SUBTASK 21-26-11-210-001

(12) Make sure that there is no FOD in the ducts or duct linings.

NOTE: A failed composite impeller on the chiller boost fan can cause FOD in the ducts or duct linings.

(a) If necessary, remove the FOD found in the ducts or duct linings.

——— END OF TASK ———

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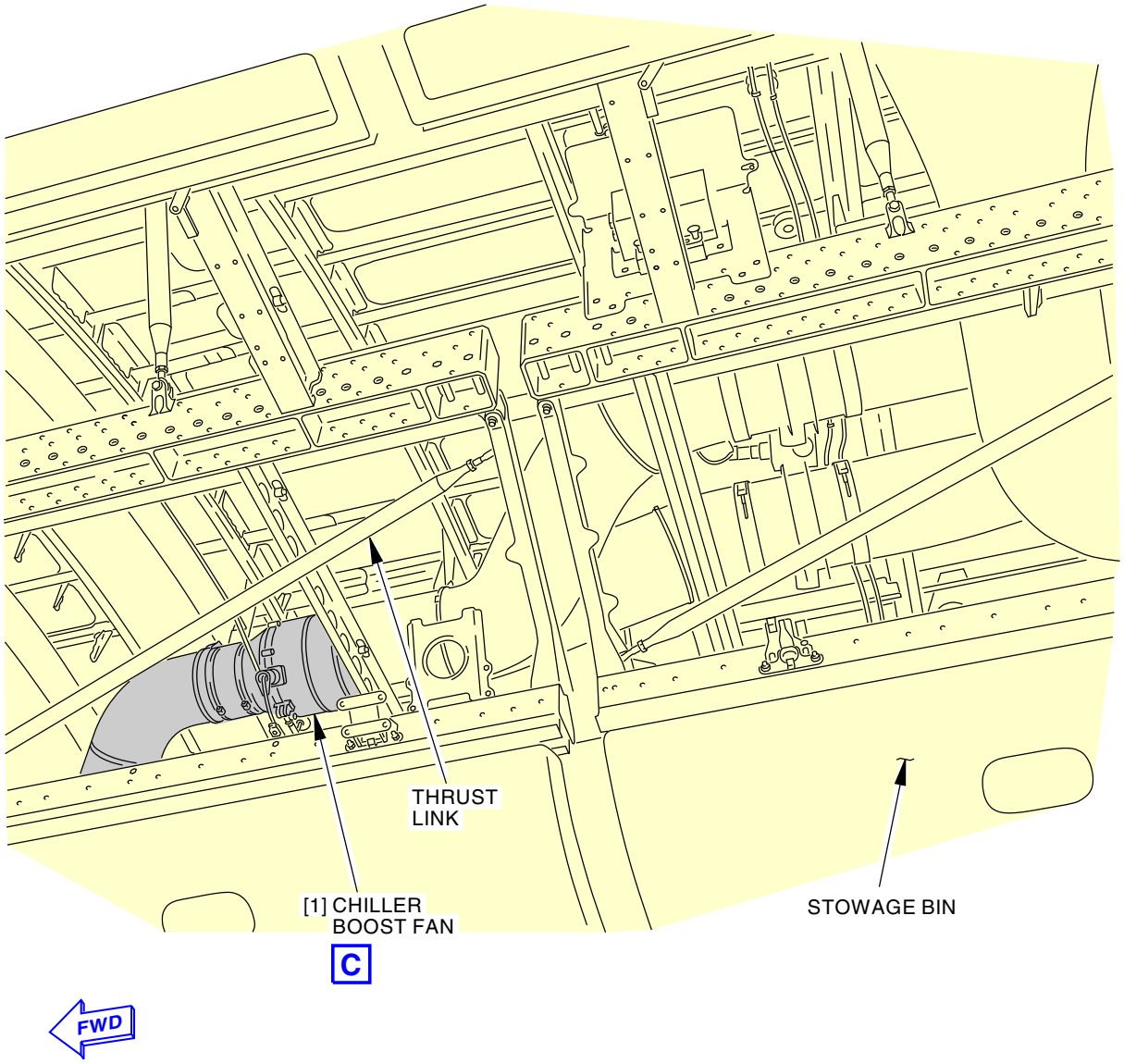

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Chiller Boost Fan Installation
Figure 401/21-26-11-990-804 (Sheet 1 of 2)

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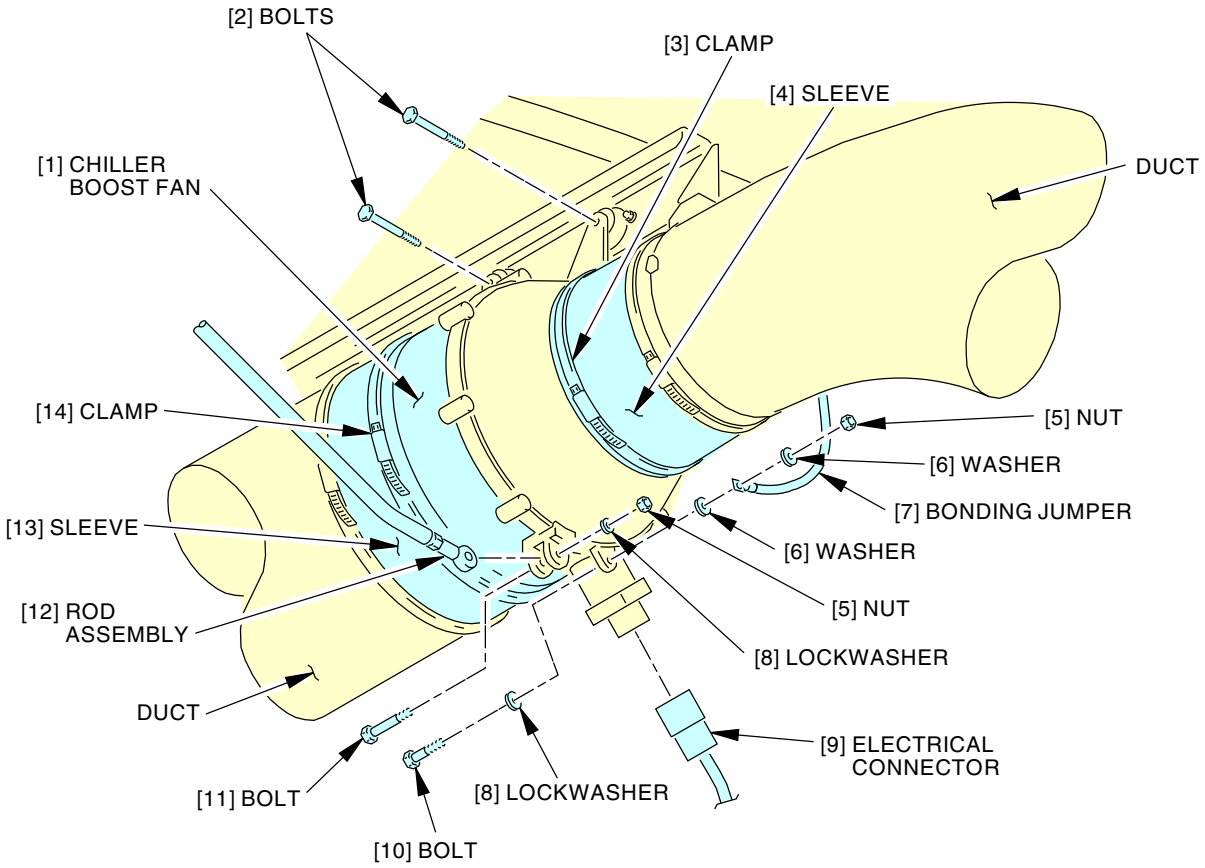

CHILLER BOOST FAN

C

M95555 S0006403235_V2

Chiller Boost Fan Installation
Figure 401/21-26-11-990-804 (Sheet 2 of 2)

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TASK 21-26-11-400-801

3. Chiller Boost Fan Installation

(Figure 401)

A. References

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

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	21-26-11-23-030	ARO ALL
		21-26-11-23-032	ARO ALL

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right
234	Area Above Passenger Compartment Ceiling, Right - Section 43

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Chiller Boost Fan Installation

SUBTASK 21-26-11-210-002

(1) Make sure that there is no FOD in the ducts or duct linings.

NOTE: A failed composite impeller on the chiller boost fan can cause FOD in the ducts or duct linings.

(a) If necessary, remove the FOD found in the ducts or duct linings.

SUBTASK 21-26-11-420-001

(2) Hold the chiller boost fan [1] between the ducts while you install the two bolts [2].

SUBTASK 21-26-11-420-010

(3) Install the new lockwire between two bolts [2].

SUBTASK 21-26-11-420-002

(4) Do the steps that follow to install the rod assembly [12] onto the chiller boost fan [1]:

(a) Put the rod assembly [12] into the correct position on the chiller boost fan [1].

(b) Install the bolt [11], lockwasher [8] and nut [5] which attach the rod assembly [12] to the chiller boost fan [1].

SUBTASK 21-26-11-420-008

(5) Move the sleeve [4] and the sleeve [13] onto the chiller boost fan [1].

SUBTASK 21-26-11-420-003

(6) Tighten the clamp [3] which attaches the sleeve [4] to the chiller boost fan [1].

SUBTASK 21-26-11-420-004

(7) Tighten the clamp [14] which attaches the sleeve [13] to the chiller boost fan [1].

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SUBTASK 21-26-11-420-005

(8) Do the steps that follow to install the bonding jumper [7]:

(a) Make sure that the bonding jumper [7], bolt [10], lockwasher [8], washers [6] and the nut [5] are clean.

(b) Put the bonding jumper [7] into the correct position.

(c) Install the bolt [10], lockwasher [8], washers [6] and the nut [5].

SUBTASK 21-26-11-420-006

(9) Connect the electrical connector [9] to the chiller boost fan [1].

ARO 001-016 POST SB 777-21-0189

SUBTASK 21-26-11-420-011

(10) Install the vibration monitor [25] to the fan housing, and reconnect the fan electrical connector plug [15] to the vibration monitor [25].

(11) Do this task: Chiller Boost Fan Vibration Monitor Installation, TASK 21-26-11-400-802.

ARO ALL

SUBTASK 21-26-11-860-002

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	27	C21307	CHLR BOOST FAN

Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
G	7	C21629	CHLR BOOST FAN CTRL

F. Chiller Boost Fan Installation Test

SUBTASK 21-26-11-860-003

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

SUBTASK 21-26-11-740-001

(2) Use a Maintenance Access Terminal (MAT) to do an LRU replacement test of the Chiller Boost Fan (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) GROUND TESTS

4) 21 Environmental Control System

5) LRU REPLACEMENT TEST

6) Chiller Exhaust System

7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE

2) START TEST

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(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.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-26-11-010-003

(1) Install the inboard ceiling panel on the right side of the passenger compartment (TASK 25-21-06-400-801).

SUBTASK 21-26-11-410-001

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

ARO 001-016 POST SB 777-21-0189

TASK 21-26-11-000-802

4. Chiller Boost Fan Vibration Monitor Removal

(Figure 402)

A. General

(1) This procedure removes the Chiller Boost Fan Vibration Monitor.

B. References

Reference	Title
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)
25-21-07-000-801	Lowered Ceiling Panel Removal (P/B 401)
25-28-06-000-801	Center Stowage Bin Diagonal Brace Removal (P/B 401)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
234	Area Above Passenger Compartment Ceiling, Right - Section 43

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-26-11-010-008

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-26-11-860-015

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	27	C21307	CHLR BOOST FAN

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ARO 001-016 POST SB 777-21-0189 (Continued)

(Continued)

Right Power Management Panel, P210

Row	Col	Number	Name
G	7	C21629	CHLR BOOST FAN CTRL

SUBTASK 21-26-11-010-009

(3) Remove the inboard ceiling panel on the right side of the passenger compartment to get access to the chiller boost fan [1] (Lowered Ceiling Panel Removal, TASK 25-21-07-000-801 or Main Ceiling Panel - Removal, TASK 25-21-06-000-801).

NOTE: You can use (Figure 401 or Figure 402) to help you find the location of the inboard ceiling panel.

SUBTASK 21-26-11-010-012

(4) Remove the diagonal brace on the center stowage bin to get access to the chiller exhaust fan (Center Stowage Bin Diagonal Brace Removal, TASK 25-28-06-000-801).

F. Fan Vibration Monitor Removal

SUBTASK 21-26-11-020-012

(1) Disconnect the fan electrical connector plug [15] from the vibration monitor electrical receptacle [16].

SUBTASK 21-26-11-020-013

(2) Disconnect the vibration monitor electrical connector plug [17] from the fan electrical receptacle [18].

SUBTASK 21-26-11-020-014

(3) If installed, remove the screw [19], washers [20] and nut [21]to disconnect the vibration monitor bonding strap [22] from the fan ground lug [26].

NOTE: This step only applies to fans that have bonding strap or ground stud.

SUBTASK 21-26-11-020-015

(4) Remove the two screws [23] from the L-brackets that hold the vibration monitor [25] to the fan [1].

SUBTASK 21-26-11-020-016

(5) Remove the band clamp [24] from the vibration monitor [25] and the fan [1].

SUBTASK 21-26-11-020-017

(6) Remove the vibration monitor [25].

——— END OF TASK ———

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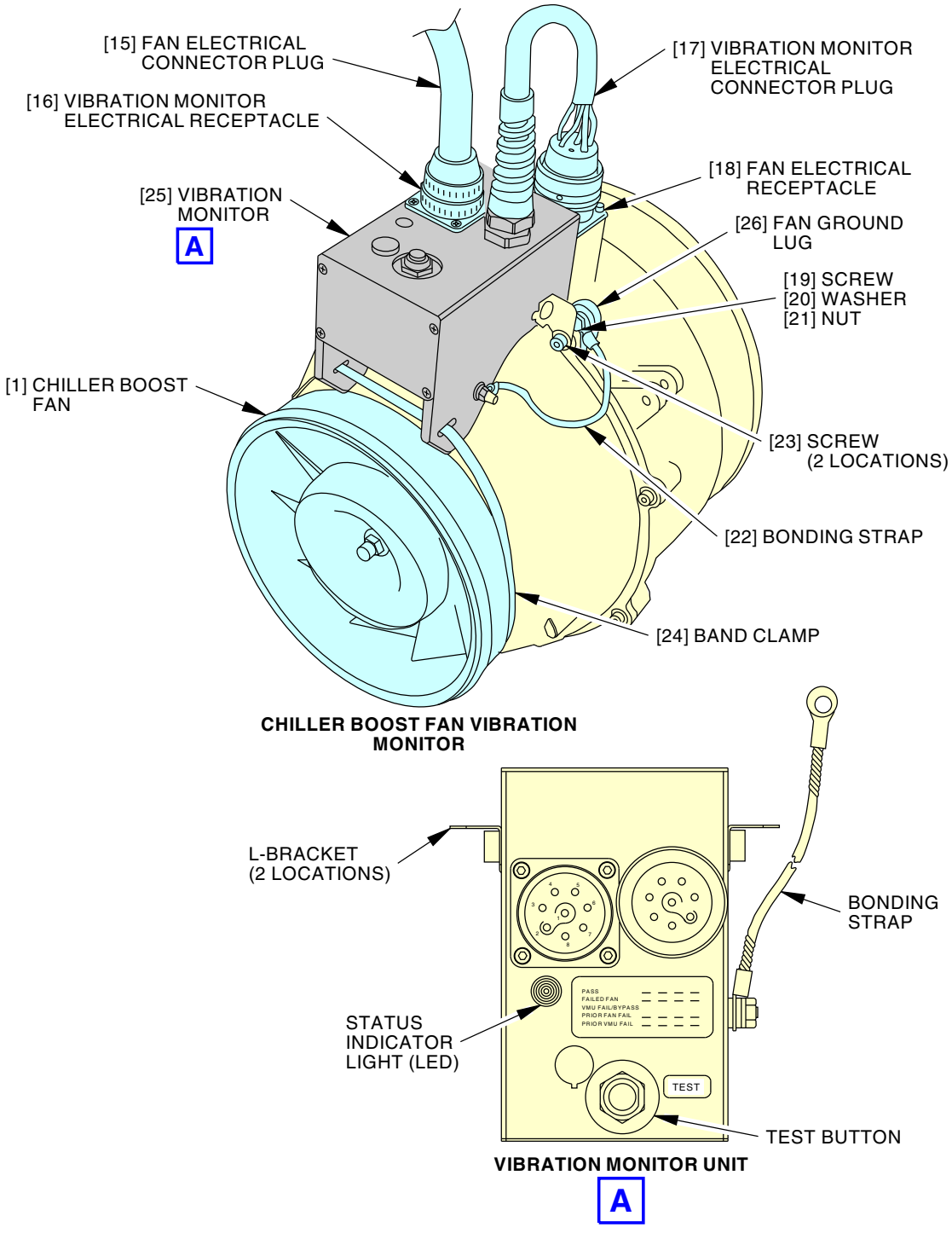

Fan Vibration Monitor
Figure 402/21-26-11-990-806

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TASK 21-26-11-400-802

5. Chiller Boost Fan Vibration Monitor Installation

(Figure 402)

A. General

(1) This procedure installs the Chiller Boost Fan Vibration Monitor.

B. References

Reference	Title
24-22-00 P/B 201	AC GENERATION AND BUS CONTROL - MAINTENANCE PRACTICES
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-21-06-400-801	Main Ceiling Panel - Installation (P/B 401)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
212	Flight Compartment, Right
234	Area Above Passenger Compartment Ceiling, Right - Section 43

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Chiller Boost Fan Vibration Monitor Installation

SUBTASK 21-26-11-420-014

(1) Put the band clamp [24] thru the slots in the legs of the vibration monitor [25].

SUBTASK 21-26-11-420-020

(2) Loosely install the band clamp [24] around the fan housing.

SUBTASK 21-26-11-820-001

(3) Align the L-brackets on each side of the vibration monitor [25] with the two split line holes on the fan housing.

SUBTASK 21-26-11-420-015

(4) Install the two screws [23] to secure the vibration monitor L-brackets to the fan housing.

(a) Tighten each screw [23] to 51-56 pound-inches (5.76-6.32 newton-meters).

SUBTASK 21-26-11-420-016

(5) Tighten the band clamp [24] to 12-15 pound-inches (1.35-1.69 newton-meters).

(a) Make sure that the band clamp [24] engages fully around the entire circumference of the fan housing.

(b) Make sure that both legs of the vibration monitor [25] are in full contact with the fan housing.

SUBTASK 21-26-11-420-017

(6) If applicable, reconnect the vibration monitor bonding strap [22] to the fan ground lug [26] with the screw [19], washers [20] and nut [21].

NOTE: This step only applies to fans that have a bonding strap or ground stud.

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ARO 001-016 POST SB 777-21-0189 (Continued)

(a) Make sure that the fan ground lug [26] is positioned with the bolt head on the monitor side.

(b) Do an electrical bonding and resistance check of the fan and vibration monitor (SWPM 20-20-00, Electrical Bonds and Grounds, Standard Wiring Practice Manual, D6-54446).

SUBTASK 21-26-11-420-018

(7) Reconnect the vibration monitor electrical connector plug [17] to the fan electrical receptacle [18].

SUBTASK 21-26-11-420-019

(8) Reconnect the fan electrical connector plug [15] to the vibration monitor electrical receptacle [16].

F. Lower Recirculation Fan Vibration Monitor Installation Test

SUBTASK 21-26-11-860-017

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

Right Power Management Panel, P210

Row	Col	Number	Name
A	27	C21307	CHLR BOOST FAN
G	7	C21629	CHLR BOOST FAN CTRL

SUBTASK 21-26-11-860-018

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

SUBTASK 21-26-11-860-019

(3) Do these steps for installation test:

(a) Make sure that fan [1] is operating.

(b) Make sure that the STATUS LED is blinking GREEN after 2 minutes.

(4) Do these steps for aircraft logic test:

(a) Press and hold monitor test button for 15 seconds.

NOTE: Fan should turn off and aircraft latch will engage after time delay.

(b) Release TEST button.

(c) Make sure the fan [1] is OFF.

(d) Disconnect the electrical connector [15] from the fan vibration monitor [25] to remove power from the fan [1].

(e) Re-connect the electrical connector [15].

1) Make sure the fan [1] restarts and operates as normal.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-26-11-010-014

(1) Install the inboard ceiling panel on the right side of the passenger compartment (Main Ceiling Panel - Installation, TASK 25-21-06-400-801).

SUBTASK 21-26-11-410-004

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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ARO 001-016 POST SB 777-21-0189 (Continued)

SUBTASK 21-26-11-860-020

(3) Remove electrical power if no longer required (AC GENERATION AND BUS CONTROL - MAINTENANCE PRACTICES, PAGEBLOCK 24-22-00/201).

——— END OF TASK ———

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CHILLER BOOST FAN - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) An operational test of the chiller exhaust system.

TASK 21-26-11-740-801

2. Chiller Exhaust System - Operational Test

A. General

(1) This task contains this test:

(a) Operational Test - Chiller Exhaust System.

(2) A Maintenance Access Terminal (MAT) is necessary for this procedure.

(a) For instructions on how to use the 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)
24-22-00-860-806	Remove 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 - Chiller Boost Fan

SUBTASK 21-26-11-860-005

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

SUBTASK 21-26-11-740-002

(2) Use a MAT to do the operational test of the chiller boost fan.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Chiller Exhaust 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.

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(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. Put the Airplane Back to Its Usual Condition

SUBTASK 21-26-11-860-012

(1) Remove electrical power if it is not necessary (TASK 24-22-00-860-806)

——— END OF TASK ———

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FORWARD CARGO AIR CONDITIONING EXHAUST FAN - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Forward cargo air conditioning exhaust fan - deactivation.

(2) Forward cargo air conditioning exhaust fan - activation.

TASK 21-26-12-040-801

2. Forward Cargo Air Conditioning Exhaust Fan - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the forward cargo air conditioning exhaust fan.

B. References

Reference	Title
21-27-22-000-802-002	Forward Cargo Heat Valve Removal (P/B 401)
24-00-00-040-805-001	Electrical Power/Power Panels - Deactivation (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-53-02-000-801	Ball Panel Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left

D. Procedure

SUBTASK 21-26-12-860-003

CAUTION

REMOVE ELECTRICAL POWER FROM THE AIRPLANE. WHILE THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THERE IS NO AIRFLOW. WITHOUT AIRFLOW, ELECTRICAL, AND ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-26-12-860-006

(2) 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.

SUBTASK 21-26-12-860-007

(3) Remove the forward cargo heat valve. To remove the forward cargo heat valve, do this task: Forward Cargo Heat Valve Removal, TASK 21-27-22-000-802-002.

SUBTASK 21-26-12-860-008

(4) Remove the ball panel on the left side of the forward cargo compartment. To remove the ball panel, do this task: Ball Panel Removal, TASK 25-53-02-000-801.

E. Forward Cargo Air Conditioning Exhaust Fan - Tryout

NOTE: This tryout is to make sure that the forward cargo air conditioning exhaust fan is in a zero energy state.

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SUBTASK 21-26-12-860-004

(1) Make sure that the power to the airplane is removed, TASK 24-00-00-040-805-001.

SUBTASK 21-26-12-210-002

(2) Do a visual inspection of the forward cargo air conditioning exhaust fan.

(a) Make sure that the exhaust fan is not on.

——— END OF TASK ———

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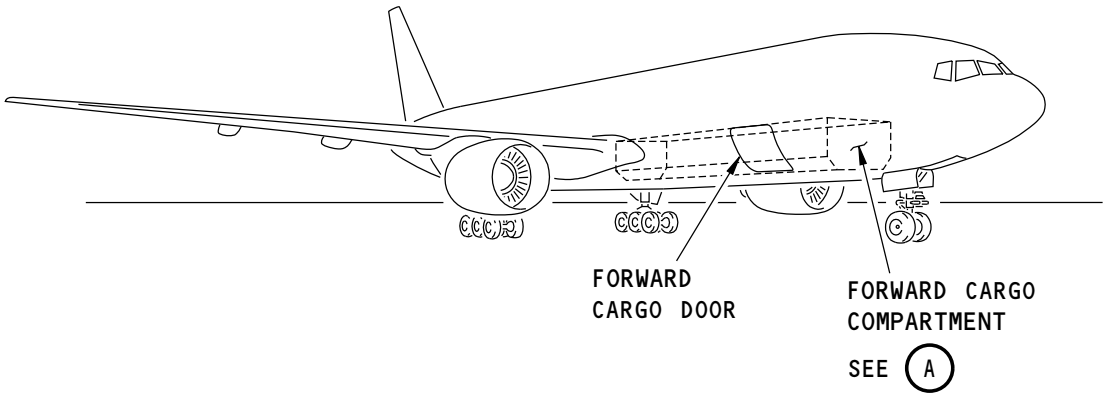

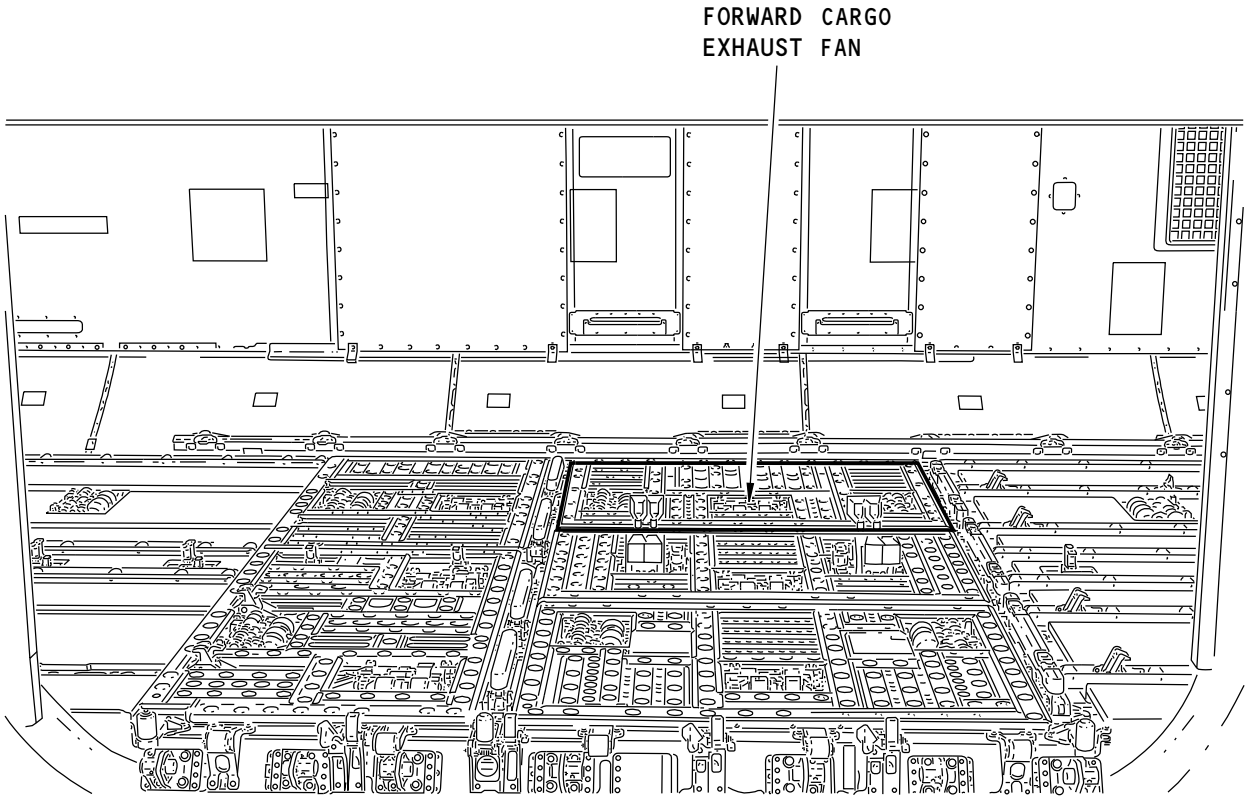

Forward Cargo Air Conditioning Exhaust Fan
Figure 201/21-26-12-990-802

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TASK 21-26-12-440-801

3. Forward Cargo Air Conditioning Exhaust Fan - Activation

(Figure 201)

A. General

(1) This task will activate the forward cargo air conditioning exhaust fan.

B. References

Reference	Title
21-27-22-400-802-002	Forward Cargo Heat Valve Installation (P/B 401)
24-00-00-440-805-001	Electrical Power/Power Panels - Activation (P/B 201)
25-53-02-400-801	Ball Panel Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left

D. Procedure

SUBTASK 21-26-12-860-011

(1) Make sure that the power to the airplane is activate (TASK 24-00-00-440-805-001).

SUBTASK 21-26-12-860-012

(2) Install the ball panel on the left side of the forward cargo compartment (TASK 25-53-02-400-801).

SUBTASK 21-26-12-860-013

(3) Install the forward cargo heat valve (TASK 21-27-22-400-802-002).

SUBTASK 21-26-12-860-014

(4) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

——— END OF TASK ———

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FORWARD CARGO AIR CONDITIONING EXHAUST FAN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the Forward Cargo Air Conditioning (FCAC) exhaust fan

(2) An installation of the FCAC exhaust fan.

B. The FCAC exhaust fan removes air from the forward cargo compartment when the FWD CARGO A/C switch is in the AUTO position. The air from the forward cargo compartment is sent overboard through the forward outflow valve.

TASK 21-26-12-000-801

2. Forward Cargo Air Conditioning (FCAC) Exhaust Fan Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane before you remove the FCAC exhaust fan. The equipment cooling vent fan must be off to prevent airflow in the FCAC ducts. Removing electrical power will make sure that the electrical/electronic equipment does not overheat when the equipment cooling vent fan is off.

B. References

Reference	Title
21-27-22-000-802-002	Forward Cargo Heat Valve Removal (P/B 401)
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-53-02-000-801	Ball Panel Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left

D. Prepare for the Removal

SUBTASK 21-26-12-010-001

(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.

SUBTASK 21-26-12-010-003

(2) Remove the forward cargo heat valve, do this task: Forward Cargo Heat Valve Removal, TASK 21-27-22-000-802-002.

SUBTASK 21-26-12-010-002

(3) Remove the ball panel on the left side of the forward cargo compartment, do this task: Ball Panel Removal, TASK 25-53-02-000-801.

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SUBTASK 21-26-12-860-001

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(4) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

E. FCAC Exhaust Fan Removal

SUBTASK 21-26-12-020-001

(1) Disconnect the electrical connector [4] from the forward cargo exhaust fan [1].

SUBTASK 21-26-12-020-002

(2) Remove the insulation from the forward cargo exhaust fan [1].

(a) Keep the insulation for the installation.

SUBTASK 21-26-12-020-003

(3) Remove the nut [14], washers [13], and bolt [12] to disconnect the bonding jumper [5] from the forward cargo exhaust fan [1].

(a) Move the bonding jumper [5] away from the forward cargo exhaust fan [1].

SUBTASK 21-26-12-020-004

(4) Loosen the clamps [2] which hold the sleeve [3] to the forward cargo exhaust fan [1].

(a) Move the clamps [2] and the sleeve [3] away from the forward cargo exhaust fan [1].

SUBTASK 21-26-12-020-005

(5) Loosen the clamps [8] which holds the sleeve [7] to the forward cargo exhaust fan [1].

(a) Move the clamps [8] away from the forward cargo exhaust fan [1].

SUBTASK 21-26-12-020-006

(6) Remove the nut [15], and washer [16] to disconnect the support rod [6] from the forward cargo exhaust fan [1].

(a) Move the support rod [6] away from the forward cargo exhaust fan [1].

(b) Remove the spacer [11] from the forward cargo exhaust fan [1].

(c) Keep the spacer for the installation.

SUBTASK 21-26-12-020-007

CAUTION

HOLD THE FAN WHILE YOU REMOVE THE BOLTS. THE FAN CAN FALL WHEN YOU REMOVE THE BOLTS. DAMAGE TO EQUIPMENT CAN OCCUR.

(7) Remove the bolts [9] and washers [10] that hold the forward cargo exhaust fan [1] to the support bracket.

SUBTASK 21-26-12-020-008

(8) Move the forward cargo exhaust fan [1] away from the sleeve [7] to remove it from the airplane.

——— END OF TASK ———

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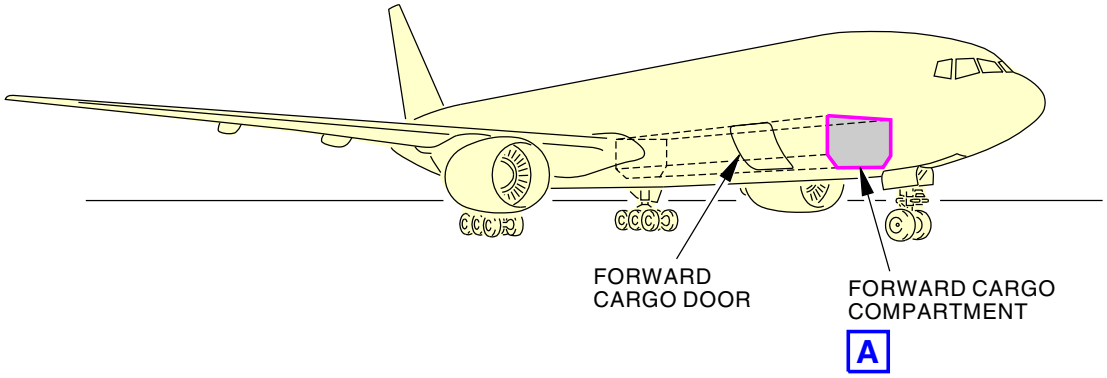

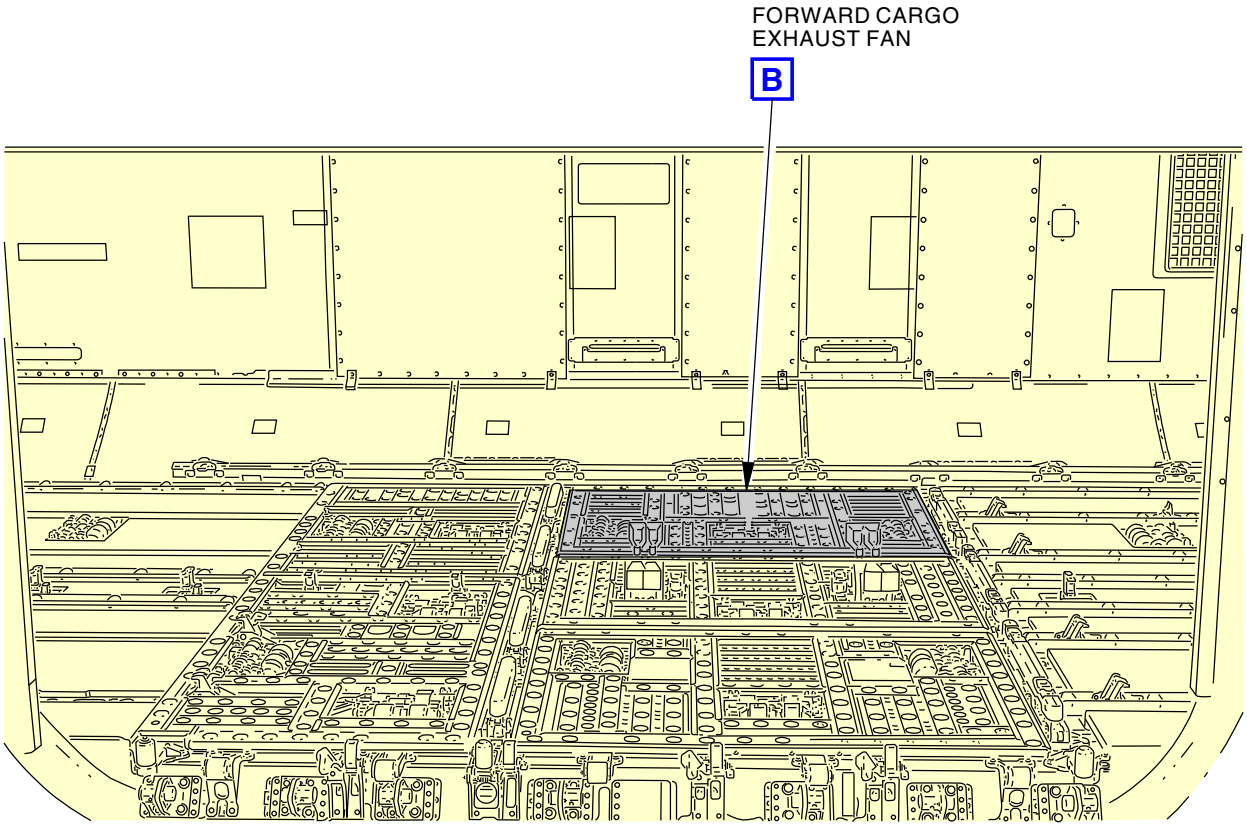

Forward Cargo Exhaust Fan Installation
Figure 401/21-26-12-990-801 (Sheet 1 of 2)

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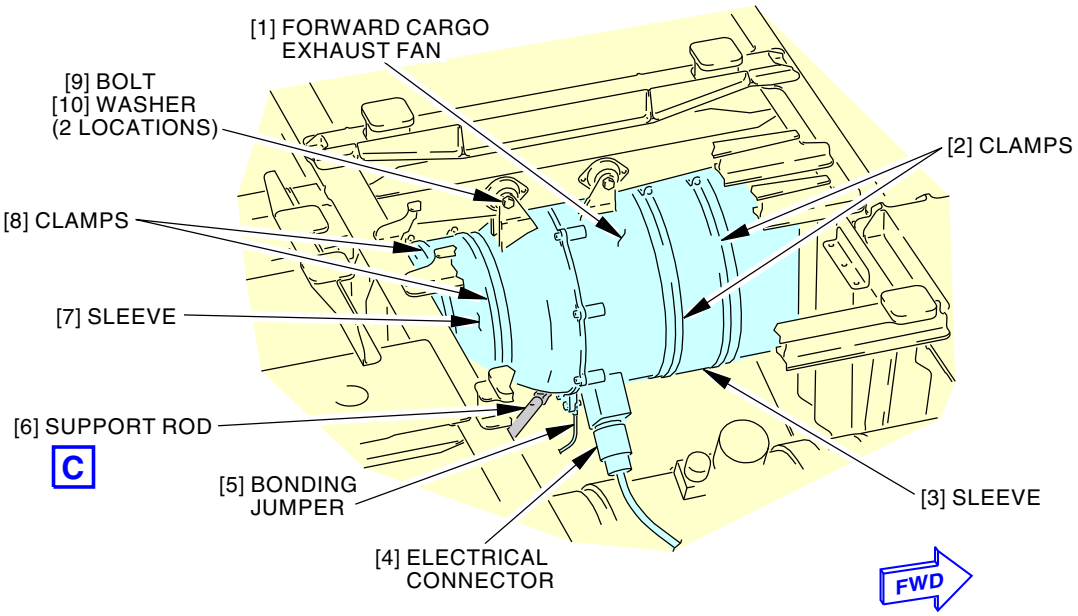
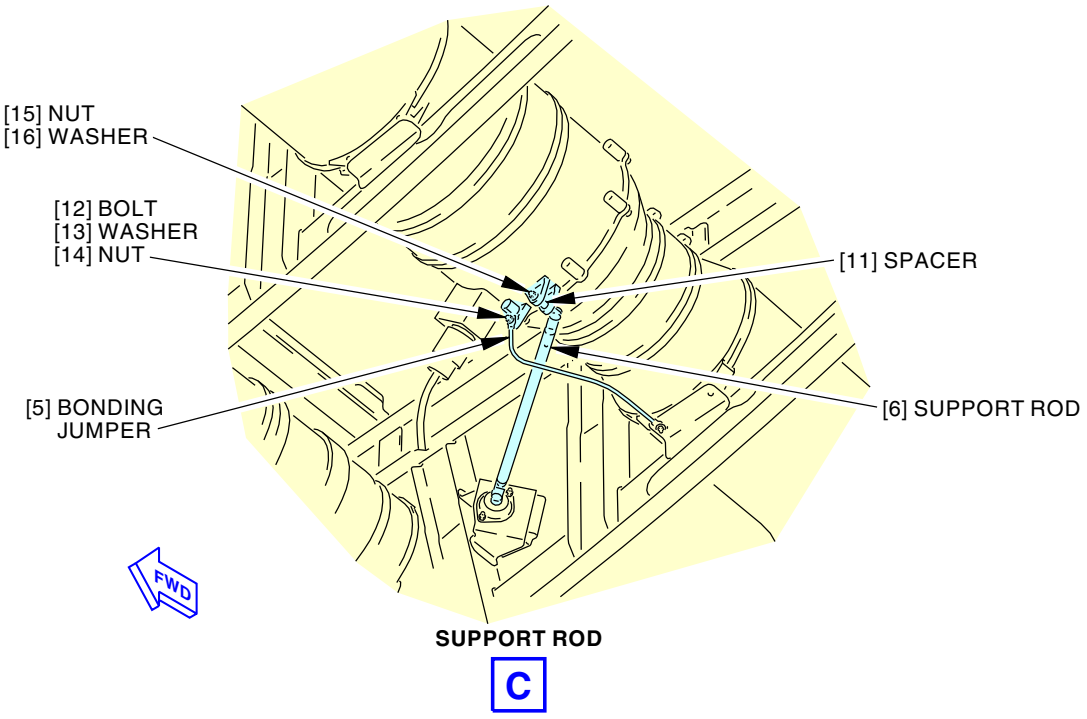


FORWARD CARGO EXHAUST FAN

B



SUPPORT ROD

C

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Forward Cargo Exhaust Fan Installation
Figure 401/21-26-12-990-801 (Sheet 2 of 2)

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TASK 21-26-12-400-801

3. Forward Cargo Air Conditioning (FCAC) Exhaust Fan Installation

(Figure 401)

A. References

Reference	Title
21-27-22-400-802-002	Forward Cargo Heat Valve Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-53-02-400-801	Ball Panel Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	21-43-01-04-100	ARO ALL

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. FCAC Exhaust Fan Installation

SUBTASK 21-26-12-420-001

(1) Put the forward cargo exhaust fan [1] into its position in the sleeve [7].

SUBTASK 21-26-12-420-002

(2) Hold the forward cargo exhaust fan [1] in its position while you install the bolts [9] and washers [10] that hold the forward cargo exhaust fan [1] to the support bracket.

SUBTASK 21-26-12-420-003

(3) Hold the spacer [11] in its position while you reconnect the support rod [6] to the forward cargo exhaust fan [1].

SUBTASK 21-26-12-420-004

(4) Install the washer [16] and nut [15] that hold the support rod [6] to the forward cargo exhaust fan [1].

SUBTASK 21-26-12-420-005

(5) Put the sleeve [3] onto the forward cargo exhaust fan [1].

SUBTASK 21-26-12-420-006

(6) Put the clamps [2] onto the sleeve [3], and tighten them to 18 in-lb (2.0 N·m).

SUBTASK 21-26-12-420-007

(7) Put the clamps [8] onto the sleeve [7], and tighten it to 18 in-lb (2.0 N·m).

SUBTASK 21-26-12-210-001

(8) Make sure the bonding jumper [5], bolt [12], washers [13], and nut [14] are clean.

SUBTASK 21-26-12-420-008

(9) Install the bolt [12], washers [13], and nut [14] to reconnect the bonding jumper [5] to the forward cargo exhaust fan [1].

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SUBTASK 21-26-12-420-009

(10) Reinstall the insulation onto the forward cargo exhaust fan [1].

SUBTASK 21-26-12-420-010

(11) Reconnect the electrical connector [4] to the forward cargo exhaust fan [1].

E. FCAC Exhaust Fan Installation Test

SUBTASK 21-26-12-860-002

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

SUBTASK 21-26-12-740-001

(2) Use a maintenance access terminal (MAT) to do an installation test of the FCAC exhaust Fan (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Forward Cargo Air Conditioning
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.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-26-12-010-004

(1) Install the ball panel on the left side of the forward cargo compartment, do this task: Ball Panel Installation, TASK 25-53-02-400-801.

SUBTASK 21-26-12-010-005

(2) Install the forward cargo heat valve, do this task: Forward Cargo Heat Valve Installation, TASK 21-27-22-400-802-002.

SUBTASK 21-26-12-410-002

(3) 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.

——— END OF TASK ———

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EQUIPMENT COOLING SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A system test of the equipment cooling system.

(2) An operational test of the equipment cooling switch.

(3) A system test of the IFE equipment cooling system.

C. To do a complete system test of the equipment cooling system, you must do each of the above tasks.

TASK 21-27-00-700-801

2. Equipment Cooling System - System Test

A. General

(1) This task does a test of the basic operation of the equipment cooling system.

(2) It is necessary to use a maintenance access terminal (MAT) for this test.

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 21-27-00-860-001

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

SUBTASK 21-27-00-860-002

(2) Put the GND TEST switch, on the Overhead Maintenance Panel, P61, in the ENABLE position.

SUBTASK 21-27-00-860-003

(3) Make sure the EQUIP COOL switch is in the AUTO position.

NOTE: The EQUIP COOL switch is on the Air Conditioning Module which is on the Pilot's Overhead Panel, P5:

SUBTASK 21-27-00-740-001

(4) Use a maintenance access terminal (MAT) to do a System Test of the Equipment Cooling System. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) GROUND TESTS

4) 21 Environmental Control System

5) SYSTEM TEST

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6) Equipment Cooling 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.

SUBTASK 21-27-00-860-004

(5) Put the GND TEST switch in the NORM position.

——— END OF TASK ———

TASK 21-27-00-700-802

3. Equipment Cooling Switch - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task does a test of the equipment cooling switch.

B. References

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

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 21-27-00-860-006

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

SUBTASK 21-27-00-860-007

(2) Make sure the EQUIP COOL switch is in the AUTO position.

NOTE: The EQUIP COOL switch is on the Air Conditioning Module which is on the Pilot's Overhead Panel, P5:

SUBTASK 21-27-00-710-002

(3) Do these steps to make sure the EQUIP COOL switch operates correctly in the AUTO and OVRD mode:

(a) Put the EQUIP COOL switch in the OVRD position.

(b) Make sure this EICAS ADVISORY message shows:

1) EQUIPMENT COOLING OVRD

(c) Put the EQUIP COOL switch in the AUTO position.

(d) Make sure this EICAS ADVISORY message does not show:

1) EQUIPMENT COOLING OVRD

——— END OF TASK ———

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TASK 21-27-00-700-803

4. IFE Equipment Cooling System - System Test

A. General

(1) This task does a test of the basic operation of the IFE equipment cooling system.

(2) It is necessary to use a maintenance access terminal (MAT) for this test.

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. IFE Equipment Cooling System Test

SUBTASK 21-27-00-860-008

(1) Supply electrical power, do this task: Supply Electrical Power, TASK 24-22-00-860-805

SUBTASK 21-27-00-860-009

(2) Put the GND TEST switch, on the Overhead Maintenance Panel, P61, in the ENABLE position.

SUBTASK 21-27-00-740-002

(3) Use a maintenance access terminal (MAT) to do the system test of the IFE equipment cooling system, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) IFE Equipment Cooling
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, then do the procedures in the Fault Isolation Manual to correct the fault.

SUBTASK 21-27-00-860-010

(4) Put the GND TEST switch in the NORM position.

——— END OF TASK ———

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EQUIPMENT COOLING SYSTEM - INSPECTION/CHECK

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) An inspection of the equipment cooling override duct.

C. The equipment cooling override valve consists of a nine-inch valve and a smaller three-inch valve. When one of the valves is open, the other valve is closed. In the AUTO mode, the three-inch valve is closed and the nine-inch valve is open to allow air from the supply fans to flow to the main equipment center. In the OVRD mode, the nine-inch valve closes and the three-inch valve opens to let the warm air from the main equipment center exit overboard due to the airplane pressure differential. The equipment cooling override duct runs from the three inch valve to the airplane skin. A leak in the override duct can result in the loss of pressurized air from the forward cargo compartment.

TASK 21-27-00-210-801

2. EQUIPMENT COOLING OVERRIDE DUCT INSPECTION

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-34-00 P/B 201	FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES

B. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

C. Prepare for the Inspection

SUBTASK 21-27-00-010-010

(1) Open the forward cargo door (FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES, PAGEBLOCK 52-34-00/201).

SUBTASK 21-27-00-010-011

(2) To get access to the equipment cooling override duct, remove this sidewall liner in the forward cargo compartment (TASK 25-52-06-000-801).

(a) The left sidewall liner between STA 487.0 and STA 508.0.

D. Inspect the Equipment Cooling Override Duct

SUBTASK 21-27-00-210-001

(1) Do a general visual inspection of the equipment cooling override duct, from the override valve to the airplane skin.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-00-410-001

(1) Install this sidewall liner in the forward cargo compartment (TASK 25-52-06-400-801).

(a) The left sidewall liner between STA 487.0 and STA 508.0.

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SUBTASK 21-27-00-410-002

(2) Close the forward cargo door (FORWARD LARGE CARGO DOOR - MAINTENANCE PRACTICES, PAGEBLOCK 52-34-00/201).

——— END OF TASK ———

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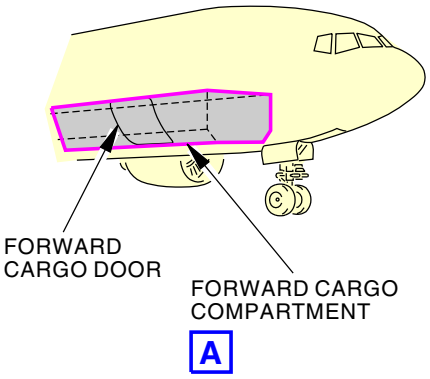

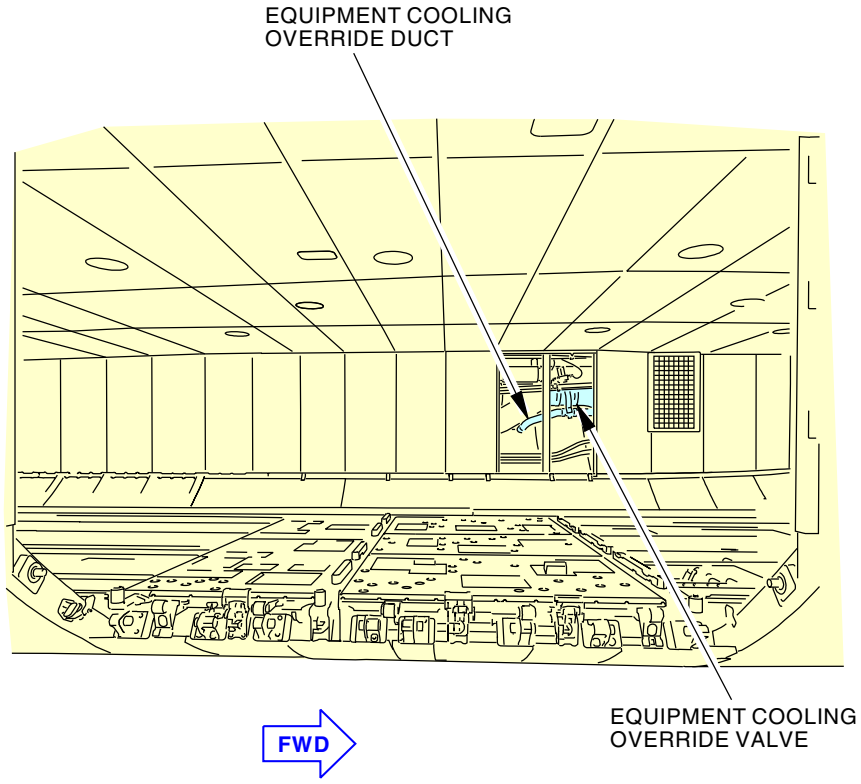

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COOLING OVERRIDE DUCT INSPECTION
Figure 601/21-27-00-990-801

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EQUIPMENT COOLING CONTROLLERS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Equipment cooling controllers - deactivation.

(2) Equipment cooling controllers - activation.

TASK 21-27-01-040-801

2. Equipment Cooling Controllers - Deactivation

(Figure 201 or Figure 202, Figure 201 or Figure 202)

A. General

(1) This task will deactivate the equipment cooling controllers.

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 21-27-01-010-003

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-01-020-003

WARNING

KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(2) Do this step to deactivate the left equipment cooling controller:

Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

Row	Col	Number	Name
H	8	C21637	L EQPT CLG CTRL

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SUBTASK 21-27-01-020-004

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(3) Do this step to deactivate the right equipment cooling center:

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
P	9	C21636	R EQPT CLG CTRL

E. Equipment Cooling Controller - Tryout

NOTE: This tryout is to make sure that the equipment cooling controller is in a zero energy state.

SUBTASK 21-27-01-860-007

(1) Use a Maintenance Access Terminal (MAT) to do an operational test of the equipment cooling controllers.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Equipment Cooling
7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE
2) START TEST

(c) After the test, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

(d) Make sure that these maintenance messages show on the ground test display:

1) 21–14011 for ECC left
2) 21–14012 for ECC right

END OF TASK

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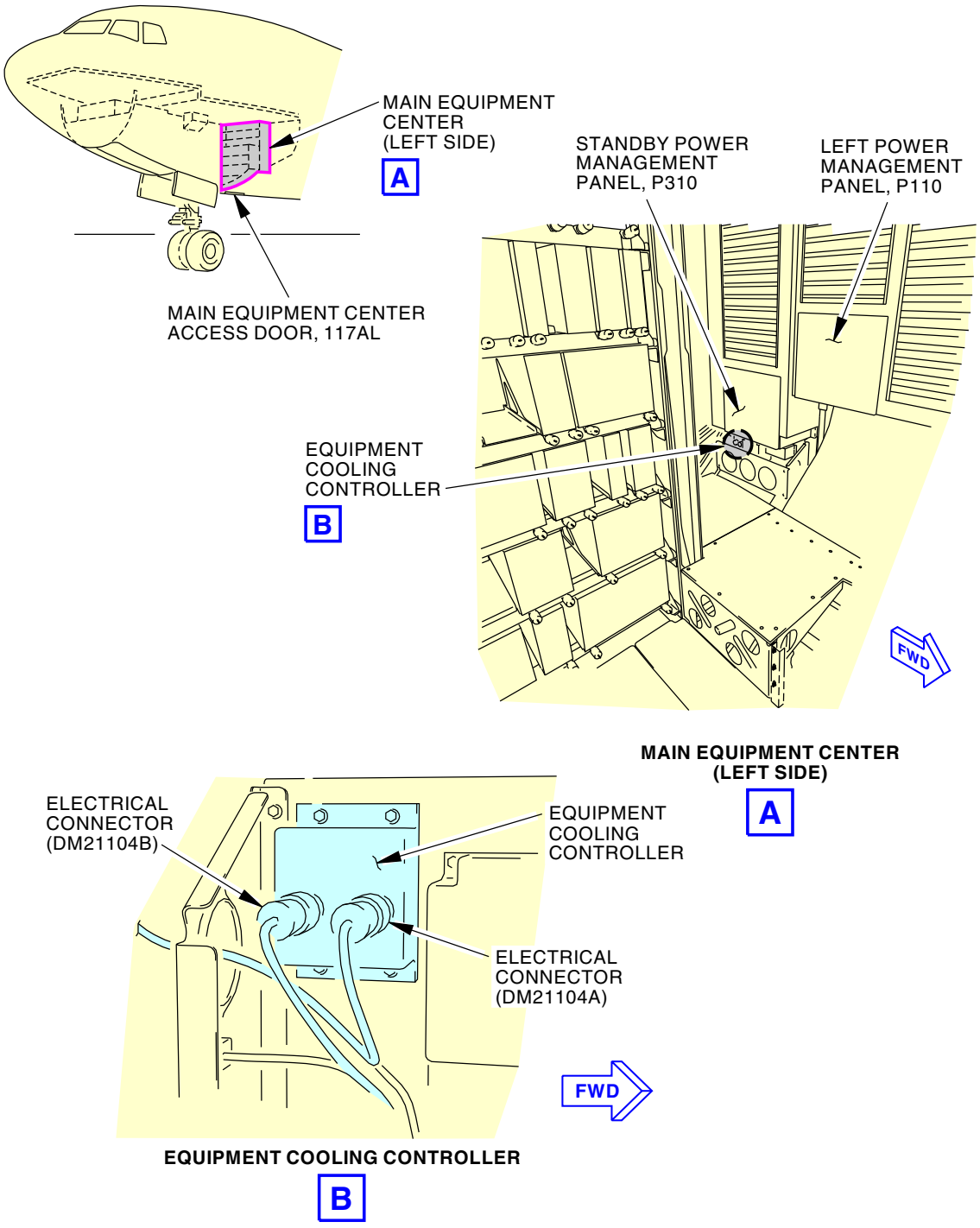

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Left Equipment Cooling Controller
Figure 201/21-27-01-990-803

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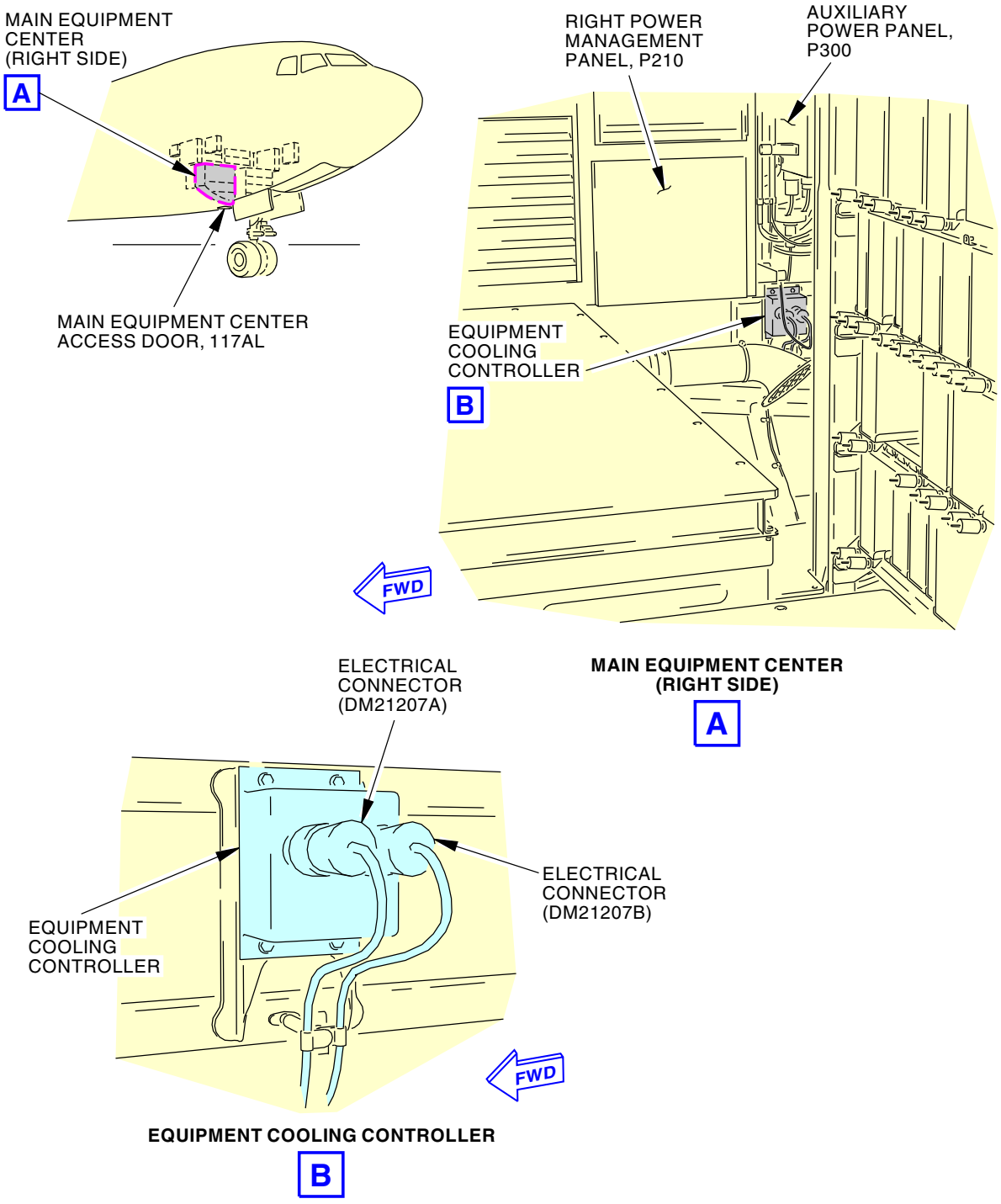

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Right Equipment Cooling Controller
Figure 202/21-27-01-990-804

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TASK 21-27-01-440-801

3. Equipment Cooling Controllers - Activation

(Figure 201 or Figure 202, Figure 201 or Figure 202)

A. General

(1) This task will activate the equipment cooling controllers.

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 21-27-01-420-007

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Standby Power Management Panel, P310

Row	Col	Number	Name
H	8	C21637	L EQPT CLG CTRL

SUBTASK 21-27-01-420-008

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	9	C21636	R EQPT CLG CTRL

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SUBTASK 21-27-01-410-003

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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EQUIPMENT COOLING CONTROLLERS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling controllers

(2) An installation of the equipment cooling controllers.

B. There are two equipment cooling controllers in the main equipment center.

(1) The left equipment cooling controller is installed below this panel:

(a) P310 Standby Power Management Panel.

(2) The right equipment cooling controller is installed below this panel:

(a) P300 Auxiliary Power Panel.

TASK 21-27-01-000-801

2. Equipment Cooling Controllers Removal

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

B. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

C. Prepare for the Removal

SUBTASK 21-27-01-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-01-860-001

(2) To remove the left equipment cooling controller;

Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

Row	Col	Number	Name
H	8	C21637	L EQPT CLG CTRL

SUBTASK 21-27-01-860-002

(3) To remove the right equipment cooling controller;

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
P	9	C21636	R EQPT CLG CTRL

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D. Left Equipment Cooling Controller Removal

(Figure 401)

SUBTASK 21-27-01-010-002

(1) To get access to the equipment cooling controller [1], turn the four quarter-turn fasteners [3] and remove the kick panel [2].

SUBTASK 21-27-01-020-001

(2) Do the steps that follow to remove the equipment cooling controller [1]:

(a) Disconnect the electrical connector (DM21104A) [6] from the equipment cooling controller [1].

(b) Disconnect the electrical connector (DM21104B) [7] from the equipment cooling controller [1].

(c) Remove the four screws [4] and four washers [5].

(d) Remove the equipment cooling controller [1].

E. Right Equipment Cooling Controller Removal

(Figure 402)

SUBTASK 21-27-01-020-002

(1) Do the steps that follow to remove the equipment cooling controller [21]:

(a) Disconnect the electrical connector (DM21207A) [25] from the equipment cooling controller [21].

(b) Disconnect the electrical connector (DM21207B) [24] from the equipment cooling controller [21].

(c) Remove the four screws [22] and four washers [23].

(d) Remove the equipment cooling controller [21].

——— END OF TASK ———

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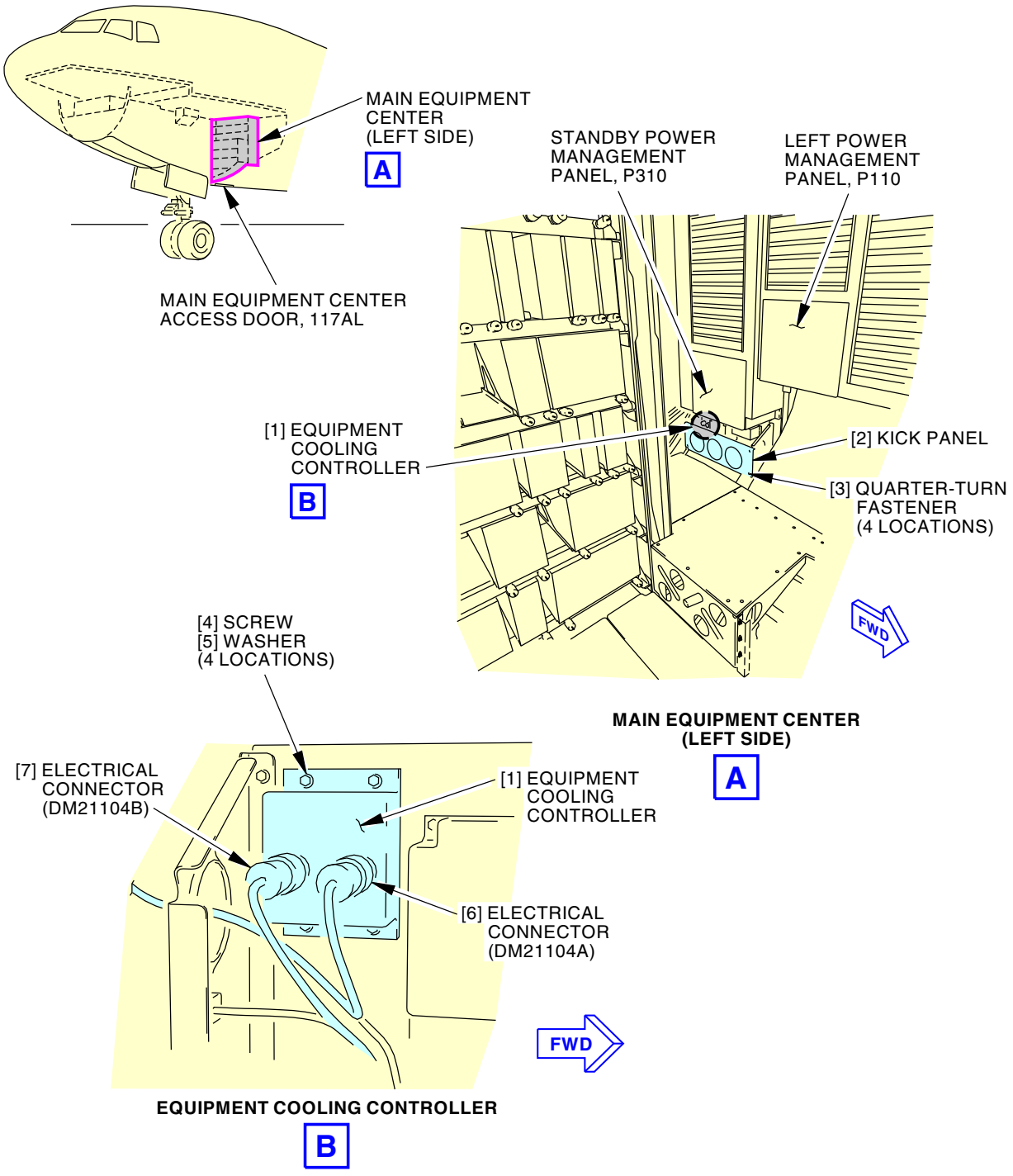

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Left Equipment Cooling Controller Installation
Figure 401/21-27-01-990-801

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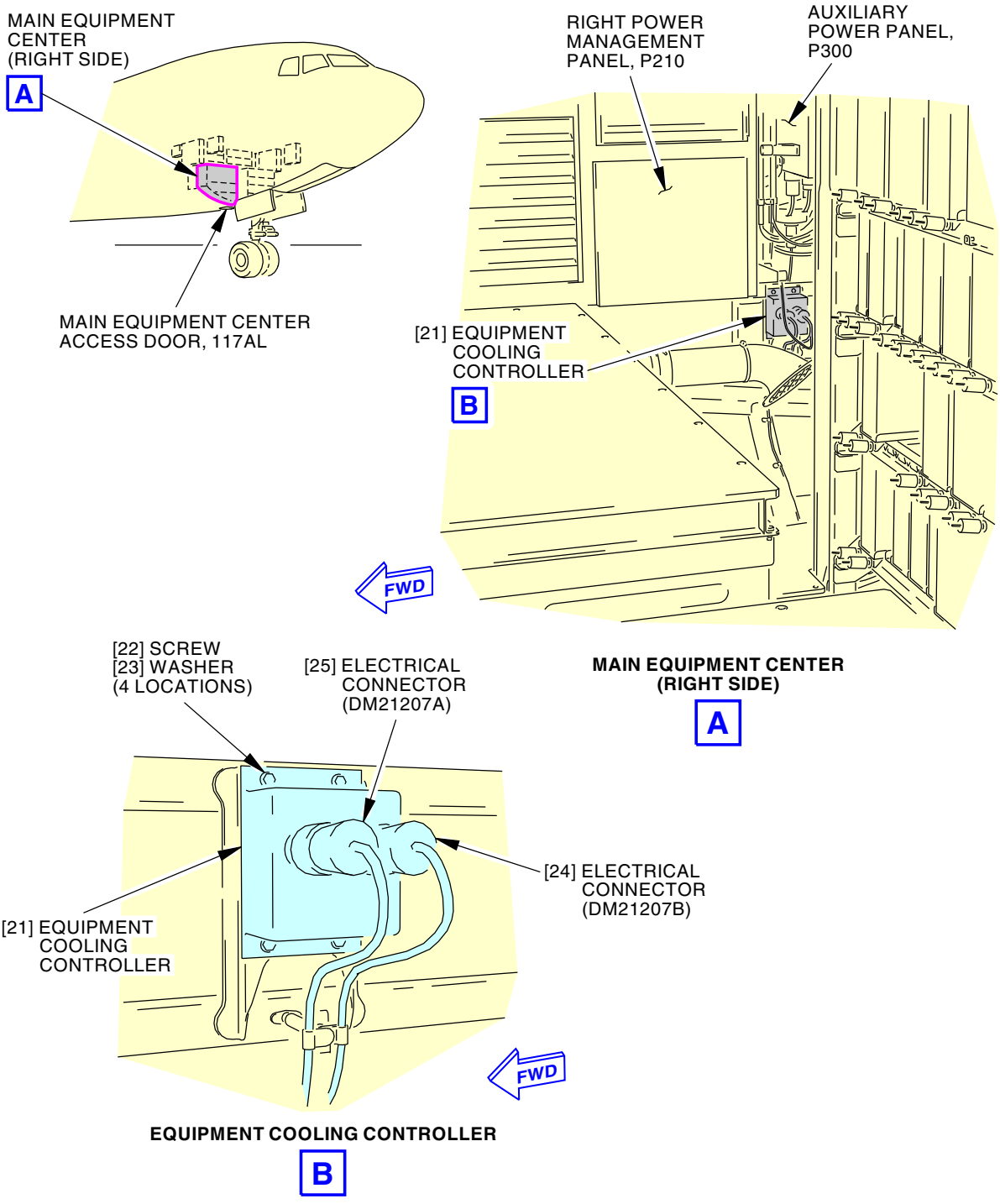

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Right Equipment Cooling Controller Installation
Figure 402/21-27-01-990-802

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TASK 21-27-01-400-801

3. Equipment Cooling Controllers Installation

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)
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)
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
STD-449	Gun - Sealant
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

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Controller	21-27-01-02-005	ARO ALL
21	Controller	21-27-01-02-105	ARO ALL

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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G. Prepare for the Installation

SUBTASK 21-27-01-110-001

(1) To clean the mating surfaces of the airplane structure and the equipment cooling controller, do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

H. Left Equipment Cooling Controller Installation

(Figure 401)

SUBTASK 21-27-01-420-001

(1) Do the steps that follow to install the equipment cooling controller [1]:

(a) Put the equipment cooling controller [1] into the correct position.

(b) Install the four screws [4] and four washers [5].

SUBTASK 21-27-01-760-001

(2) Use a intrinsically safe approved bonding meter, COM-1550 to make sure that the resistance between the equipment cooling controller and the airplane structure is less than 0.0025 ohms (SWPM 20-20-00).

NOTE: You can remove a small area of the surface finish to allow the probes to make contact with the bare metal.

(a) If the resistance is more than 0.0025 ohms, then remove the equipment cooling controller and repeat the cleaning and installation steps.

SUBTASK 21-27-01-390-001

(3) Do the steps that follow to make a fillet seal between the equipment cooling controller [1] and the airplane structure:

(a) Apply a thin layer of sealant, A02315 to any bare area of the controller and the structure that is the result of cleaning.

(b) Use a sealant gun, STD-449 to apply a bead of sealant, A02315 to the joint between the controller and the structure.

NOTE: Keep the nozzle tip perpendicular to the joint and force the sealant ahead of the nozzle tip to minimize air bubbles in the bead.

(c) Use a hardwood or plastic fillet smoothing spatula, STD-810 to make the fillet seal smooth.

NOTE: You can apply a mixture of one part isopropyl alcohol and six parts distilled water to the hardwood or plastic fillet smoothing spatula, STD-810 to prevent the sealant from bonding to the hardwood or plastic fillet smoothing spatula, STD-810.

SUBTASK 21-27-01-420-003

(4) Re-connect the electrical connector (DM21104A) [6].

SUBTASK 21-27-01-420-004

(5) Re-connect the electrical connector (DM21104B) [7].

SUBTASK 21-27-01-410-001

(6) Put the kick panel [2] into the correct position and turn the four quarter-turn fasteners [3].

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SUBTASK 21-27-01-860-003

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

Standby Power Management Panel, P310

Row	Col	Number	Name
H	8	C21637	L EQPT CLG CTRL

I. Right Equipment Cooling Controller Installation

(Figure 402)

SUBTASK 21-27-01-420-002

(1) Do the steps that follow to install the equipment cooling controller [21]:

(a) Put the equipment cooling controller [21] into the correct position.

(b) Install the four screws [22] and four washers [23].

SUBTASK 21-27-01-760-002

(2) Use an intrinsically safe approved bonding meter, COM-1550 to make sure that the resistance between the equipment cooling controller and the airplane structure is less than 0.0025 ohms (SWPM 20-20-00).

NOTE: You can remove a small area of the surface finish to allow the probes to make contact with the bare metal.

(a) If the resistance is more than 0.0025 ohms, then remove the equipment cooling controller and repeat the cleaning and installation steps.

SUBTASK 21-27-01-390-002

(3) Do the steps that follow to make a fillet seal between the equipment cooling controller [21] and the airplane structure:

(a) Apply a thin layer of sealant, A02315 to any bare area of the controller and the structure that is the result of cleaning.

(b) Use a sealant gun, STD-449 to apply a bead of sealant, A02315 to the joint between the controller and the structure.

NOTE: Keep the nozzle tip perpendicular to the joint and force the sealant ahead of the nozzle tip to minimize air bubbles in the bead.

(c) Use a hardwood or plastic fillet smoothing spatula, STD-810 to make the fillet seal smooth.

NOTE: You can apply a mixture of one part isopropyl alcohol and six parts distilled water to the hardwood or plastic fillet smoothing spatula, STD-810 to prevent the sealant from bonding to the hardwood or plastic fillet smoothing spatula, STD-810.

SUBTASK 21-27-01-420-005

(4) Re-connect the electrical connector (DM21207A) [25].

SUBTASK 21-27-01-420-006

(5) Re-connect the electrical connector (DM21207B) [24].

SUBTASK 21-27-01-860-004

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	9	C21636	R EQPT CLG CTRL

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J. Equipment Cooling Controller Installation Test

SUBTASK 21-27-01-860-006

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

SUBTASK 21-27-01-740-001

(2) Use a maintenance access terminal (MAT) to do the System Test of the Equipment Cooling System (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Equipment Cooling
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.

K. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-01-410-002

(1) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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EQUIPMENT COOLING AIR FILTER - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A removal of the equipment cooling air filter

(2) An installation of the equipment cooling air filter.

C. The equipment cooling air filter removes unwanted material from the air that cools the electrical/electronic equipment in these areas:

(1) Flight deck instrument panel

(2) Flight deck overhead panel

(3) Flight deck aisle stand

(4) E1 rack

(5) E2 rack

(6) E3 rack

(7) E4 rack

(8) E5 rack

(9) E16 rack

(10) Weather radar

(11) Frequency Converter.

TASK 21-27-02-000-801

2. Equipment Cooling Air Filter Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You must remove electrical power from the 115V AC Bus before you remove the equipment cooling air filter. This will make sure the electrical/electronic equipment does not receive electrical power when the equipment cooling system is not in operation.

(2) You can supply external ground service power to use the airplanes internal lighting.

B. References

Reference	Title
21-27-02-100-801	Equipment Cooling Air Filter Cleaning (P/B 701)
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

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C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

D. Prepare for the Removal

SUBTASK 21-27-02-010-001

(1) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-27-02-860-009

CAUTION

MAKE SURE THAT YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-02-860-010

(3) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-27-02-010-002

(4) Remove the left sidewall liner in the forward cargo compartment to get access to the equipment cooling air filter [1] (TASK 25-52-06-000-801).

E. Equipment Cooling Air Filter Removal

SUBTASK 21-27-02-020-001

(1) Loosen the clamp [3] which keeps the sleeve [4] on the equipment cooling air filter [1].

SUBTASK 21-27-02-020-002

(2) Disconnect the clamps [2] from the clamps [5].

SUBTASK 21-27-02-020-003

(3) Pull the equipment cooling air filter [1] out of the sleeve [4].

SUBTASK 21-27-02-020-004

(4) Remove the equipment cooling air filter [1], then do one of the steps which follow:

(a) Clean the equipment cooling air filter [1] (TASK 21-27-02-100-801).

(b) Get a serviceable equipment cooling air filter [1].

END OF TASK

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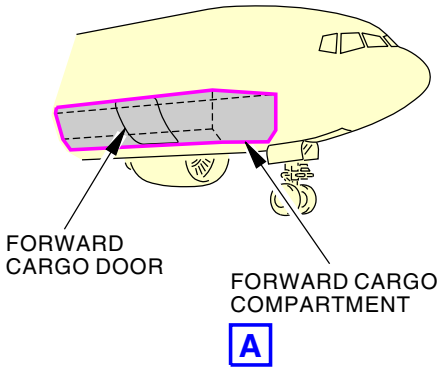

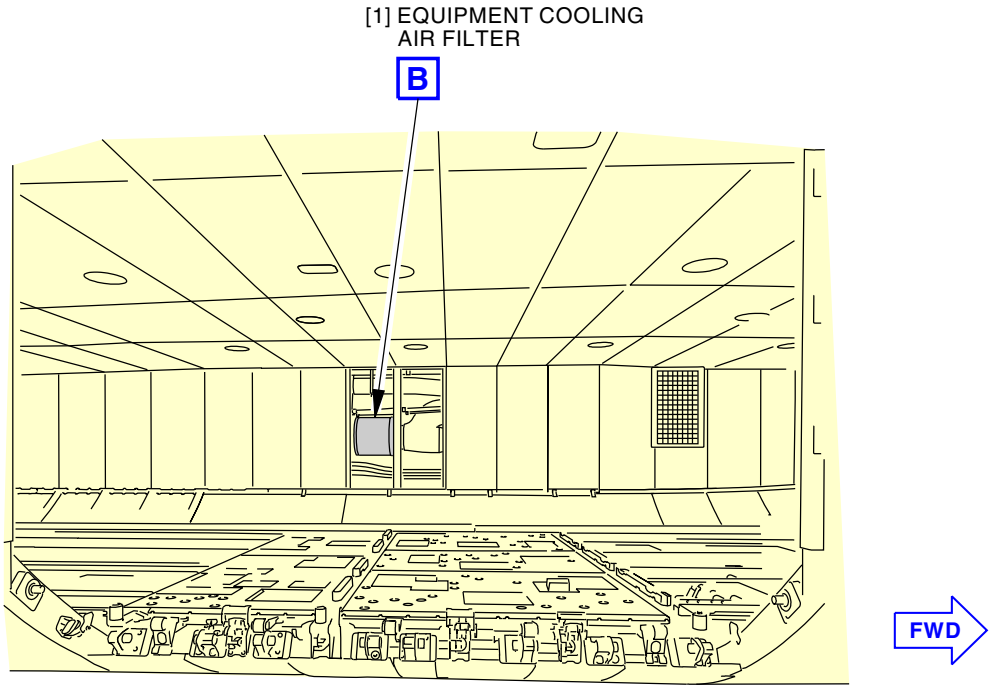

FORWARD CARGO COMPARTMENT

A

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Equipment Cooling Air Filter Installation
Figure 401/21-27-02-990-801 (Sheet 1 of 2)

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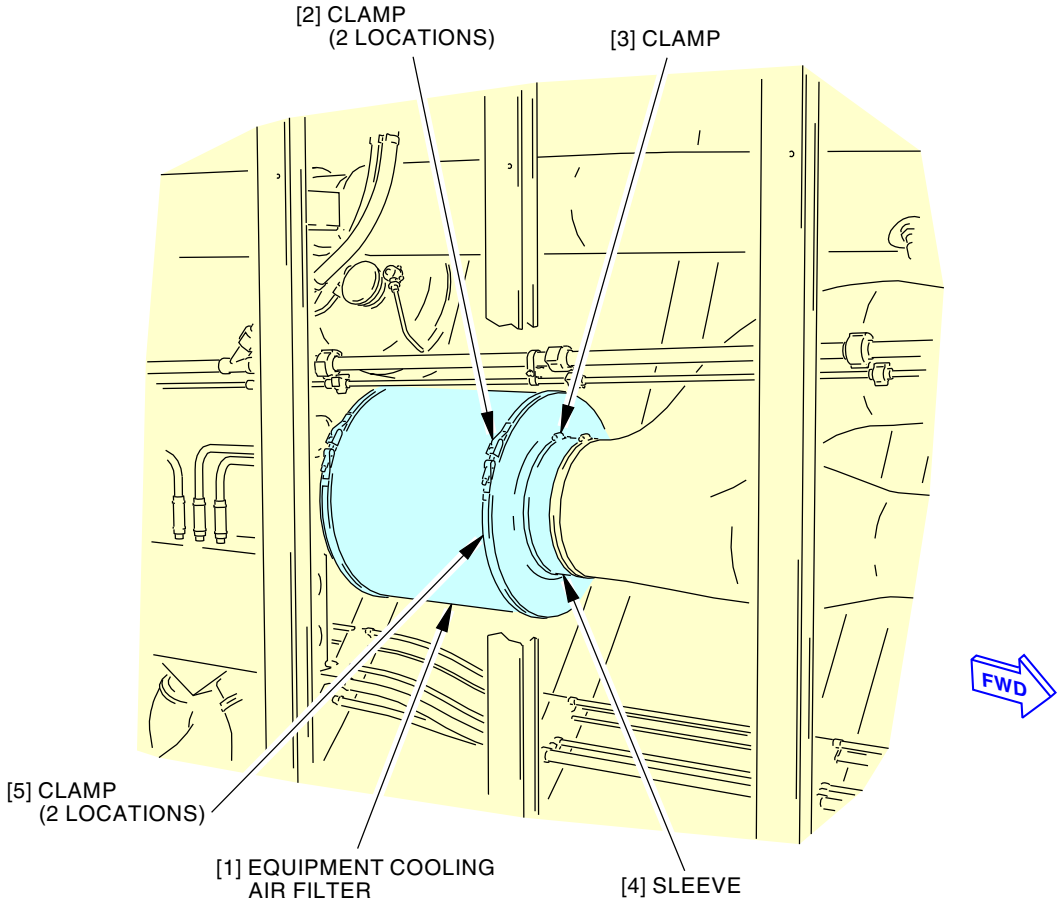

EQUIPMENT COOLING AIR FILTER

B

C98656 S0006403296_V3

Equipment Cooling Air Filter Installation
Figure 401/21-27-02-990-801 (Sheet 2 of 2)

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TASK 21-27-02-400-801

3. Equipment Cooling Air Filter Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Filter	21-27-02-01-045	ARO ALL

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Equipment Cooling Air Filter Installation

SUBTASK 21-27-02-420-001

(1) Put the equipment cooling air filter [1] into the sleeve [4].

SUBTASK 21-27-02-420-002

(2) Connect the two clamps [2] and two clamps [5].

(a) Tighten the T-bolt nut on the clamp [5] to 15 ±5 in-lb (2 ±1 N·m).

SUBTASK 21-27-02-420-003

(3) Tighten the clamp [3] which keeps the sleeve [4] on the equipment cooling air filter [1] to 15 ±2 in-lb (2 ±1 N·m).

E. Equipment Cooling Air Filter Air Leakage Check

SUBTASK 21-27-02-860-002

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

SUBTASK 21-27-02-860-003

(2) Make sure the EQUIP COOLING switch-light is in the AUTO position.

NOTE: The EQUIP COOLING switch-light is on the AIR CONDITIONING module which is on the Forward Overhead Panel, P5.

SUBTASK 21-27-02-210-001

(3) Use your hand to feel for air leakage between the equipment cooling air filter [1] and the sleeve [4].

(a) If there is air leakage, adjust the clamp [3] and the sleeve [4] until the air leakage does not occur.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-02-410-001

(1) Install the left sidewall liner (TASK 25-52-06-400-801).

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SUBTASK 21-27-02-410-002

(2) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

——— END OF TASK ———

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EQUIPMENT COOLING AIR FILTER - CLEANING/PAINTING

1. General

A. This procedure has this task:

(1) Equipment cooling air filter cleaning.

TASK 21-27-02-100-801

2. Equipment Cooling Air Filter Cleaning

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) The air filter may be cleaned up to three times before it must be replaced.

(2) You must remove electrical power from the 115V AC Bus before you remove the equipment cooling air filter to clean it. This will make sure the electrical/electronic equipment does not receive electrical power when the equipment cooling system is not in operation.

(3) You can supply external ground service power to use the airplanes internal lighting.

B. References

Reference	Title
21-27-02-000-801	Equipment Cooling Air Filter Removal (P/B 401)
21-27-02-400-801	Equipment Cooling Air Filter Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B50026	Soap - Clear Liquid Dishwashing	

D. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

E. Prepare for the Cleaning

SUBTASK 21-27-02-010-003

(1) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

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SUBTASK 21-27-02-860-011

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE 115V AC BUS. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT MAY BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-02-860-012

(3) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-27-02-010-004

(4) Remove the applicable left sidewall liner in the forward cargo compartment to get access to the equipment cooling air filter. To remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-27-02-020-005

(5) Remove the equipment cooling air filter. To remove it, do this task: Equipment Cooling Air Filter Removal, TASK 21-27-02-000-801.

F. Equipment Cooling Air Filter Cleaning

SUBTASK 21-27-02-210-002

(1) Do the steps that follow to inspect the air filter before you clean it:

(a) Examine the air filter for dates or other marks to show that the air filter was cleaned.

1) If there are less than three marks, clean the air filter.

2) If there are three marks, install a new air filter. To install a new air filter, do this task: Equipment Cooling Air Filter Installation, TASK 21-27-02-400-801.

(b) Inspect the inside of the air filter for excessive dust streaks.

1) If excessive dust streaks are found, install a new air filter. To install a new air filter, do this task: Equipment Cooling Air Filter Installation, TASK 21-27-02-400-801.

(c) Inspect the air filter for damage to the end covers, liners, and a torn or punctured air filter media.

1) If excessive dust streaks are found, install a new air filter. To install a new air filter, do this task: Equipment Cooling Air Filter Installation, TASK 21-27-02-400-801.

SUBTASK 21-27-02-170-001

(2) Do these steps to pre-clean the air filter:

(a) Use air or water to remove loose dirt or dust as follows:

1) If air is used, use a nozzle that meets OSHA Section 1910.242(b).

a) Keep the air pressure less than 100 psi.

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2) If water is used, do not use a nozzle.

a) Keep the water pressure less than 40 psi.

3) Let the air or water flow through the air filter from the inside of the air filter to the outside of the air filter.

4) Let the air or water flow through the air filter from the outside of the air filter to the inside of the air filter.

5) Repeat the cleaning from the inside to the outside until you can no longer remove any dirt or dust.

SUBTASK 21-27-02-160-001

(3) Do these steps to soak and wash the filter:

(a) Put a solution of water and a soap, B50026 into a container large enough to hold the air filter. Make sure the solution is at a temperature of 60 °F (15.5 °C) to 140 °F (60.0 °C).

(b) Completely submerge the filter into the container for 15 minutes to 1 hour depending on how contaminated the air filter is.

(c) Move the filter up and down in the solution to help loosen the dirt and dust.

SUBTASK 21-27-02-170-002

(4) Do these steps to rinse the filter:

(a) Use water to remove the solution from the filter as follows:

1) Make sure that you do not use a nozzle and the water pressure is less than 40 psi.

2) Let the water flow through the air filter from the inside of the air filter to the outside of the air filter.

3) Let the water flow through the air filter from the outside of the of the air filter to the inside of the air filter.

4) Repeat the rinse steps until the water that comes through the filter is clear.

SUBTASK 21-27-02-800-001

(5) Do these steps to dry the air filter:

(a) Use a vacuum cleaner to vacuum off the excess water from the air filter.

(b) Allow the air filter to dry by circulating warm dry air around and through the air filter.

NOTE: It may take several hours to several days for the air filter to dry.

1) Make sure the air temperature is not greater than 160 °F (71 °C).

SUBTASK 21-27-02-210-003

(6) After the air filter is dry, do these steps to inspect the air filter:

(a) Inspect the air filter for damage to the end covers, liners, and a torn or punctured air filter media.

1) If you find damage, install a new air filter. To install a new air filter, do this task: Equipment Cooling Air Filter Installation, TASK 21-27-02-400-801.

(b) Take the air filter into a dark area and put a bright light inside the air filter.

1) If you see bright spots of light, install a new air filter. To install a new air filter, do this task: Equipment Cooling Air Filter Installation, TASK 21-27-02-400-801.

NOTE: Holes or tears will show up as bright spots of light.

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(c) Make a mark of the date on the air filter.

NOTE: The date will show the number of times that the air filter was cleaned. Three times is the maximum number.

G. Put the Airplane back to It's Usual Condition

SUBTASK 21-27-02-420-004

(1) Install the equipment cooling air filter. To install it, do this task: Equipment Cooling Air Filter Installation, TASK 21-27-02-400-801.

SUBTASK 21-27-02-860-006

(2) Supply electrical power. To do this, do this task: Supply Electrical Power, TASK 24-22-00-860-805

——— END OF TASK ———

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EQUIPMENT COOLING SUPPLY FAN - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Equipment cooling supply fan - deactivation.

(2) Equipment cooling supply fan - activation.

TASK 21-27-03-040-801

2. Equipment Cooling Supply Fan - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the equipment cooling supply fan.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-27-03-860-007

CAUTION

REMOVE ELECTRICAL POWER FROM THE AIRPLANE. WHILE THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THERE IS NO AIRFLOW. WITHOUT AIRFLOW, ELECTRICAL, AND ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-03-860-008

(2) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

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SUBTASK 21-27-03-010-005

(3) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-03-020-010

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	27	C21605	EQPT CLG SPLY FAN 1 CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
B	5	C21314	AFT UPR RECIRC FAN
G	1	C21600	EQPT CLG SPLY FAN 2 CTRL

F. Equipment Cooling Supply Fan - Tryout

NOTE: This tryout is to make sure that the equipment cooling supply fan is in a zero energy state.

SUBTASK 21-27-03-860-009

(1) Make sure that the power to the airplane is removed, TASK 24-22-00-860-806

SUBTASK 21-27-03-210-001

(2) Do these steps to do a test of the equipment cooling supply fan:

(a) Remove the left sidewall liner in the forward cargo compartment to get access to the equipment cooling supply fans, TASK 25-52-06-000-801.

(b) Make sure that the equipment cooling supply fan is not on.

——— END OF TASK ———

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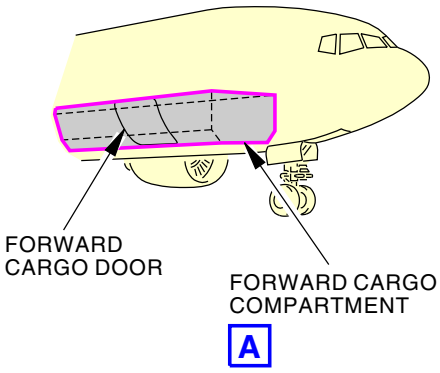

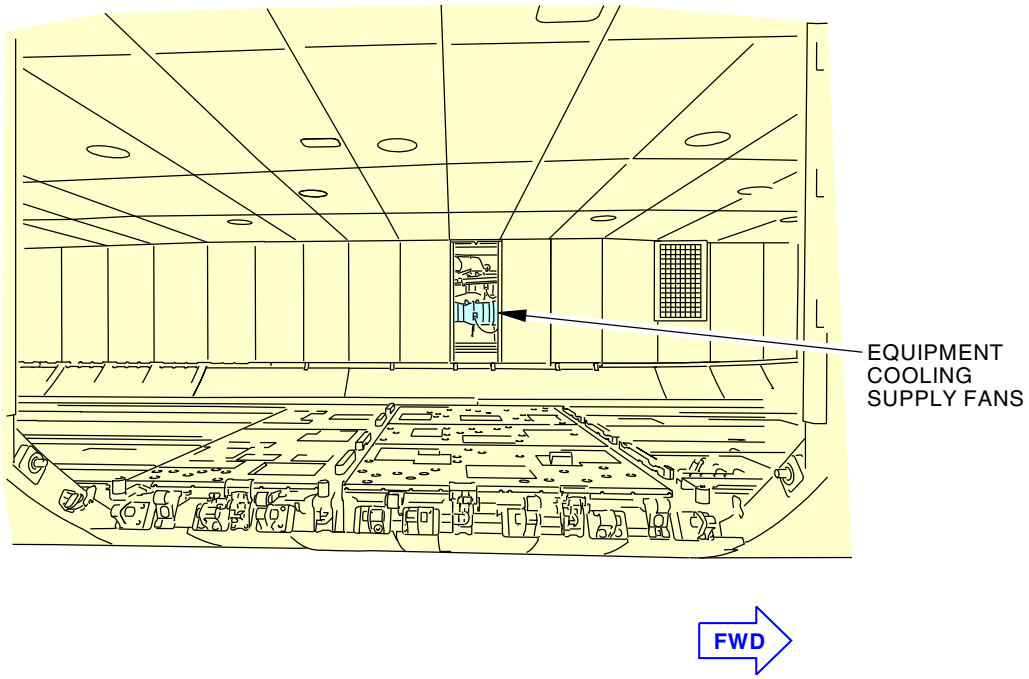

FORWARD CARGO COMPARTMENT

A

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Equipment Cooling Supply fan
Figure 201/21-27-03-990-802

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TASK 21-27-03-440-801

3. Equipment Cooling Supply Fan - Activation

(Figure 201)

A. General

(1) This task will activate the equipment cooling supply fan.

B. References

Reference	Title
24-22-00-860-814	Remove Primary External Power From the Ground Handling Bus (P/B 201)
24-22-00-860-815	Remove Primary External Power from the Ground Service Bus (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-27-03-410-001

(1) Install the left sidewall liner in the forward cargo compartment to close the equipment cooling supply fans (TASK 25-52-06-400-801).

SUBTASK 21-27-03-420-010

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	27	C21605	EQPT CLG SPLY FAN 1 CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
B	5	C21314	AFT UPR RECIRC FAN
G	1	C21600	EQPT CLG SPLY FAN 2 CTRL

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SUBTASK 21-27-03-410-002

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-03-410-003

(4) If it is necessary, remove external power from the Ground Handling Bus and the Ground Service Bus:

(a) Do this task: Remove Primary External Power From the Ground Handling Bus, TASK 24-22-00-860-814.

(b) Do this task: Remove Primary External Power from the Ground Service Bus, TASK 24-22-00-860-815.

——— END OF TASK ———

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EQUIPMENT COOLING SUPPLY FAN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling supply fans

(2) An installation of the equipment cooling supply fans.

TASK 21-27-03-000-801

2. Equipment Cooling Supply Fan Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You must remove electrical power from the 115V AC Bus before you remove an equipment cooling supply fan. This will make sure the electrical/electronic equipment does not receive electrical power when the equipment cooling system is not in operation.

(2) You can supply external ground service power to use the airplanes internal lighting.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

D. Prepare for the Removal

SUBTASK 21-27-03-010-001

(1) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-27-03-860-005

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

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SUBTASK 21-27-03-860-006

(3) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-27-03-010-002

(4) Remove the left sidewall liner in the forward cargo compartment to get access to the equipment cooling supply fans (TASK 25-52-06-000-801).

E. Equipment Cooling Supply Fan Removal

SUBTASK 21-27-03-020-001

(1) Disconnect the electrical connector [2] from the equipment cooling supply fan [9].

(a) Make a record of the orientation of the electrical connector [2] so that you can install the equipment cooling supply fan [9] with the electrical connector [2] in the same position.

SUBTASK 21-27-03-020-009

(2) Remove the insulation [1] from the equipment cooling supply fan [9].

SUBTASK 21-27-03-020-002

(3) Do the steps that follow to remove the bonding jumper [13]:

(a) Remove the nut [10], two washers [11] and bolt [15].

(b) Remove the bonding jumper [13].

SUBTASK 21-27-03-020-003

(4) Loosen clamp [4] which attaches the sleeve [3] to the equipment cooling supply fan [9].

SUBTASK 21-27-03-020-004

(5) Loosen the clamp [7] which attaches the sleeve [8] to the equipment cooling supply fan [9].

SUBTASK 21-27-03-020-005

(6) Remove the nut [10], washer [11], and bolt [14] which attaches the rod assembly [12] to the equipment cooling supply fan [9].

SUBTASK 21-27-03-020-006

(7) Remove the two bolts [5] and two washers [6].

SUBTASK 21-27-03-020-007

(8) Remove the equipment cooling supply fan [9] from sleeve [3] and sleeve [8].

——— END OF TASK ———

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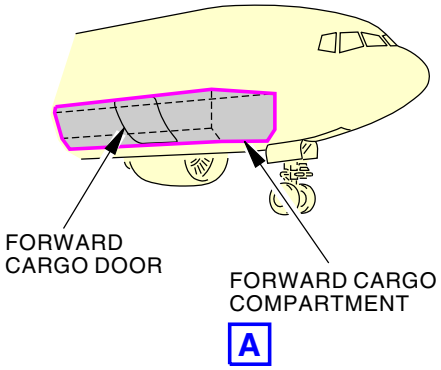

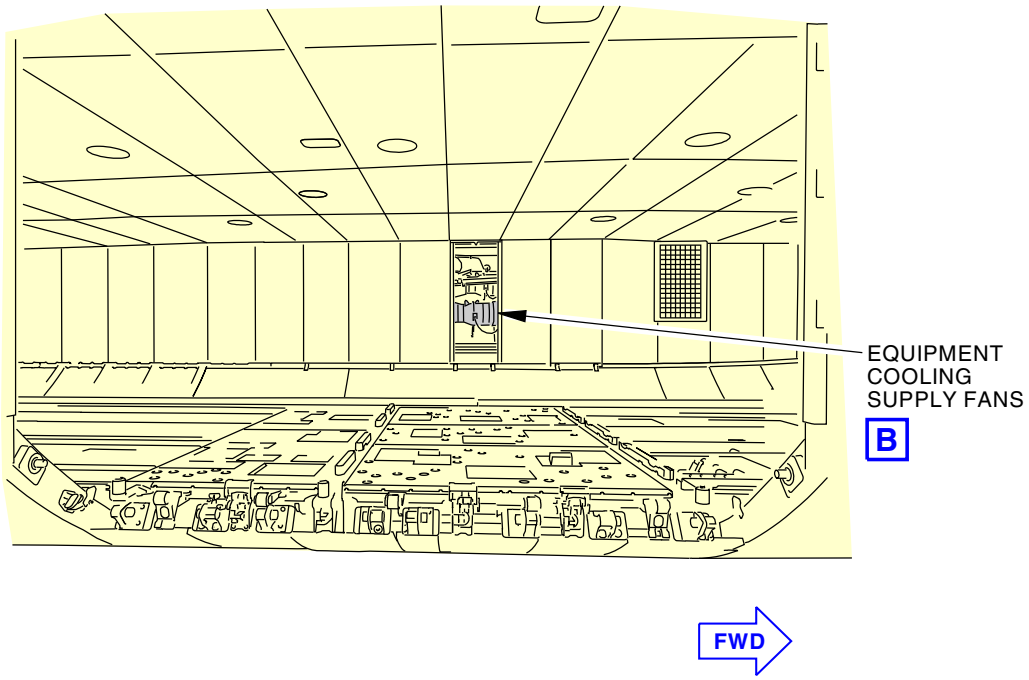

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Equipment Cooling Supply Fan Installation
Figure 401/21-27-03-990-801 (Sheet 1 of 2)

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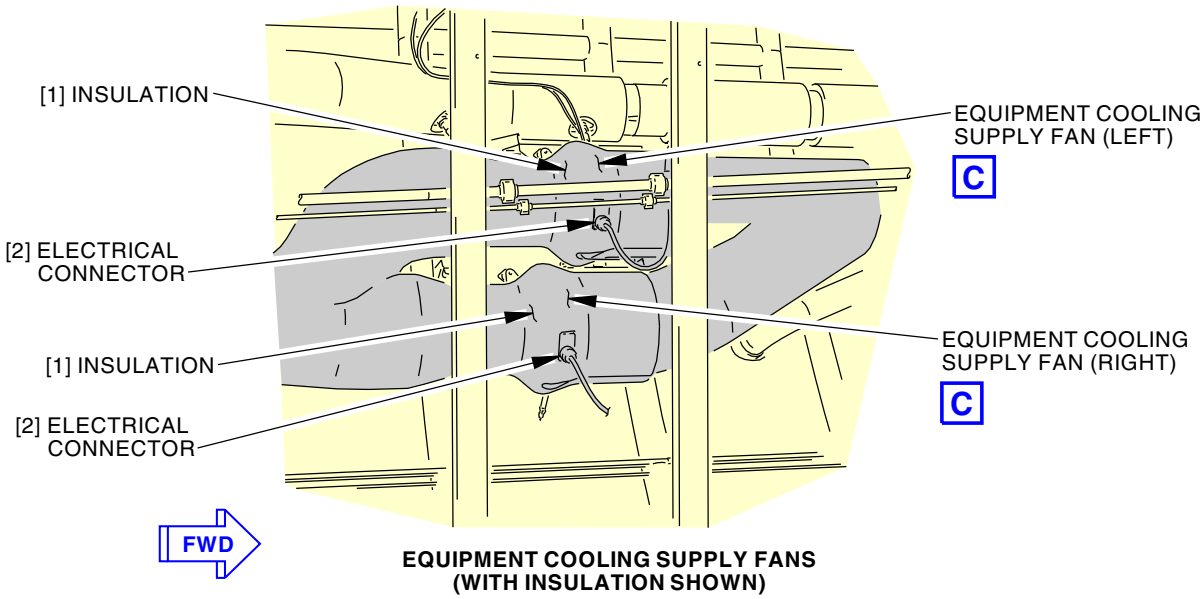
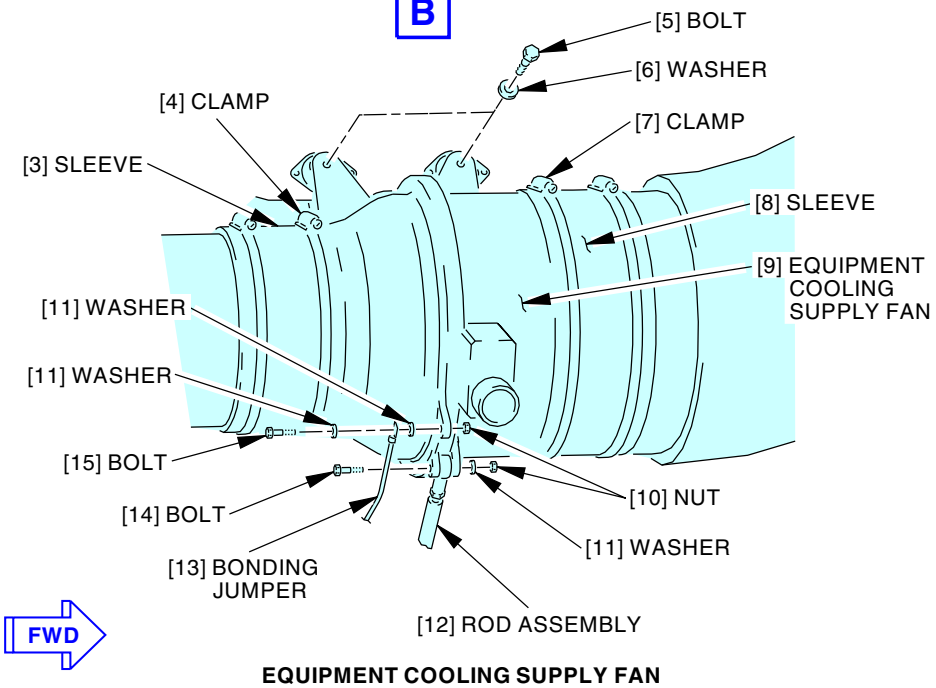


EQUIPMENT COOLING SUPPLY FANS (WITH INSULATION SHOWN)

B



EQUIPMENT COOLING SUPPLY FAN (WITHOUT INSULATION SHOWN)

C

NOTE:

THE EQUIPMENT COOLING SUPPLY FAN (RIGHT) IS SHOWN. THE EQUIPMENT COOLING SUPPLY FAN (LEFT) IS EQUIVALENT.

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Equipment Cooling Supply Fan Installation
Figure 401/21-27-03-990-801 (Sheet 2 of 2)

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TASK 21-27-03-400-801

3. Equipment Cooling Supply Fan Installation

(Figure 401, Figure 402)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Some of the ducts in the air distribution system are wrapped with insulation material. CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

(a) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) The melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

(c) The foam insulation, G51169 and foam insulation, G51170 are new, qualified materials optional to the foam insulation, G50449.

(d) Do not use the polyurethane foam, G50025 insulation for repairs due to the degradation in flammability properties over time.

(e) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

(f) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327 or tape, G51202, or tape, G50789 to meet the flammability/flame propagation requirement. Wrap tape, G50327 or tape, G51202, or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50025	Foam - Flexible Urethane	BMS8-39 Type 1 Grade 2.5 Class A-65
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK

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(Continued)

Reference	Description	Specification
G51169	Foam - Flexible Melamine,	BMS8-385 Type 6
G51170	Foam - Flexible Polyimide	BMS8-300 Type VIII
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Fan	21-27-03-01-085	ARO ALL

E. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

F. Equipment Cooling Supply Fan Installation

SUBTASK 21-27-03-212-001

(1) Make sure that the areas are clear of FOD before you install a new equipment cooling supply fan.

SUBTASK 21-27-03-420-001

(2) Put the equipment cooling supply fan [9] into sleeve [3] and sleeve [8].

SUBTASK 21-27-03-420-002

(3) Install the two bolts [5] and two washers [6].

SUBTASK 21-27-03-420-003

(4) Do the steps that follow to install the rod assembly [12] onto the equipment cooling supply fan [9]:

(a) Put the rod assembly [12] into the correct position on the equipment cooling supply fan [9].

(b) Install the bolt [14], washer [11], and nut [10].

SUBTASK 21-27-03-020-008

(5) Tighten the clamp [4] which attaches the sleeve [3] to the equipment cooling supply fan [9].

SUBTASK 21-27-03-420-004

(6) Tighten the clamp [7] which attaches the sleeve [8] to the equipment cooling supply fan [9].

SUBTASK 21-27-03-420-005

(7) Do the steps that follow to install the bonding jumper [13]:

(a) Make sure that the bonding jumper [13], bolt [15], two washers [11], and the nut [10] are clean.

(b) Put the bonding jumper [13] into the correct position.

(c) Install the bolt [15], two washers [11], and nut [10].

SUBTASK 21-27-03-420-008

(8) Use new tape, G50327 or tape, G51202, or tape, G50789 to install the insulation [1] on the equipment cooling supply fan [9].

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(a) If the insulation is replaced, then make sure the replacement insulation material meets the flame propagation requirement of CFR 14 Part 25.856.

NOTE: The existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

SUBTASK 21-27-03-420-009

(9) If the insulation material is BMS8-300, polyimide foam, then do the following steps to completely cover all exposed surfaces of the foam insulation, G02470 with tape, G50327 (Figure 402) or tape, G51202, or tape, G50789.

NOTE: The BMS8-300 polyimide foam insulation material must be covered with the BMS5-157 tape to meet the CFR 14 Part 25.856 flame propagation requirement.

(a) Cut tape, G50327 or tape, G51202, or tape, G50789 as required to fit around the air outlets, branches and insulation vent holes.

(b) Apply the tape, G50327 or tape, G51202, or tape, G50789 in any configuration as long as complete coverage of the foam insulation, G02470 is obtained and there is a ⅛ in. (3.2 mm) overlap.

1) The tape may be installed spiral wrapped or lengthwise down the duct as desired.

(c) Wrinkles in the tape, G50327 or tape, G51202, or tape, G50789 are acceptable if pinched together without voids and the foam insulation, G02470 is not compressed.

(d) The tape, G50327 or tape, G51202, or tape, G50789 can be applied to the outer surface of the foam insulation, G02470 prior to installation on the duct if desired.

SUBTASK 21-27-03-420-006

(10) Connect the electrical connector [2] to the equipment cooling supply fan [9].

G. Equipment Cooling Supply Fan Installation Test

SUBTASK 21-27-03-860-002

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

SUBTASK 21-27-03-740-001

(2) Use a Maintenance Access Terminal (MAT) to do the System test of the Equipment Cooling Supply Fans (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Equipment Cooling
7) CONTINUE.

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE
2) START TEST.

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(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. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-03-010-003

(1) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-27-03-010-004

(2) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

——— END OF TASK ———

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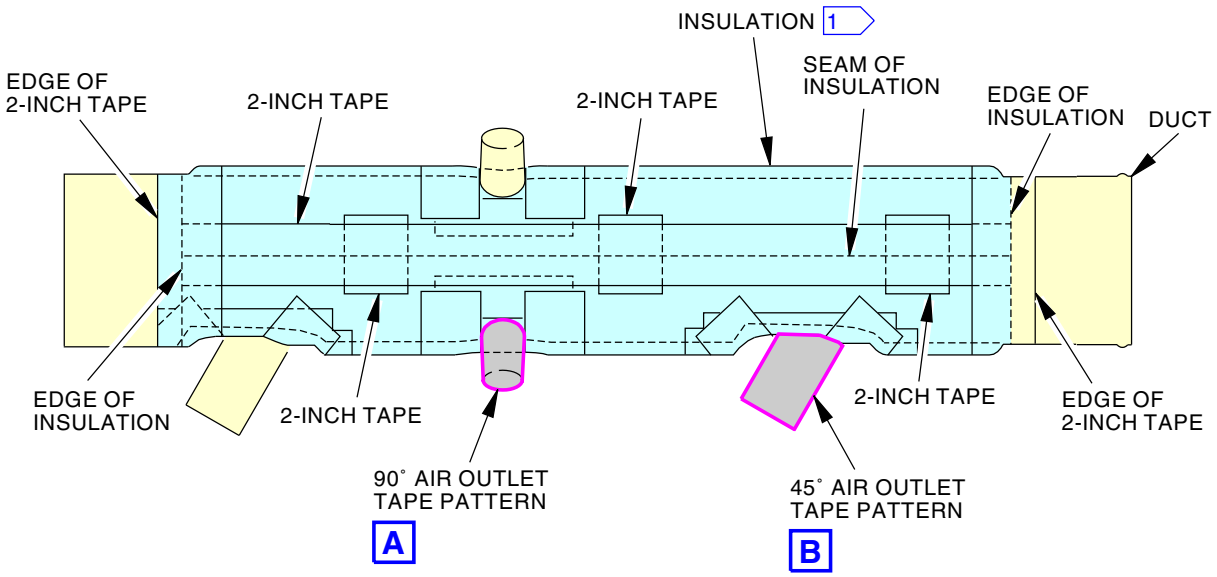
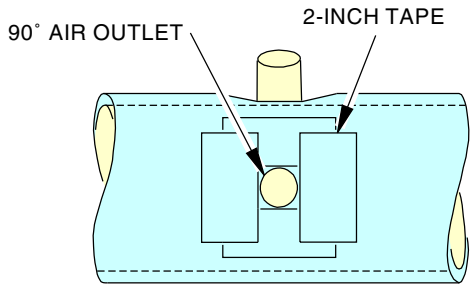
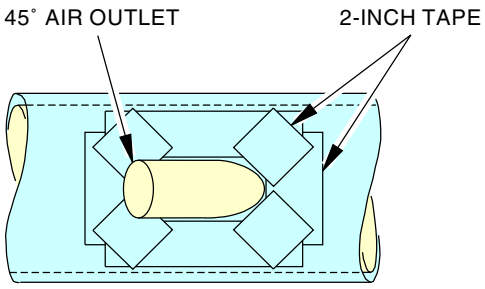


FOAM WRAPPED INSULATED DUCT (EXAMPLE)



90˚ AIR OUTLET TAPE PATTERN

A



45˚ AIR OUTLET TAPE PATTERN

B

1 FOR INSULATION DAMAGE APPLY A MINIMUM 2-INCH PATCH OF PRESSURE SENSITIVE ADHESIVE TAPE TO THE DAMAGED AREA. MAKE SURE YOU HAVE FULL COVERAGE OF THE DAMAGED OR TORN AREA WITH NO LESS THAN 1/2-INCH OVERLAP.

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Air Conditioning System Insulated Duct Repair (Foam Wrapped)
Figure 402/21-27-03-990-803 (Sheet 1 of 2)

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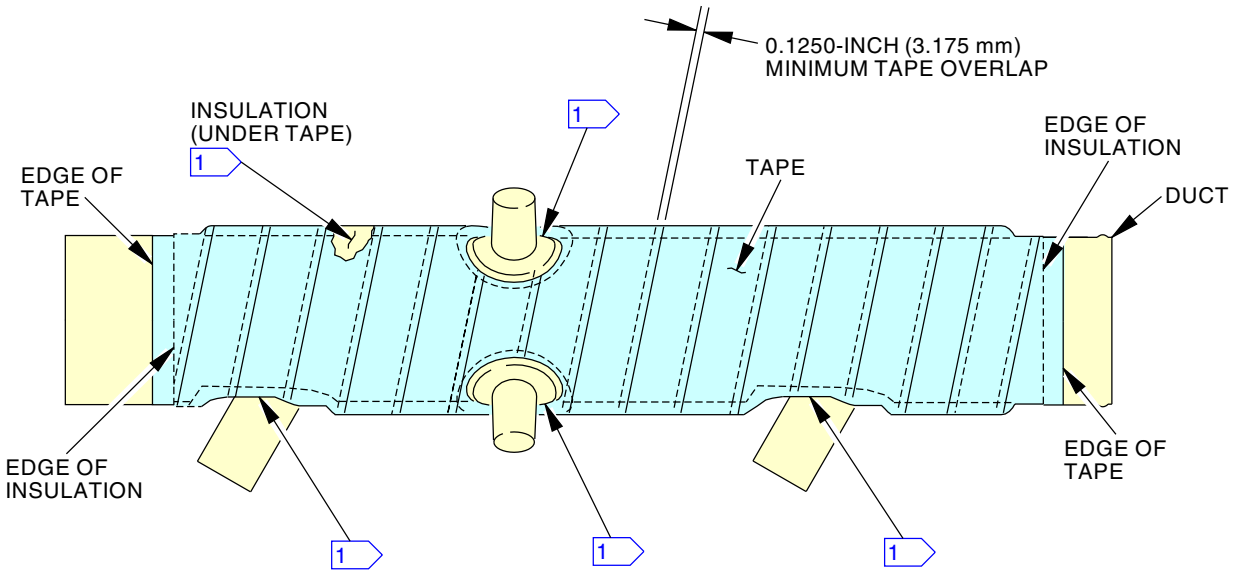

**REWORK POLYIMIDE FOAM INSULATED DUCT
(EXAMPLE)**

NOTE:

- 2-INCH WIDE, 3-INCH WIDE OR 12-INCH WIDE TAPE (BMS 5-157 TYPE I, CLASS 1, GRADE B) MUST COVER 100% OF THE BROWN HYPALON INSULATION SURFACE.
- TAPE MAY BE INSTALLED SPIRAL WRAPPED AS SHOWN OR LENGTHWISE DOWN THE DUCT DEPENDING ON THE INSTALLERS PREFERENCE.
- SHOWN PATTERN IS FOR REFERENCE ONLY. TAPE MAY BE APPLIED IN ANY CONFIGURATION AS LONG AS COMPLETE BMS 8-300 COVERAGE IS OBTAINED.
- WIDER TAPE MAY BE CUT INTO NARROWER STRIPS OR ANY UNIQUE SHAPE IF DESIRED TO ASSIST IN OBTAINING COMPLETE BMS 8-300 COVERAGE.
- MAINTAIN MINIMUM 0.1250-INCH (3.175 mm) OVERLAP OF TAPE.
- AVOID COMPRESSION OF BMS 8-300 INSULATION.
- WRINKLES IN TAPE ARE ACCEPTABLE IF PINCHED TOGETHER AND CONTAIN NO VOIDS.
- COVERING OF EXISTING BMS 5-157 TAPE IS NOT REQUIRED.
- TAPE MAY BE APPLIED TO THE BLANKET PRIOR TO THE BLANKET INSTALLATION ON THE DUCT IF DESIRED BY THE INSTALLER.
- FOR BLANKETS INSTALLED ON DUCT JOINTS, TAPE MAY BE APPLIED TO THE BLANKET BEFORE OR AFTER THE BLANKET IS INSTALLED OVER THE DUCT JOINT. TAPE ORIENTATION IS OPTIONAL.

1 COVER ALL EXPOSED INSULATION (BMS 8-300 TYPE II, GRADE 5) WITH TAPE (BMS 5-157 TYPE I, CLASS 1, GRADE B). CUT TAPE AS REQUIRED TO FIT AROUND AIR OUTLETS, BRANCHES AND INSULATION VENT HOLES.

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**Air Conditioning System Insulated Duct Repair (Foam Wrapped)
Figure 402/21-27-03-990-803 (Sheet 2 of 2)**

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EQUIPMENT COOLING OVERRIDE VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling override valve

(2) An installation of the equipment cooling override valve.

B. The equipment cooling override valve consists of a nine-inch valve and a smaller three-inch valve. When one of the valves is open, the other valve is closed. In the AUTO mode, the nine-inch valve is open and the three-inch valve is closed. In the OVRD mode, the nine-inch valve closes and the three-inch valve opens to let the warm air from the main equipment center exit overboard.

TASK 21-27-04-000-801

2. Equipment Cooling Override Valve Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You must remove electrical power from the 115V AC Bus before you remove an equipment cooling override valve. This will make sure the electrical/electronic equipment does not receive electrical power when the equipment cooling system is not in operation.

(2) You can supply external ground service power to use the airplanes internal lighting.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)
WDM 21-27-61	Wiring Diagram Manual

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

D. Prepare for the Removal

SUBTASK 21-27-04-010-001

(1) Open the forward cargo door (TASK 52-34-00-860-801).

SUBTASK 21-27-04-860-004

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE AFT EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

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SUBTASK 21-27-04-860-005

(3) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-27-04-010-002

(4) To get access to the equipment cooling override valve, remove this sidewall liner in the forward cargo compartment (TASK 25-52-06-000-801).

NOTE: The left sidewall liner between STA 487.0 and STA 508.0.

E. Equipment Cooling Override Valve Removal

SUBTASK 21-27-04-020-001

(1) Disconnect the electrical connector (DV21585A) [3] from the equipment cooling override valve [1].

SUBTASK 21-27-04-020-002

(2) Disconnect the electrical connector (DV21585B) [2] from the equipment cooling override valve [1].

NOTE: The electrical connector (DV21585A) [3] is for the left motor and electrical connector (DV21585B) [2] is for the right motor (WDM 21-27-61).

SUBTASK 21-27-04-020-003

(3) Remove the two couplings [4].

SUBTASK 21-27-04-020-004

(4) Move the two sleeves [5] away from the equipment cooling override valve [1].

SUBTASK 21-27-04-020-005

(5) Remove the two couplings [6].

SUBTASK 21-27-04-020-006

(6) Move the two sleeves [7] away from the equipment cooling override valve [1].

SUBTASK 21-27-04-020-007

(7) Remove the equipment cooling override valve [1].

——— END OF TASK ———

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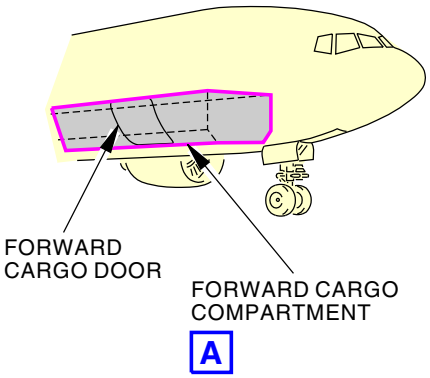

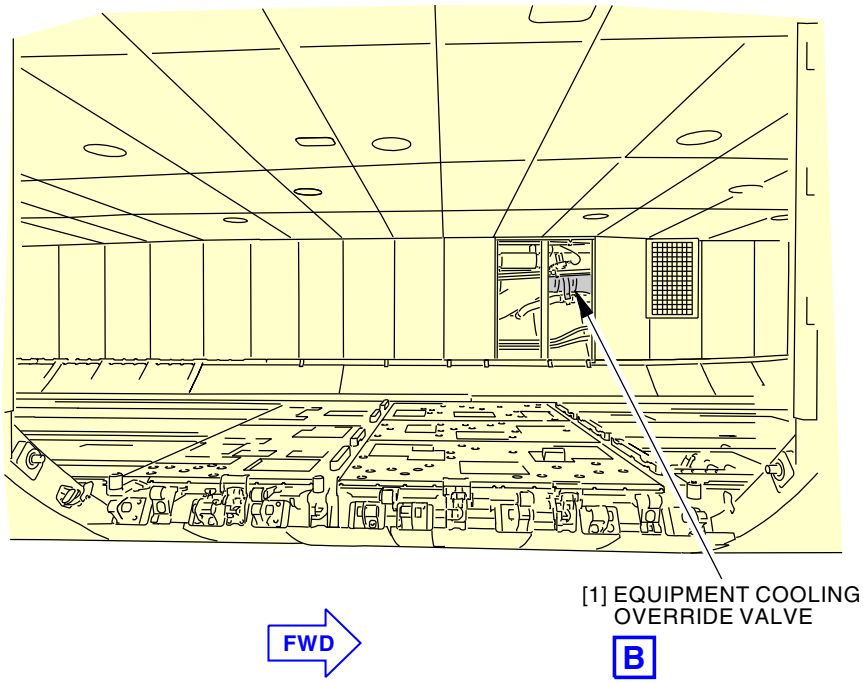

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Equipment Cooling Override Valve Installation
Figure 401/21-27-04-990-801 (Sheet 1 of 2)

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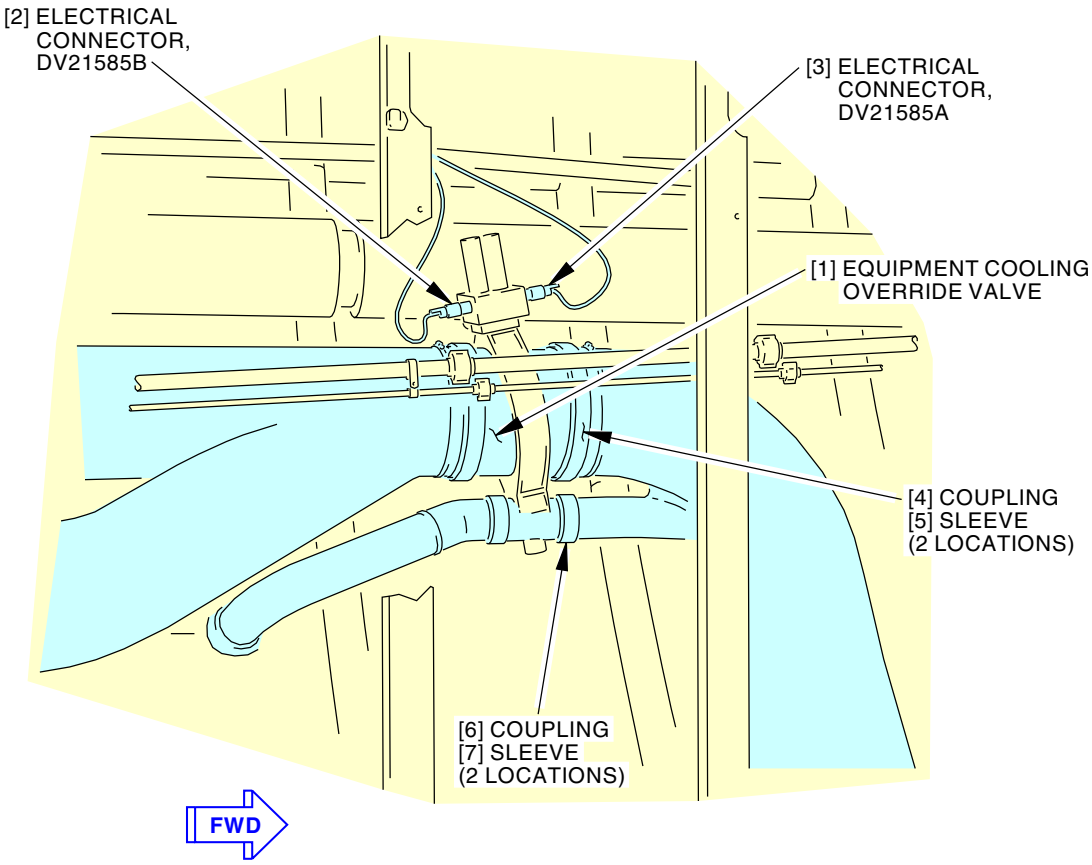

EQUIPMENT COOLING OVERRIDE VALVE

B

C99036 S0006403310_V3

Equipment Cooling Override Valve Installation
Figure 401/21-27-04-990-801 (Sheet 2 of 2)

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TASK 21-27-04-400-801

3. Equipment Cooling Override Valve Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. 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)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-819	How to Do a Ground Test (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)
WDM 21-27-61	Wiring Diagram Manual

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-27-04-01-105	ARO ALL

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Equipment Cooling Override valve Installation

SUBTASK 21-27-04-420-001

(1) Hold the equipment cooling override valve [1] in the correct position.

NOTE: The flow arrow must point forward.

SUBTASK 21-27-04-420-002

(2) Pull the two sleeves [5] onto the equipment cooling override valve [1].

SUBTASK 21-27-04-420-003

(3) Pull the two sleeves [7] onto the equipment cooling override valve [1].

SUBTASK 21-27-04-420-004

(4) Install the two couplings [4] and tighten them from 45 in-lb (5 N·m) to 55 in-lb (6 N·m).

SUBTASK 21-27-04-420-005

(5) Install the two couplings [6] and tighten them from 45 in-lb (5 N·m) to 55 in-lb (6 N·m).

SUBTASK 21-27-04-420-006

(6) Connect the electrical connector (DV21585A) [3] to the equipment cooling override valve [1].

SUBTASK 21-27-04-420-007

(7) Connect the electrical connector (DV21585B) [2] to the equipment cooling override valve [1].

NOTE: The electrical connector (DV21585A) [3] is for the left motor and electrical connector (DV21585B) [2] is for the right motor (WDM 21-27-61).

E. Equipment Cooling Override Valve Installation Test

SUBTASK 21-27-04-860-002

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

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SUBTASK 21-27-04-740-001

(2) Use a Maintenance Access Terminal (MAT) to do the System test of the Equipment Cooling Override Valve (TASK 45-10-00-740-819):

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Equipment Cooling
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 21-27-04-210-001

(3) Do the steps that follow to do an air leakage check of the equipment cooling override valve [1].

(a) Put your hand approximately six inches away from the equipment cooling override valve [1].

NOTE: You can only do an air leakage check of the nine-inch valve.

(b) If air leakage is felt, adjust these items until air leakage is not felt:

1) The equipment cooling override valve [1]
2) The two couplings [4] and two sleeves [5]
3) The two couplings [6] and two sleeves [7].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-04-010-003

(1) Install this sidewall liner in the forward cargo compartment (TASK 25-52-06-400-801).

NOTE: The left sidewall liner between STA 487.0 and STA 508.0.

SUBTASK 21-27-04-010-004

(2) Close the forward cargo door (TASK 52-34-00-860-803).

SUBTASK 21-27-04-860-006

(3) Remove electrical power if it is no longer necessary (TASK 24-22-00-860-806).

END OF TASK

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EQUIPMENT COOLING DUCT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling ducts at STA 445.0 to STA 505.0.

(2) An installation of the equipment cooling ducts at STA 445.0 to STA 505.0.

TASK 21-27-05-000-801

2. Equipment Cooling Duct Removal

(Figure 401)

A. General

(1) You must remove electrical power from the 115V AC Bus before you remove an equipment cooling duct. This will make sure the electrical/electronic equipment does not receive electrical power when the equipment cooling system is not in operation.

(2) You can supply external ground service power to use the airplanes internal lighting.

B. References

Reference	Title
21-27-04-000-801	Equipment Cooling Override Valve Removal (P/B 401)
21-27-20-000-801	Equipment Cooling Vent Fan Removal (P/B 401)
21-27-22-000-802-002	Forward Cargo Heat Valve Removal (P/B 401)
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-53-03-000-801	Roller Tray - Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right

D. Prepare for the Removal

SUBTASK 21-27-05-010-001

(1) Open the forward cargo door. To do this, do this task: (Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801).

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SUBTASK 21-27-05-860-001

CAUTION

REMOVE ELECTRICAL POWER FROM THE AIRPLANE. WHILE THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THERE IS NO AIRFLOW. WITHOUT AIRFLOW, ELECTRICAL, AND ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(2) Do this task: (Remove Electrical Power, TASK 24-22-00-860-806).

SUBTASK 21-27-05-860-002

(3) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: (Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811).

(b) Do this task: (Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812).

SUBTASK 21-27-05-010-002

(4) To get access to the equipment cooling ducts, remove these sidewall liners in the forward cargo compartment. To do this, do this task: (Sidewall Liner Removal, TASK 25-52-06-000-801).

(a) The left sidewall liner between STA 445.0 and STA 505.0.

(b) The right sidewall liner between STA 445.0 and STA 505.0.

SUBTASK 21-27-05-010-003

(5) To get access to the equipment cooling ducts, remove the applicable floor panels and walkways between STA 445.0 and STA 505.0 in the forward cargo compartment. To do this, do this task: (Floor Panels and Walkways Removal, TASK 25-52-10-000-801).

SUBTASK 21-27-05-010-004

(6) Remove the applicable roller trays that are above the equipment cooling ducts between STA 445.0 and STA 505.0. To remove the roller trays, do this task: (Roller Tray - Removal, TASK 25-53-03-000-801).

E. Equipment Cooling Duct Removal

SUBTASK 21-27-05-020-001

(1) To remove the equipment cooling supply ducts between STA 445.0 and STA 505.0, do the steps that follow:

(a) Remove the equipment cooling override valve. To do this, do this task: (Equipment Cooling Override Valve Removal, TASK 21-27-04-000-801).

(b) If necessary, remove the forward cargo heat valve to access the lower coverplate [4]. To do this, do this task: (Forward Cargo Heat Valve Removal, TASK 21-27-22-000-802-002).

(c) Remove the coverplate [4] at two locations. To do this, do these steps that follow:

1) Remove the bolt [6] and the washer [7] at ten locations.

2) Remove the coverplate [4] and the gasket [5] at two locations.

(d) Remove the clamp [8] at two locations and the sleeve [9].

(e) Remove the clamp [10] at two locations and the sleeve [11].

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(f) Remove the bolt [12] and the washer [13] at five locations.

(g) Remove the bolt [29] and washer [30] at four locations.

(h) Remove the equipment cooling supply duct [1].

(i) Remove the bolt [14] and the washer [15] at five locations.

(j) Remove the equipment cooling supply duct [2].

(k) Remove the equipment cooling supply duct [3].

SUBTASK 21-27-05-020-002

(2) To remove the equipment cooling exhaust ducts between STA 445.0 and STA 505.0, do the steps that follow:

(a) Remove the equipment cooling vent fan. To do this, do this task: (Equipment Cooling Vent Fan Removal, TASK 21-27-20-000-801).

(b) Remove the coverplate [19] at two locations. To do this, do these steps that follow:

1) Remove the bolt [21] and the washer [22] at ten locations.

2) Remove the coverplate [19] and the gasket [20] at two locations.

(c) Remove the clamp [23] at two locations and the sleeve [24].

(d) Remove the bolt [25] and the washer [26] at five locations.

(e) Remove the bolt [29] and washer [30] at four locations.

(f) Remove the equipment cooling exhaust duct [16].

(g) Remove the bolt [27] and the washer [28] at five locations.

(h) Remove the equipment cooling exhaust duct [17].

(i) Remove the equipment cooling exhaust duct [18].

——— END OF TASK ———

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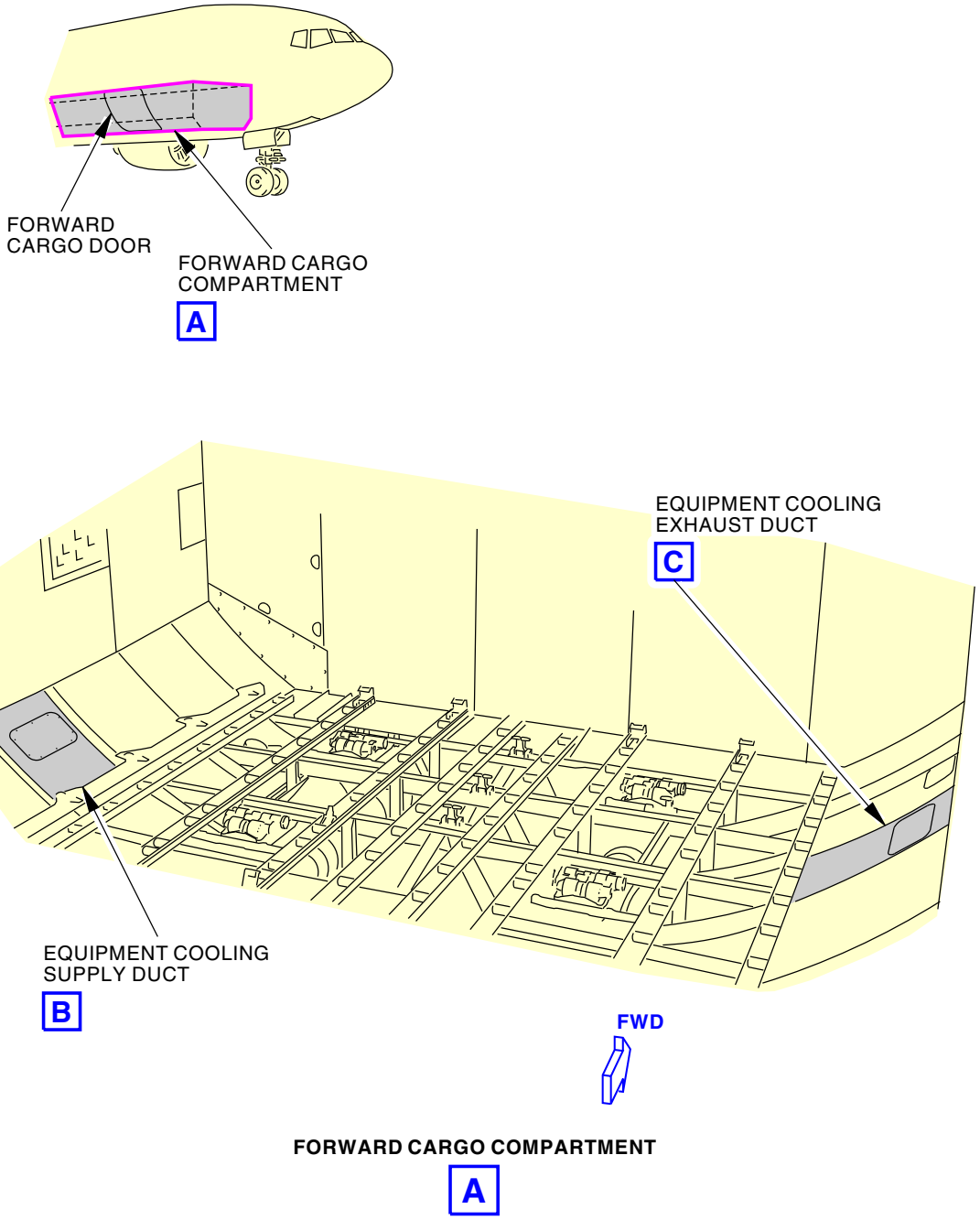

1631248 S0000298185_V2

Equipment Cooling Duct Installation
Figure 401/21-27-05-990-801 (Sheet 1 of 4)

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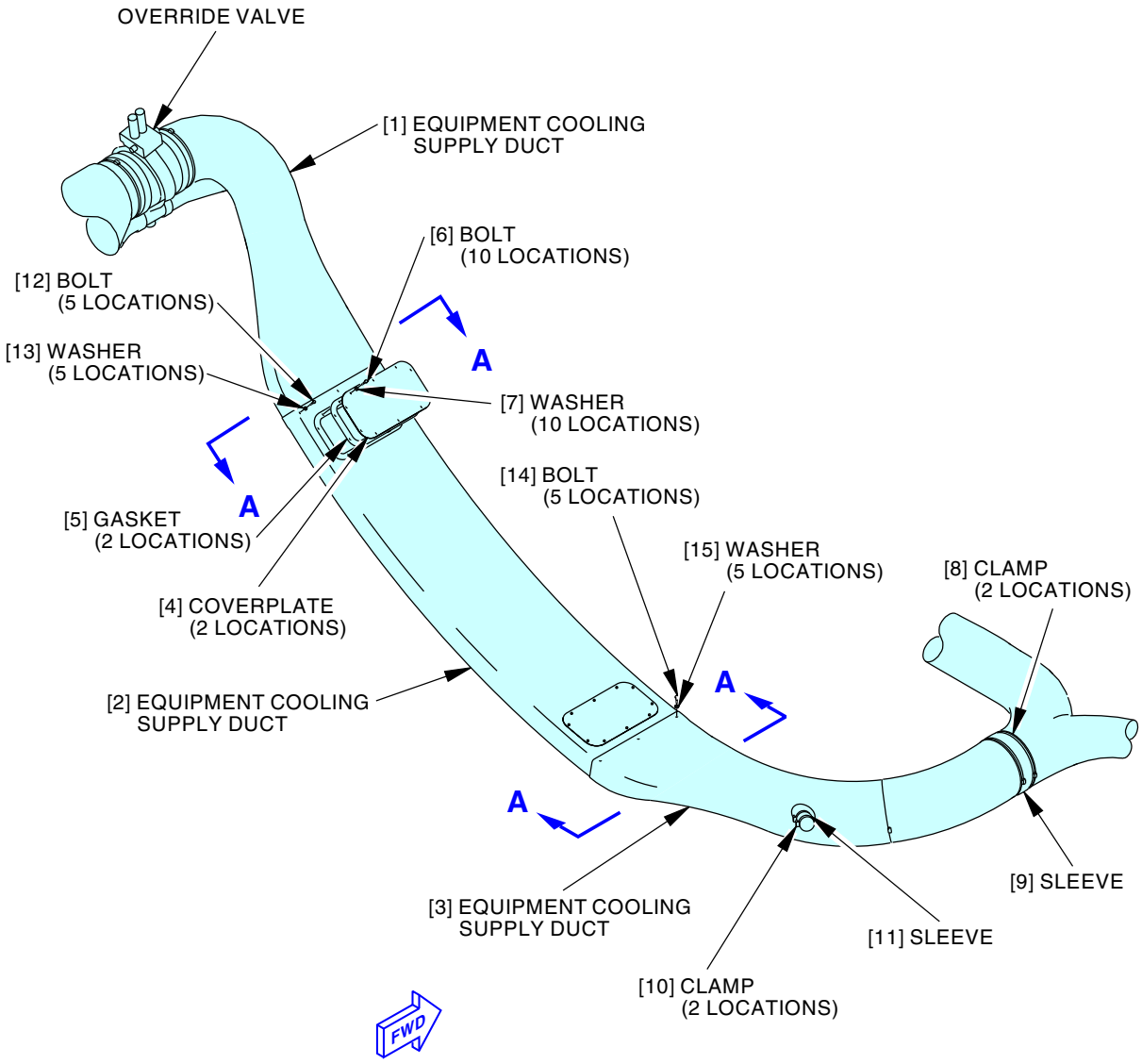

EQUIPMENT COOLING SUPPLY DUCT

B

1632031 S0000298916_V3

Equipment Cooling Duct Installation
Figure 401/21-27-05-990-801 (Sheet 2 of 4)

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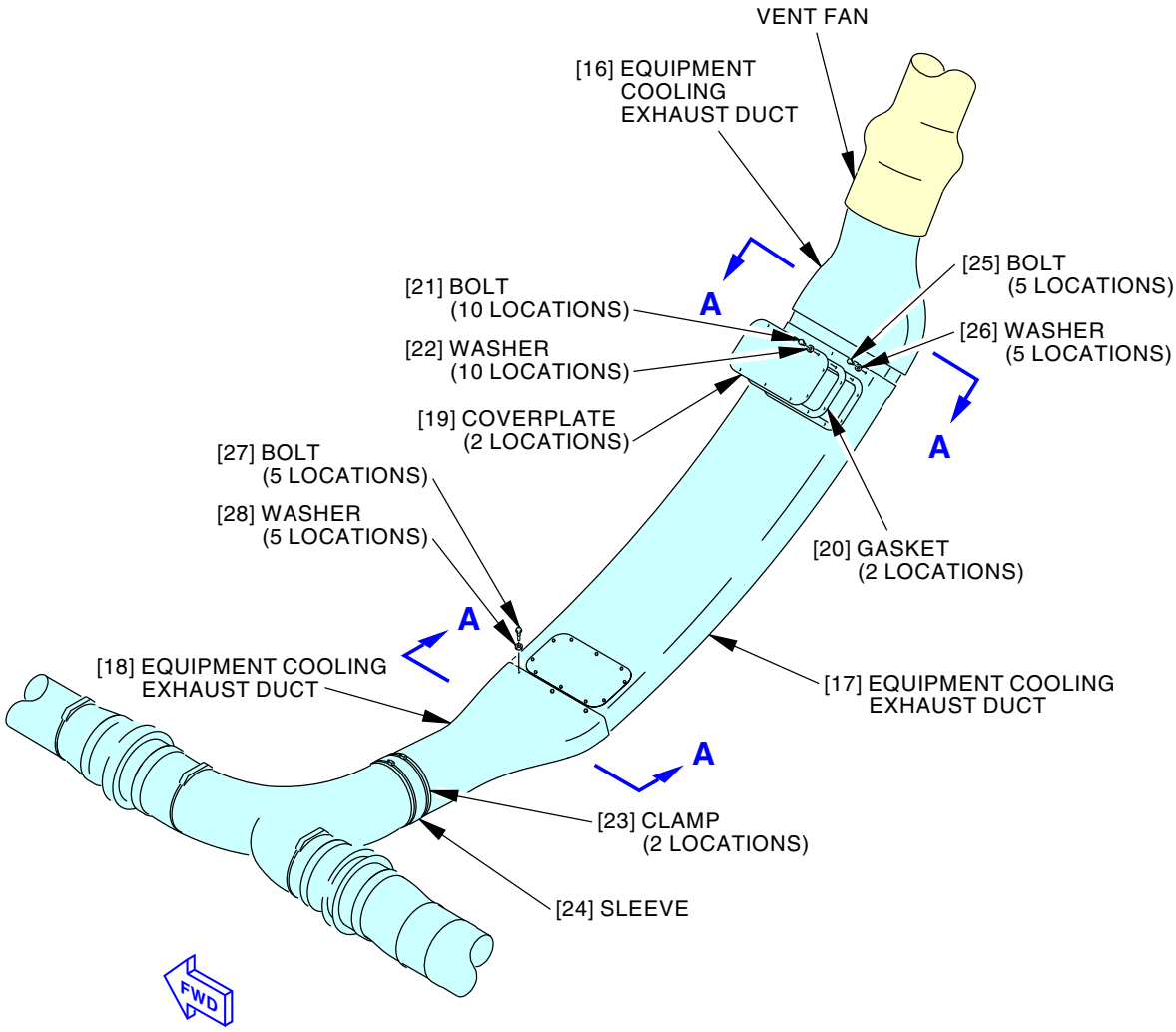

EQUIPMENT COOLING EXHAUST DUCT

C

1632083 S0000298918_V3

Equipment Cooling Duct Installation
Figure 401/21-27-05-990-801 (Sheet 3 of 4)

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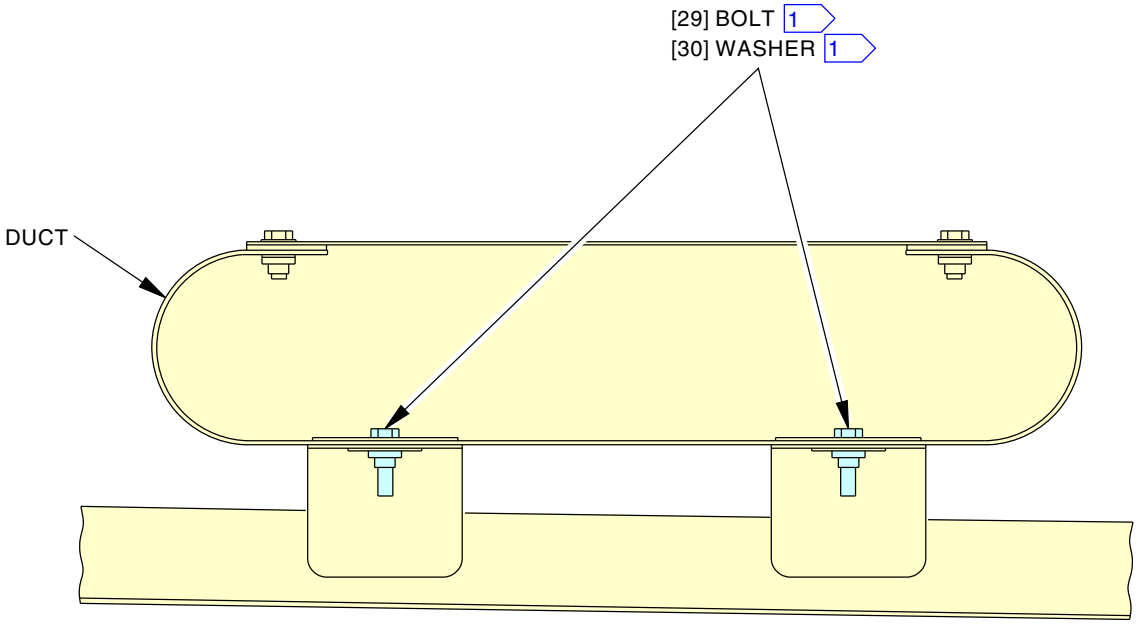

(EXAMPLE)

A-A

1 FOUR LOCATIONS EACH DUCT.

1903330 S0000350336_V2

Equipment Cooling Duct Installation
Figure 401/21-27-05-990-801 (Sheet 4 of 4)

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TASK 21-27-05-400-801

3. Equipment Cooling Duct Installation

(Figure 401)

A. References

Reference	Title
21-27-04-400-801	Equipment Cooling Override Valve Installation (P/B 401)
21-27-20-400-801	Equipment Cooling Vent Fan Installation (P/B 401)
21-27-22-400-802-002	Forward Cargo Heat Valve Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
25-53-03-400-801	Roller Tray - Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Consumable Materials

Reference	Description	Specification
A00281	Adhesive - Dow Corning 3145 RTV	MIL-A-46146 (BAC5010 Type 79)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Equipment cooling supply duct	21-27-04-01-045	ARO ALL
2	Equipment cooling supply duct	21-27-04-01-055	ARO ALL
3	Equipment cooling supply duct	21-27-04-01-050	ARO ALL
5	Gasket	21-27-04-01-085	ARO ALL
16	Equipment cooling exhaust duct	21-27-51-42-022	ARO ALL
17	Equipment cooling exhaust duct	21-27-51-42-065	ARO ALL
18	Equipment cooling exhaust duct	21-27-51-42-075	ARO ALL
20	Gasket	21-27-51-42-030	ARO ALL

D. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right

E. Equipment Cooling Duct Installation

SUBTASK 21-27-05-420-001

(1) To install the equipment cooling supply ducts between STA 445.0 and STA 505.0, do the steps that follow:

(a) Install the equipment cooling supply duct [3].

(b) Install the clamp [8] at two locations and the sleeve [9] to the duct.

1) Keep the clamps [8] loose until the remaining ducts are installed.

(c) Install the clamp [10] at two locations and the sleeve [11] to the duct.

1) Keep the clamps [10] loose until the remaining ducts are installed.

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(d) Position the equipment cooling supply duct [2] into the equipment cooling supply duct [3] and align the bolt holes.

(e) Apply Dow Corning 3145 RTV adhesive, A00281 to the side of the four washers [30] that will contact the equipment cooling supply duct [2].

(f) Install the bolts [29] and washers [30] at four locations with the Dow Corning 3145 RTV adhesive, A00281 between the washers [30] and the equipment cooling supply duct [2].

(g) Install the bolt [14] and the washer [15] at five locations.

(h) Tighten the bolt [14] to 25 in-lb (3 N·m) to 35 in-lb (4 N·m).

(i) Position the equipment cooling supply duct [1] into the equipment cooling supply duct [2] and align the bolt holes.

(j) Install the bolt [12] and the washer [13] at five locations.

(k) Tighten the bolt [12] to 25 in-lb (3 N·m) to 35 in-lb (4 N·m).

(l) Tighten the clamp [8] at two locations.

(m) Tighten the clamp [10] at two locations.

(n) Install the coverplate [4] at two locations. To do this, do these steps that follow:

1) Install the coverplate [4] and the gasket [5] at two locations.

2) Install the bolt [6] and the washer [7] at ten locations.

3) Tighten the bolt [6] to 25 in-lb (3 N·m) to 35 in-lb (4 N·m)

(o) Install the equipment cooling override valve. To do this, do this task: (Equipment Cooling Override Valve Installation, TASK 21-27-04-400-801).

(p) If removed, install the forward cargo heat valve. To do this, do this task: (Forward Cargo Heat Valve Installation, TASK 21-27-22-400-802-002).

SUBTASK 21-27-05-420-002

(2) To install the equipment cooling exhaust ducts between STA 445.0 and STA 505.0, do the steps that follow:

(a) Install the equipment cooling exhaust duct [18].

(b) Install the clamp [23] at two locations and the sleeve [24] to the duct.

1) Keep the clamps [23] loose until the remaining ducts are installed.

(c) Position the equipment cooling exhaust duct [17] into the equipment cooling exhaust duct [18] and align the bolt holes.

(d) Apply Dow Corning 3145 RTV adhesive, A00281 to the side of the fourwashers [30] that will contact the equipment cooling exhaust duct [17].

(e) Install the bolts [29] and washers [30] at four locations with the Dow Corning 3145 RTV adhesive, A00281 between the washers [30] and the equipment cooling exhaust duct [17].

(f) Install the bolt [27] and the washer [28] at five locations.

(g) Tighten the bolt [27] to 25 in-lb (3 N·m) to 35 in-lb (4 N·m).

(h) Position the equipment cooling exhaust duct [16] into the equipment cooling exhaust duct [17] and align the bolt holes.

(i) Install the bolt [25] and the washer [26] at five locations.

(j) Tighten the bolt [25] to 25 in-lb (3 N·m) to 35 in-lb (4 N·m).

(k) Tighten the clamp [23] at two locations.

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(l) Install the coverplate [19] at two locations. To do this, do these steps that follow:

1) Install the coverplate [19] and the gasket [20] at two locations.

2) Install the bolt [21] and the washer [22] at ten locations.

3) Tighten the bolt [21] to 25 in-lb (3 N·m) to 35 in-lb (4 N·m).

(m) Install the equipment cooling vent fan. To do this, do this task: (Equipment Cooling Vent Fan Installation, TASK 21-27-20-400-801).

F. Equipment Cooling Duct Leakage Check

SUBTASK 21-27-05-860-003

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

SUBTASK 21-27-05-860-004

(2) Make sure that the EQUIP COOLING switch on the P5 overhead panel is in the AUTO position.

SUBTASK 21-27-05-700-001

(3) Use your hand to make sure that there is no air leakage at a distance of 2 inches (51mm) from the duct or duct joint.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-05-410-001

(1) Install the applicable roller trays that are above the equipment cooling duct between STA 445.0 and STA 505.0. To install the roller trays, do this task: (Roller Tray - Installation, TASK 25-53-03-400-801).

SUBTASK 21-27-05-410-002

(2) Install the applicable floor panels and walkways between STA 445.0 and STA 505.0 in the forward cargo compartment. To do this, do this task: (Floor Panels and Walkways Installation, TASK 25-52-10-400-801).

SUBTASK 21-27-05-410-003

(3) Install these sidewall liners in the forward cargo compartment. To do this, do this task: (Sidewall Liner Installation, TASK 25-52-06-400-801).

(a) The left sidewall liner between STA 445.0 and STA 505.0.

(b) The right sidewall liner between STA 445.0 and STA 505.0.

SUBTASK 21-27-05-410-004

(4) Close the forward cargo door. To do this, do this task: (Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803).

——— END OF TASK ———

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CONVERTER SUPPLEMENTAL COOLING CHECK VALVE (VSCF) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the converter supplemental cooling check valve (VSCF).

(2) An installation of the converter supplemental cooling check valve (VSCF).

TASK 21-27-06-000-801

2. Converter Supplemental Cooling Check Valve (VSCF) Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You must remove electrical power from the airplane before you remove the check valve. This will make sure the electrical/electronic equipment does not receive electrical power when the Equipment Cooling System is not in operation.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-27-06-860-001

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-06-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Check Valve Removal

SUBTASK 21-27-06-020-001

(1) Loosen the two clamps [2] which attach the sleeve [3] and sleeve [4] to the check valve [1].

SUBTASK 21-27-06-020-002

(2) Remove the check valve [1].

END OF TASK

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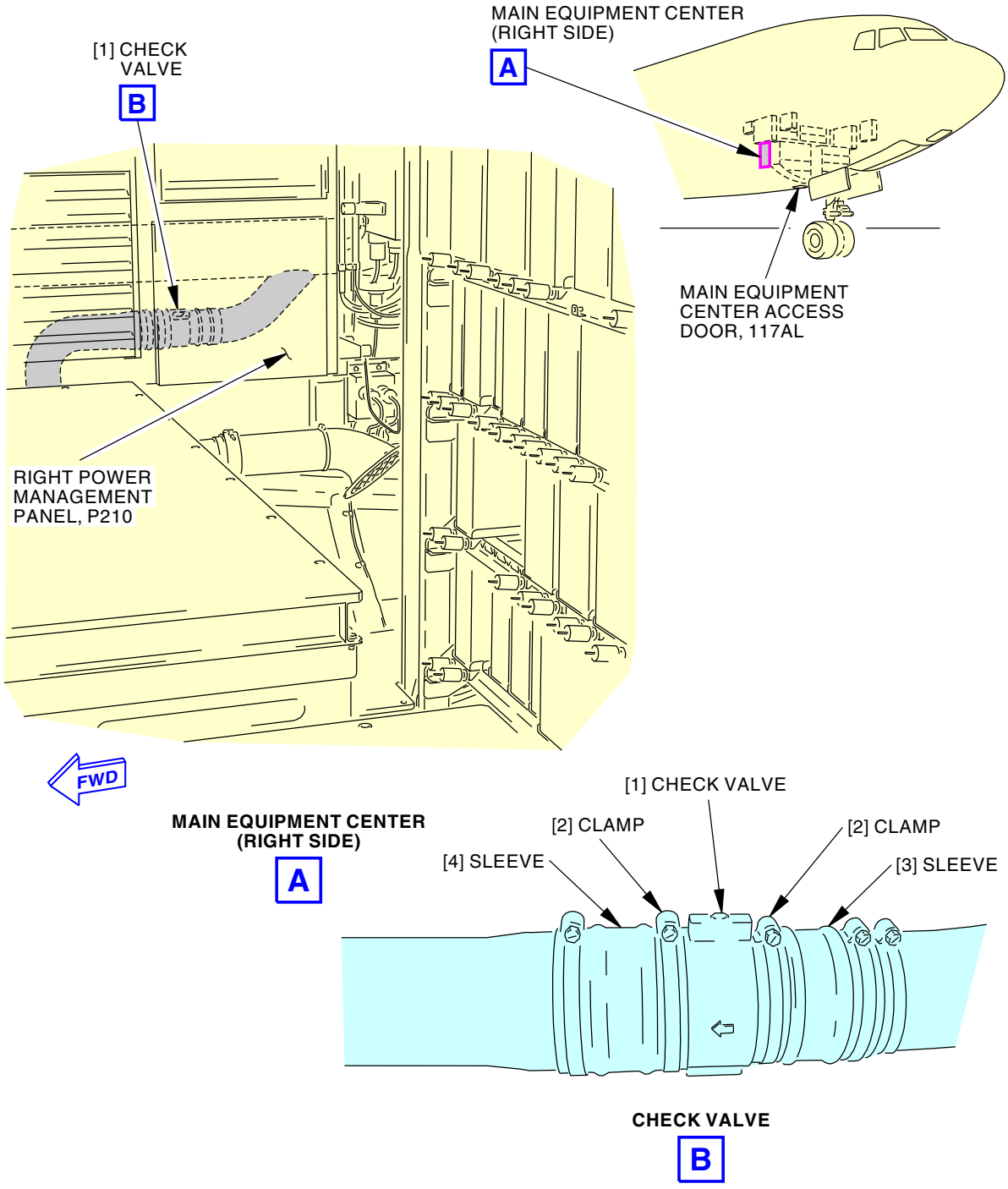

Converter Supplemental Cooling Check Valve (VSCF) Installation
Figure 401/21-27-06-990-801

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TASK 21-27-06-400-801

3. Converter Supplemental Cooling Check Valve (VSCF) Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

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

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Check valve	21-27-06-01-120	ARO ALL

C. Location Zones

Zone	Area
118	Main Equipment Center, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Check Valve Installation

SUBTASK 21-27-06-420-001

(1) Put the check valve [1] into the sleeve [3] and sleeve [4].

NOTE: Make sure the flow arrow points down.

SUBTASK 21-27-06-420-002

(2) Tighten the two clamps [2].

F. Check Valve Leakage Check

SUBTASK 21-27-06-860-002

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

SUBTASK 21-27-06-210-001

(2) Use your hand to feel for air leakage where the sleeve [3] and sleeve [4] are attached to the check valve [1].

NOTE: You should not feel air leakage.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-06-410-001

(1) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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EQUIPMENT COOLING LOW FLOW SENSORS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling low flow sensors.

(2) An installation of the equipment cooling low flow sensors.

B. There are two low flow sensors installed in the forward equipment cooling system. One flow sensor is in the supply duct that goes to the electrical/electronic equipment racks in the Main Equipment Center. The other equipment cooling low flow sensor is in the supply duct that goes to the flight deck. Each low flow sensor determines the temperature of the air in the duct and the air flow rate in the duct.

TASK 21-27-07-000-801

2. Equipment Cooling Low Flow Sensors Removal

A. General

(1) You must remove electrical power from the airplane before you remove one of the equipment cooling low flow sensors. This will make sure the electrical/electronic equipment does not receive electrical power when the equipment cooling system is not in operation.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
124	Area Below Forward Cargo Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-27-07-010-001

(1) Do the steps which follow to get access to the equipment cooling low flow sensor that is in the supply duct that goes to the Main Equipment Center:

(a) Open the forward cargo door (TASK 52-34-00-860-801).

(b) Remove the floor panel(s) which are aft of the main equipment center bulkhead liner and near the centerline of the forward cargo compartment (TASK 25-52-10-000-801).

NOTE: The floor panels are shown on Figure 401.

SUBTASK 21-27-07-010-002

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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to get access to the equipment cooling low flow sensor that is in the supply duct that goes to the Flight Deck.

SUBTASK 21-27-07-860-001

CAUTION

MAKE SURE THAT YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

F. Equipment Cooling Low Flow Sensor (Equipment Bay) Removal

(Figure 401)

SUBTASK 21-27-07-020-001

(1) Disconnect the electrical connector [3].

SUBTASK 21-27-07-020-002

(2) Remove the three screws [4] and three washers [5].

SUBTASK 21-27-07-020-003

(3) Remove the drip shield [2].

SUBTASK 21-27-07-020-004

(4) Remove the equipment cooling low flow sensor [1].

SUBTASK 21-27-07-020-005

(5) Remove the gasket [6] and discard.

G. Equipment Cooling Low Flow Sensor (Flight Deck) Removal

(Figure 402)

SUBTASK 21-27-07-020-006

(1) Disconnect the electrical connector [25].

SUBTASK 21-27-07-020-007

(2) Remove the three screws [24] and three washers [23].

SUBTASK 21-27-07-020-008

(3) Remove the equipment cooling low flow sensor [21].

SUBTASK 21-27-07-020-009

(4) Remove the gasket [22] and discard.

END OF TASK

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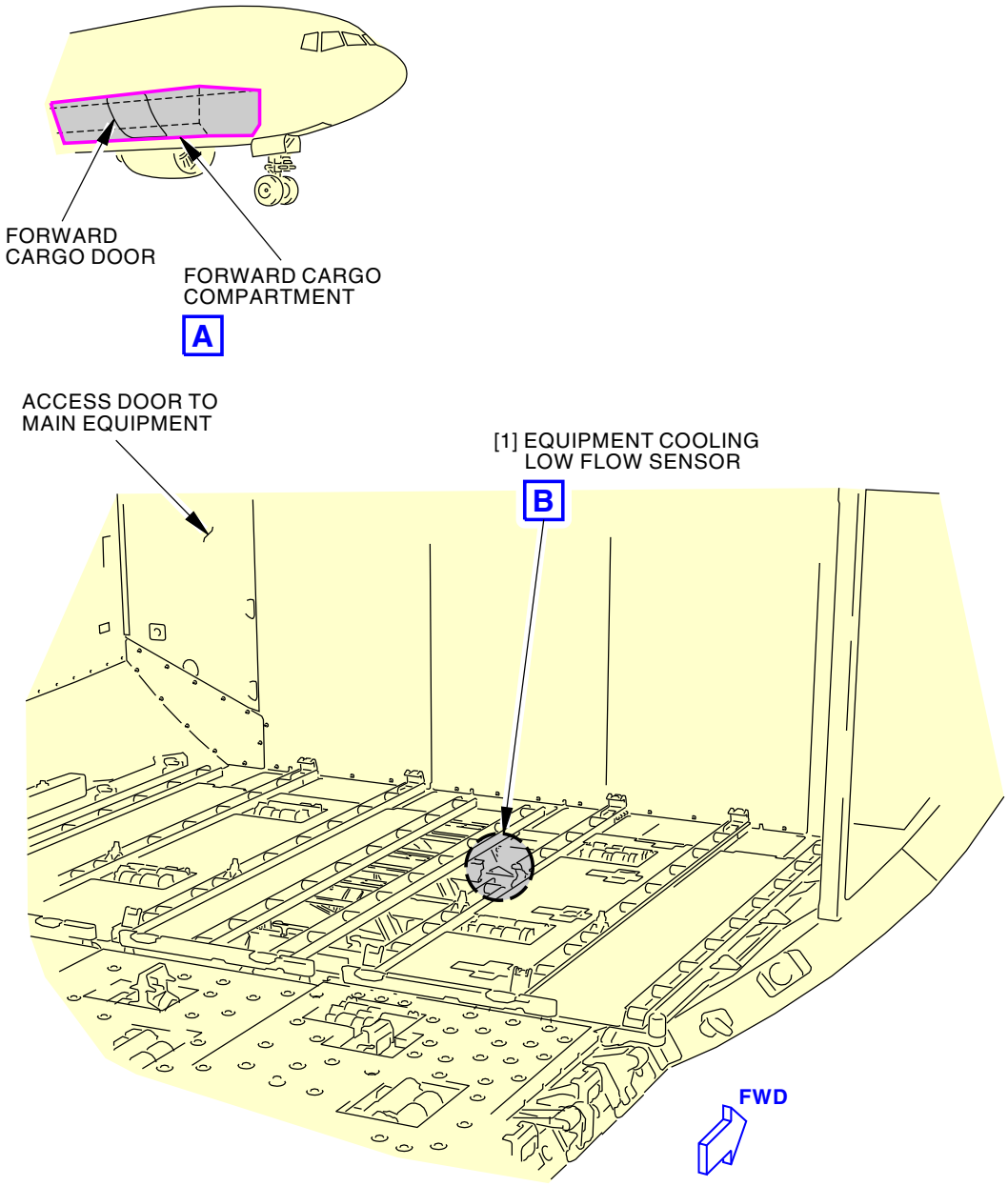

FORWARD CARGO COMPARTMENT

A

NOTE:

THE FLOOR PANELS NEAR THE CENTERLINE OF THE CARGO COMPARTMENT ARE NOT SHOWN.

D09040 S0006403322_V2

Equipment Cooling Low Flow Sensor (Equipment Bay) Installation
Figure 401/21-27-07-990-801 (Sheet 1 of 2)

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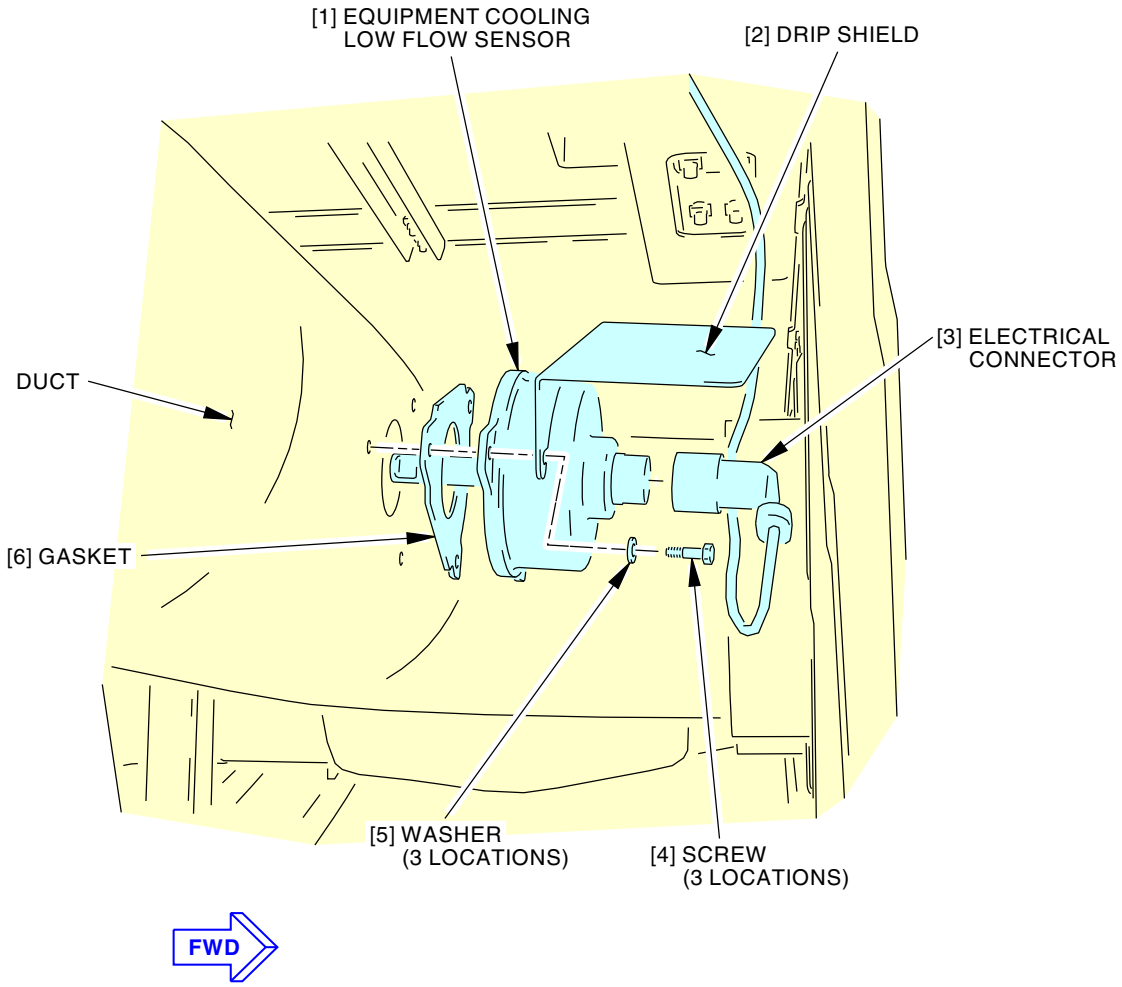

EQUIPMENT COOLING LOW FLOW SENSOR

B

D08964 S0006403323_V2

Equipment Cooling Low Flow Sensor (Equipment Bay) Installation
Figure 401/21-27-07-990-801 (Sheet 2 of 2)

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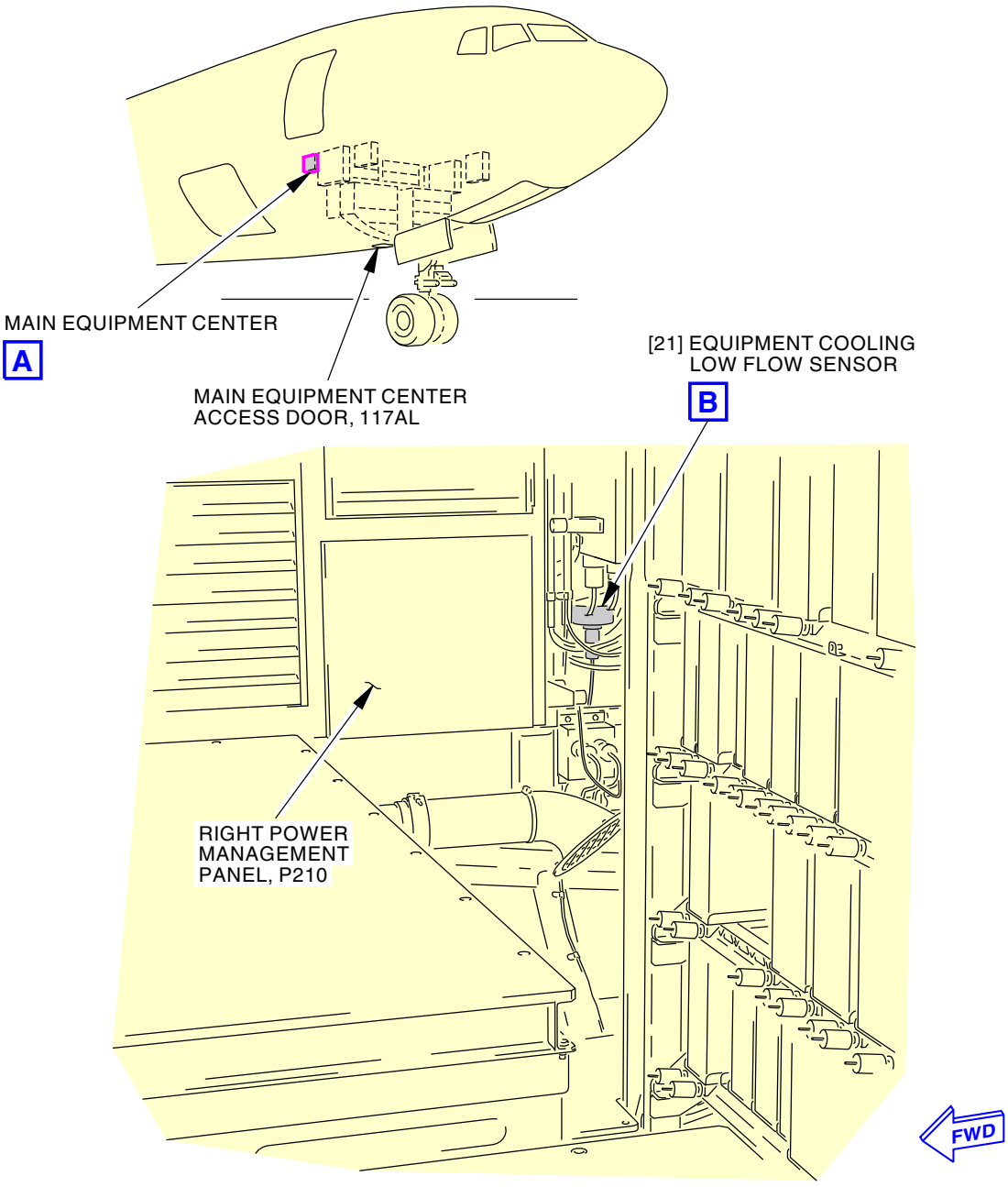

MAIN EQUIPMENT CENTER

A

D11237 S0006403324_V2

Equipment Cooling Low Flow Sensor (Flight Deck) Installation
Figure 402/21-27-07-990-802 (Sheet 1 of 2)

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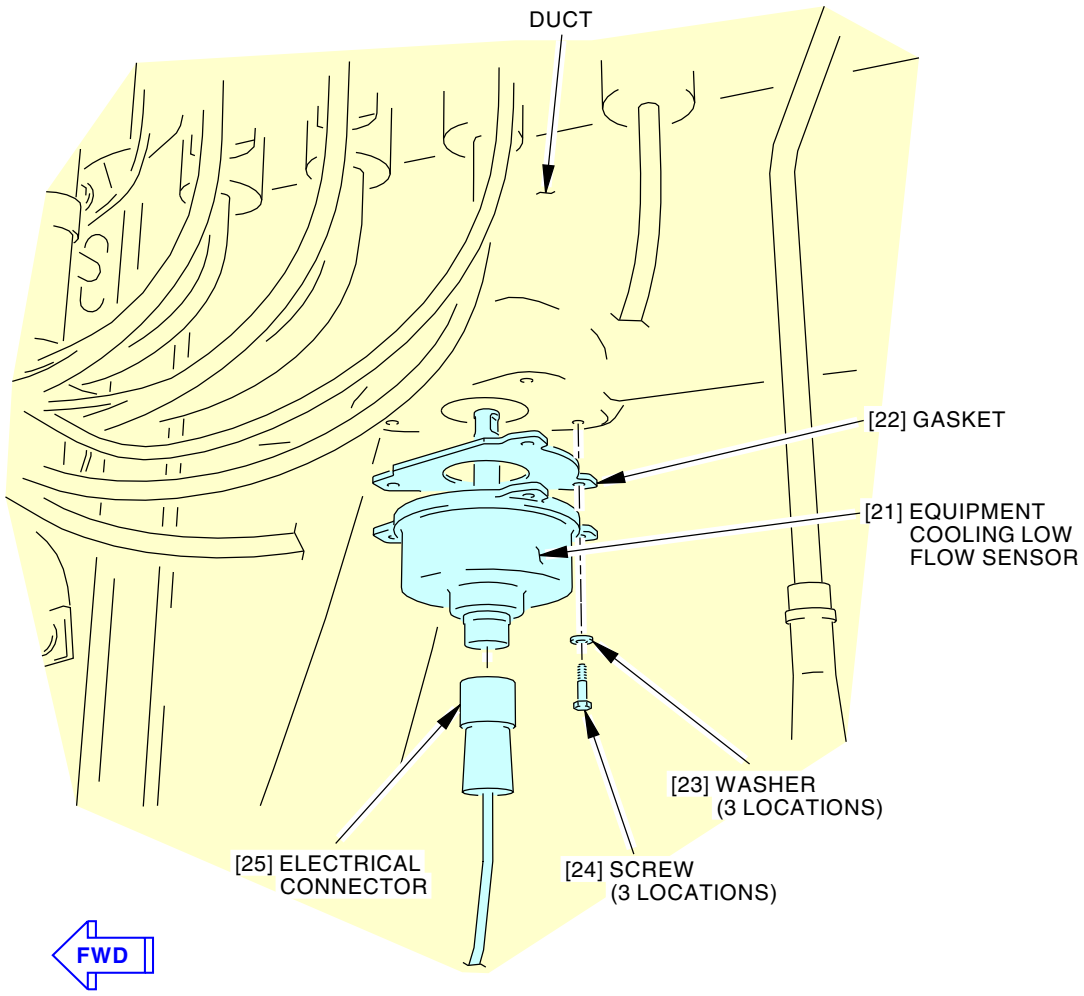

EQUIPMENT COOLING LOW FLOW SENSOR

B

D11046 S0006403325_V2

Equipment Cooling Low Flow Sensor (Flight Deck) Installation
Figure 402/21-27-07-990-802 (Sheet 2 of 2)

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TASK 21-27-07-400-801

3. Equipment Cooling Low Flow Sensors Installation

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-27-07-01-135	ARO ALL
6	Gasket	21-27-07-01-105	ARO ALL
21	Sensor	21-27-07-01-135	ARO ALL
22	Gasket	21-27-07-01-105	ARO ALL

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
124	Area Below Forward Cargo Compartment, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Equipment Cooling Low Flow Sensor (Equipment Bay) Installation

(Figure 401)

SUBTASK 21-27-07-420-001

(1) Put a new gasket [6] and the equipment cooling low flow sensor [1] on the duct.

SUBTASK 21-27-07-420-002

(2) Hold the drip shield [2] on the equipment cooling low flow sensor [1].

SUBTASK 21-27-07-420-003

(3) Install the three screws [4] and three washers [5].

SUBTASK 21-27-07-420-004

(4) Connect the electrical connector [3].

F. Equipment Cooling Low Flow Sensor (Flight Deck) Installation

(Figure 402)

SUBTASK 21-27-07-420-005

(1) Put a new gasket [22] and the equipment cooling low flow sensor [21] on the duct.

SUBTASK 21-27-07-420-006

(2) Install the three screws [24] and three washers [23].

SUBTASK 21-27-07-420-007

(3) Connect the electrical connector [25].

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G. Equipment Cooling Low Flow Sensors Installation Test

SUBTASK 21-27-07-860-002

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

SUBTASK 21-27-07-740-001

(2) Use a maintenance access terminal (MAT) to do an LRU Replacement test of the equipment cooling low flow sensors (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) LRU REPLACEMENT TEST
6) Equipment Cooling
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.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-07-010-003

(1) Do the steps which follow if you removed the equipment cooling low flow sensor that is in the supply duct that goes to the Main Equipment Center:

(a) Install the floor panel(s) (TASK 25-52-10-400-801).

(b) Close the forward cargo door (TASK 52-34-00-860-803).

SUBTASK 21-27-07-010-004

(2) If you removed the equipment cooling low flow sensor that is in the supply duct that goes to the Flight Deck, do this task:

Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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EQUIPMENT COOLING DUCT PRESSURE SENSORS - MAINTENANCE PRACTICES

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) Equipment Cooling Duct Pressure Sensors Check.

TASK 21-27-08-740-801

2. Equipment Cooling Duct Pressure Sensors Check

A. General

(1) Use this task to determine if one or more equipment cooling duct pressure sensors are inoperative.

B. Equipment Cooling Duct Pressure Sensor Check

SUBTASK 21-27-08-860-005

(1) Do these steps on a MAT to determine if one or more equipment cooling duct pressure sensors are inoperative:

(a) On a maintenance access terminal, select ONBOARD MAINTENANCE from the initial MAT menu.

(b) Select EXTENDED MAINTENANCE from the CMCS main menu.

(c) Select EXISTING FAULTS from the extended maintenance menu.

(d) Select ATA 21 Environmental Control System from the ATA selection dialog box.

NOTE: If ATA 21 Environmental Control System does not show in the dialog box, then there are no ACTIVE or LATCHED maintenance messages in ATA 21.

(e) Select CONTINUE.

(f) Make sure there are no maintenance messages for the equipment cooling duct pressure sensors.

C. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-08-860-006

(1) To go back to the initial MAT menu, do this:

(a) Select LINE MAINTENANCE from the CMCS main menu.

(b) Select EXIT MAINTENANCE from the line maintenance menu.

——— END OF TASK ———

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EQUIPMENT COOLING DUCT PRESSURE SENSORS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling duct pressure sensors.

(2) An installation of the equipment cooling duct pressure sensors.

B. There is an equipment cooling duct pressure sensor installed in these ducts:

(1) E4 rack supply duct

(2) E5 rack supply duct

(3) Flight deck supply duct

(4) VSCF supply duct.

C. The equipment cooling duct pressure sensors will be called duct pressure sensors in this procedure.

D. The duct pressure sensors send a duct pressure signal to the ECS Miscellaneous Cards (ECSMC's). If a duct is damaged, the signal will show low duct pressure and the applicable maintenance message will be set.

TASK 21-27-08-000-801

2. Equipment Cooling Duct Pressure Sensors Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane before you remove a duct pressure sensor. This will make sure the electrical/electronic equipment does not receive electrical power when the equipment cooling system is not in operation.

(2) The duct pressure sensors are found as follows:

(a) The duct pressure sensor for the E4 rack supply duct is found under the battery on the forward side of the supply duct.

(b) The duct pressure sensor for the E5 rack supply duct is found behind the sidewall liners on the right side of the forward cargo compartment. It is found aft of the forward cargo door.

(c) The duct pressure sensor for the flight deck supply duct is found in the supply duct that is forward of the nose landing gear wheel well.

(d) The duct pressure sensor for the VSCF supply duct is found in the supply duct that is below the right power management panel, P210.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
118	Main Equipment Center, Right
122	Forward Cargo Compartment, Right

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D. Access Panels

Number	Name/Location
112AL	Forward Access Door
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-27-08-010-005

(1) To get access to the duct pressure sensor for the E4 rack supply duct, do this step:

Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-08-010-006

(2) To get access to the duct pressure sensor for the E5 rack supply duct, do these steps:

(a) Open the forward cargo door (TASK 52-34-00-860-801).

(b) Remove the vertical liner on the right sidewall just aft of the forward cargo door (TASK 25-52-06-000-801).

SUBTASK 21-27-08-010-007

(3) To get access to the duct pressure sensor for the flight deck supply duct, do this step:

Open this access panel:

Number	Name/Location
112AL	Forward Access Door

SUBTASK 21-27-08-010-008

(4) To get access to the duct pressure sensor for the VSCF supply duct, do this step:

Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-08-860-004

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(5) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

F. Duct Pressure Sensor Removal

SUBTASK 21-27-08-020-004

(1) Disconnect the electrical connector [2] from the duct pressure sensor [1].

SUBTASK 21-27-08-020-005

(2) Remove the lockwire which attaches the duct pressure sensor [1] to the boss on the duct.

SUBTASK 21-27-08-020-006

(3) Turn the duct pressure sensor [1] counterclockwise until you can remove it from the boss.

END OF TASK

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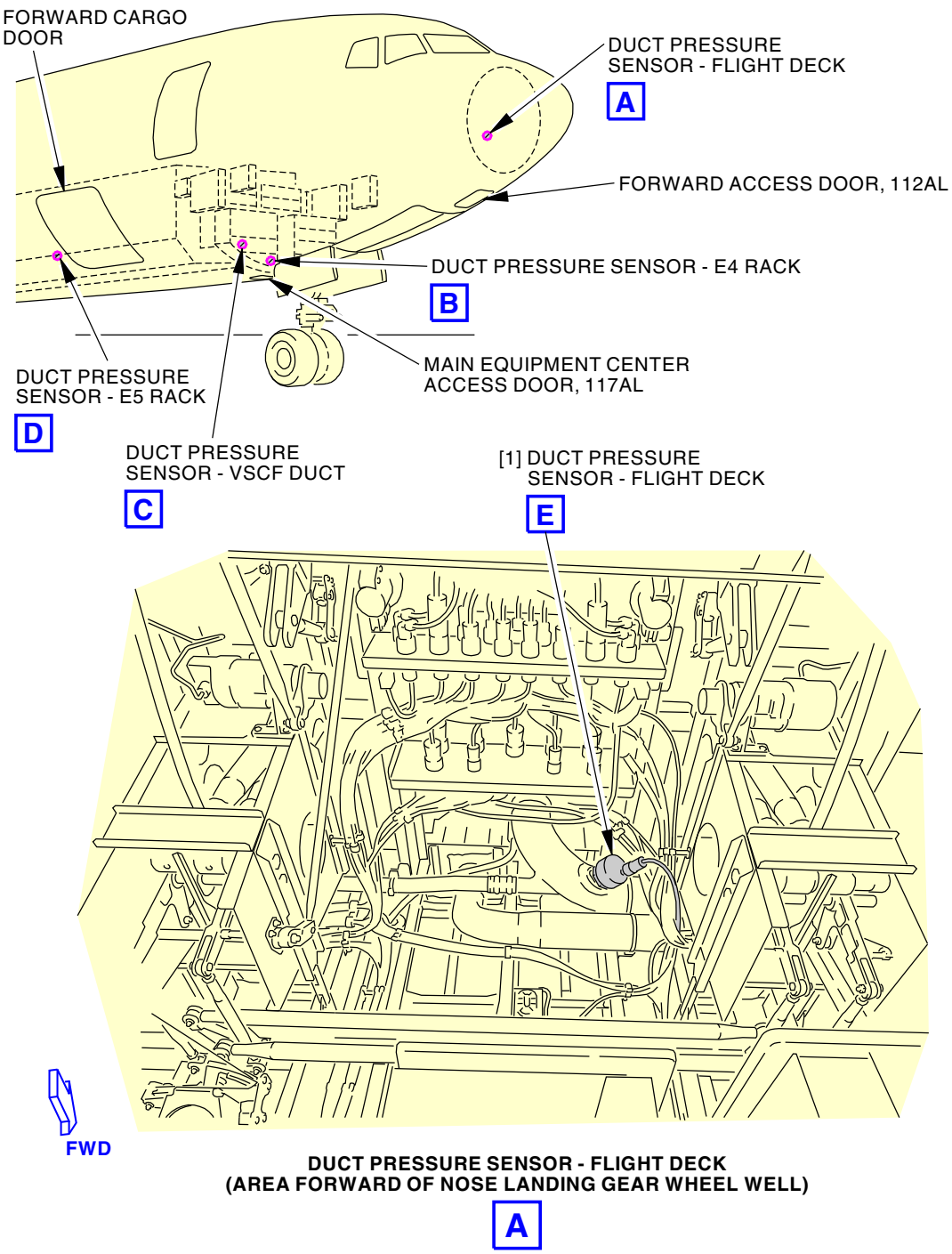

Equipment Cooling Duct Pressure Sensors Installation
Figure 401/21-27-08-990-801 (Sheet 1 of 3)

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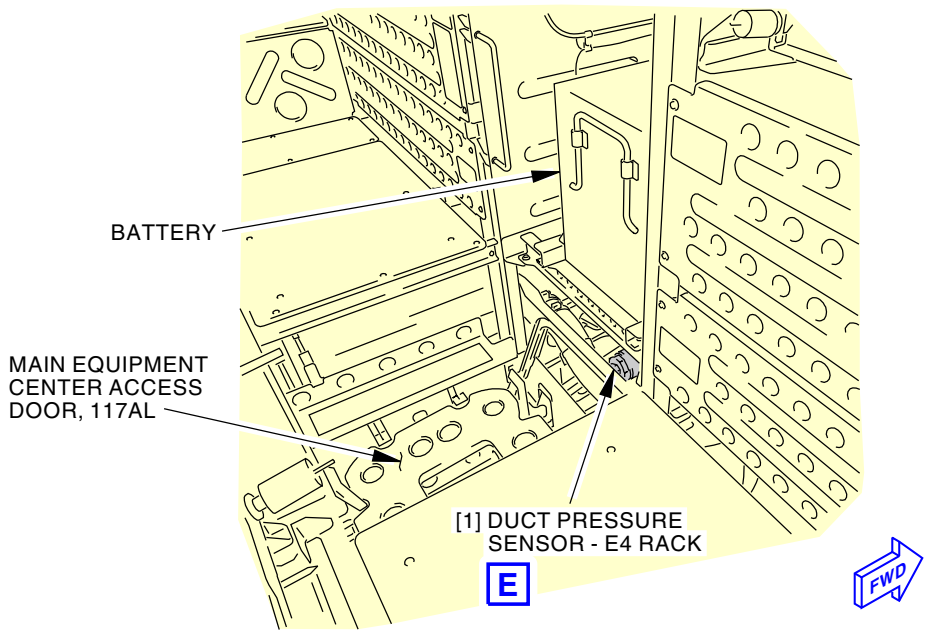
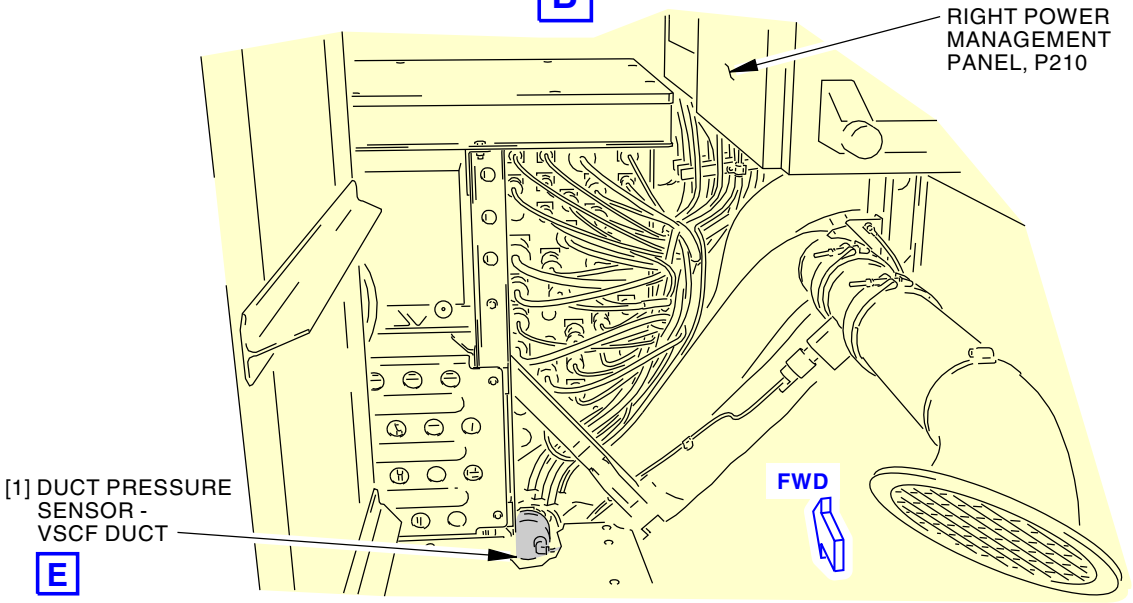


DUCT PRESSURE SENSOR - E4 RACK (MAIN EQUIPMENT CENTER)

B



DUCT PRESSURE SENSOR - VSCF DUCT (MAIN EQUIPMENT CENTER)

C

D13018 S0006403333_V2

Equipment Cooling Duct Pressure Sensors Installation
Figure 401/21-27-08-990-801 (Sheet 2 of 3)

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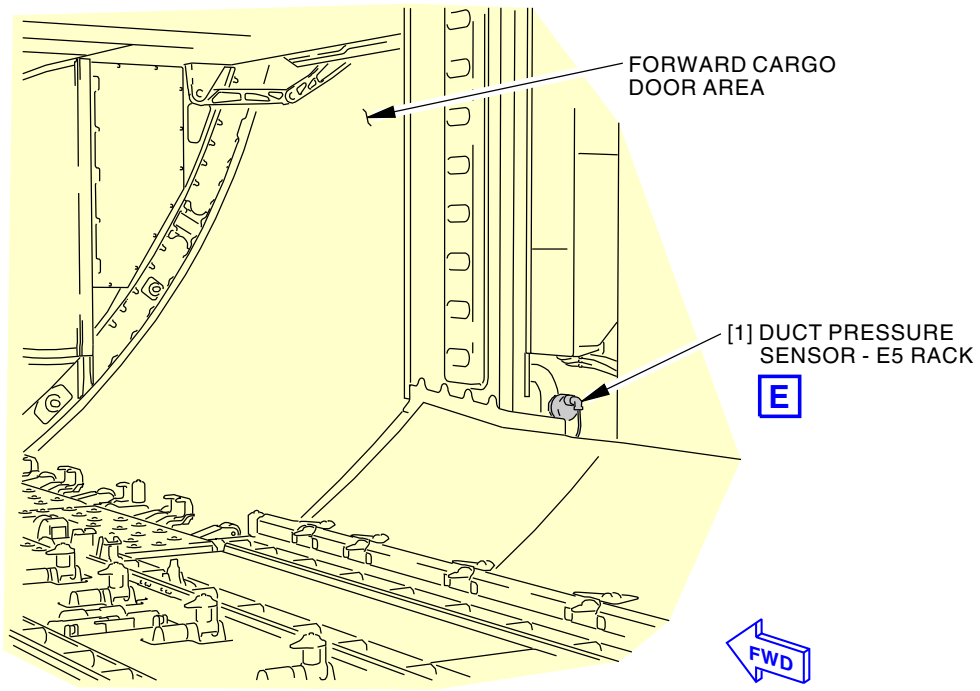
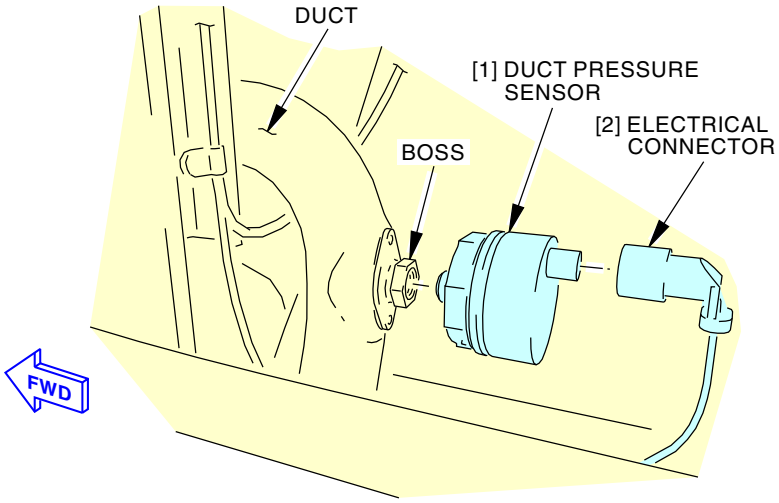


DUCT PRESSURE SENSOR - E5 RACK (FORWARD CARGO COMPARTMENT)

D



NOTE:

THE DUCT PRESSURE SENSOR FOR THE E5 RACK IS SHOWN. THE OTHER DUCT PRESSURE SENSOR INSTALLATIONS ARE EQUIVALENT.

DUCT PRESSURE SENSOR (EXAMPLE)

E

D14200 S0006403334_V2

Equipment Cooling Duct Pressure Sensors Installation
Figure 401/21-27-08-990-801 (Sheet 3 of 3)

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TASK 21-27-08-400-801

3. Equipment Cooling Duct Pressure Sensors Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00010	Compound - Thread Antiseize, High Temperature	MIL-PRF-907

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-27-08-01-345	ARO ALL
		21-27-08-05-170	ARO ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
118	Main Equipment Center, Right
122	Forward Cargo Compartment, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
112AL	Forward Access Door
117AL	Main Equipment Center Access Door

F. Duct Pressure Sensor Installation

SUBTASK 21-27-08-640-001

(1) Apply a thin layer of the compound, D00010 to the threads of the duct pressure sensor [1].

SUBTASK 21-27-08-420-001

(2) Turn the duct pressure sensor [1] clockwise until it is fully engaged into the boss on the duct.

SUBTASK 21-27-08-420-002

(3) Install a lockwire to attach the duct pressure sensor [1] to the boss.

SUBTASK 21-27-08-420-003

(4) Connect the electrical connector [2] to the duct pressure sensor [1].

G. Duct Pressure Sensor Installation Test

SUBTASK 21-27-08-860-002

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

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SUBTASK 21-27-08-740-001

(2) Use a maintenance access terminal (MAT) to do an LRU Replacement Test of the duct pressure sensors (TASK 45-10-00-740-808):

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) LRU REPLACEMENT TEST
6) Equipment Cooling
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.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-08-410-001

(1) If you replaced the duct pressure sensor for the E4 rack supply duct, do this task:

Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-08-410-002

(2) If you replaced the duct pressure sensor for the E5 rack supply duct, do these steps:

(a) Install the vertical liner on the right sidewall (TASK 25-52-06-400-801).

(b) Close the forward cargo door (TASK 52-34-00-860-803).

SUBTASK 21-27-08-410-003

(3) If you replaced the duct pressure sensor for the flight deck supply duct, do this task:

Close this access panel:

Number	Name/Location
112AL	Forward Access Door

SUBTASK 21-27-08-410-004

(4) If you replaced the duct pressure sensor for the VSCF supply duct, do this task:

Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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EQUIPMENT COOLING VENT FAN - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Equipment cooling vent fan - deactivation

(2) Equipment cooling vent fan - activation.

TASK 21-27-20-040-801

2. Equipment Cooling Vent Fan - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the equipment cooling vent fan.

B. References

Reference	Title
24-00-00-040-805-001	Electrical Power/Power Panels - Deactivation (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)

C. Location Zones

Zone	Area
122	Forward Cargo Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-27-20-860-003

CAUTION REMOVE ELECTRICAL POWER FROM THE AIRPLANE. WHILE THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THERE IS NO AIRFLOW. WITHOUT AIRFLOW, ELECTRICAL, AND ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-20-010-003

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-20-020-010

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

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(WARNING PRECEDES)

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	28	C21601	EQPT CLG VENT FAN CTRL

F. Equipment Cooling Vent Fan - Tryout

NOTE: This tryout is to make sure that the equipment cooling vent fan is in a zero energy state.

SUBTASK 21-27-20-860-005

(1) Make sure that the power to the airplane is removed, TASK 24-00-00-040-805-001.

SUBTASK 21-27-20-860-006

(2) Do these steps to do a test of the equipment cooling supply fan:

(a) Remove the right sidewall liner in the forward cargo compartment to get access to the equipment cooling vent fan, Sidewall Liner Removal, TASK 25-52-06-000-801.

(b) Make sure that the equipment cooling supply fan is not on.

END OF TASK

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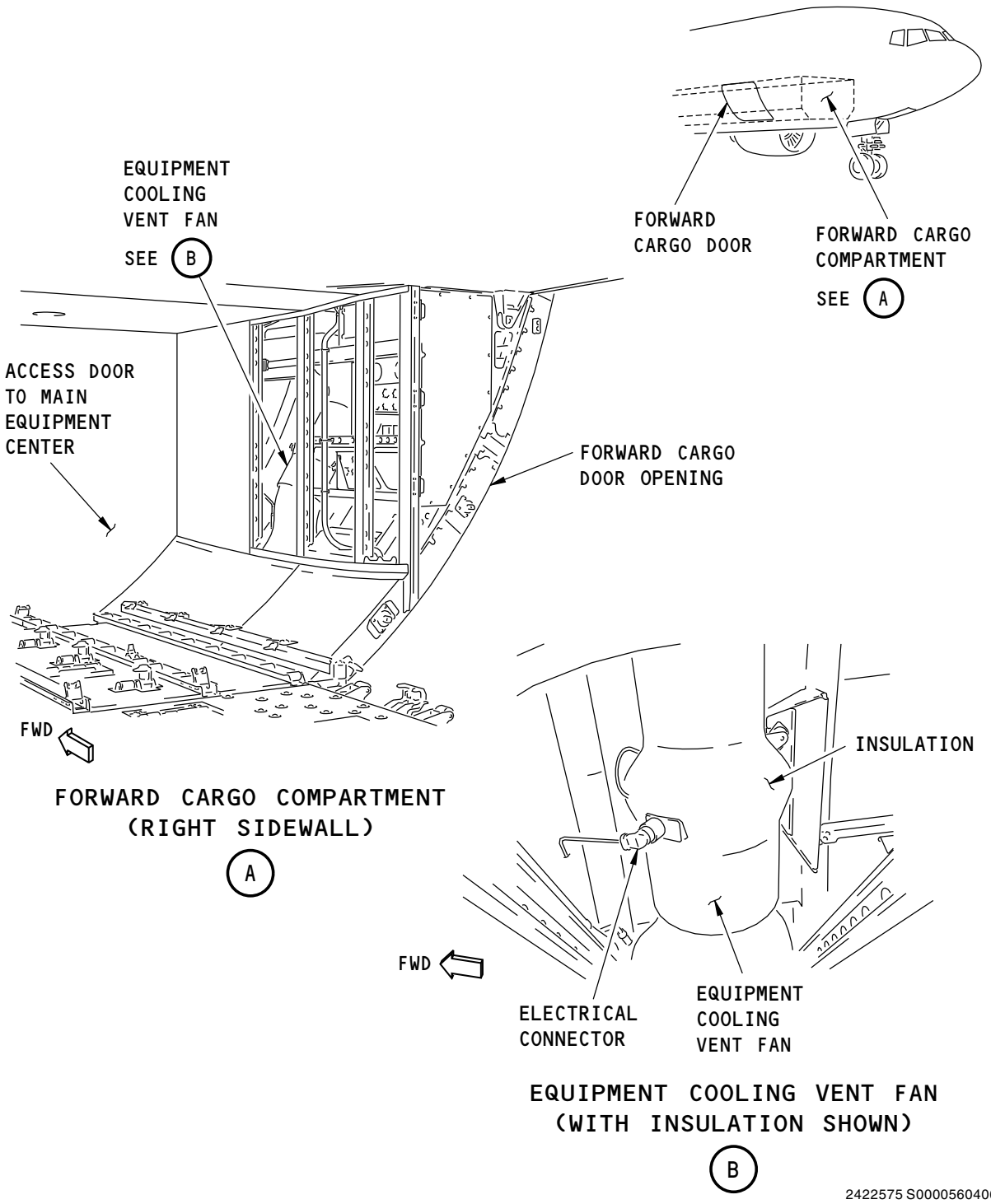

Equipment Cooling Vent fan
Figure 201/21-27-20-990-802

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TASK 21-27-20-440-801

3. Equipment Cooling Vent Fan - Activation

(Figure 201)

A. General

(1) This task will activate the equipment cooling vent fan.

B. Location Zones

Zone	Area
122	Forward Cargo Compartment, Right

C. Procedure

SUBTASK 21-27-20-420-009

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	28	C21601	EQPT CLG VENT FAN CTRL

END OF TASK

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EQUIPMENT COOLING VENT FAN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling vent fan

(2) An installation of the equipment cooling vent fan.

B. The equipment cooling vent fan removes the warm air generated by the flight deck instrument panels and the electrical/electronic racks in the main equipment center. The equipment cooling vent fan then blows the warm air through the forward cargo heat valve and into the forward cargo compartment, or through the equipment cooling vent valve and out of the airplane through the forward outflow valve. The equipment cooling vent fan operates only when the EQUIP COOL switch is set to the AUTO position.

NOTE: The EQUIP COOL switch is on the Air Conditioning Module which is on the Pilot's Overhead Panel, P5.

TASK 21-27-20-000-801

2. Equipment Cooling Vent Fan Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane before you remove the equipment cooling vent fan. This will make sure the electrical/electronic equipment does not receive electrical power when the equipment cooling system is not in operation.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
122	Forward Cargo Compartment, Right

D. Prepare for the Removal

SUBTASK 21-27-20-010-001

(1) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-27-20-860-001

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE AFT EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-20-010-002

(3) Remove the right sidewall liner in the forward cargo compartment to get access to the equipment cooling vent fan [7] (TASK 25-52-06-000-801).

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E. Equipment Cooling Vent Fan Removal

SUBTASK 21-27-20-020-001

(1) Disconnect the electrical connector [2] from the equipment cooling vent fan [7].

SUBTASK 21-27-20-020-002

(2) Remove the insulation [1] from the equipment cooling vent fan [7].

SUBTASK 21-27-20-020-003

(3) Remove the nut [10], two washers [11], and bolt [12] to disconnect the bonding jumper [13] from the equipment cooling vent fan [7].

(a) Move the bonding jumper [13] out of the way.

SUBTASK 21-27-20-020-004

(4) Loosen two clamps [4] which attaches the sleeve [3] to the equipment cooling vent fan [7].

(a) Move two clamps [4] and the sleeve [3] out of the way.

SUBTASK 21-27-20-020-005

(5) Loosen two clamps [8] which attaches the sleeve [9] to the equipment cooling vent fan [7].

(a) Move two clamps [8] and the sleeve [9] out of the way.

SUBTASK 21-27-20-020-009

(6) Remove the cotter pin [16], pin [14], and washer [11] to disconnect the rod assembly [18] from the eye bolt [15].

(a) Move the rod assembly [18] out of the way.

SUBTASK 21-27-20-020-006

(7) Remove the nut [10], washer [11], and eye bolt [15] to disconnect the rod assembly [17] from the equipment cooling vent fan [7].

(a) Move the rod assembly [17] out of the way.

SUBTASK 21-27-20-020-007

(8) Hold the equipment cooling fan [7] while you remove two screws [5] and two washers [6].

SUBTASK 21-27-20-020-008

(9) Remove the equipment cooling vent fan [7].

——— END OF TASK ———

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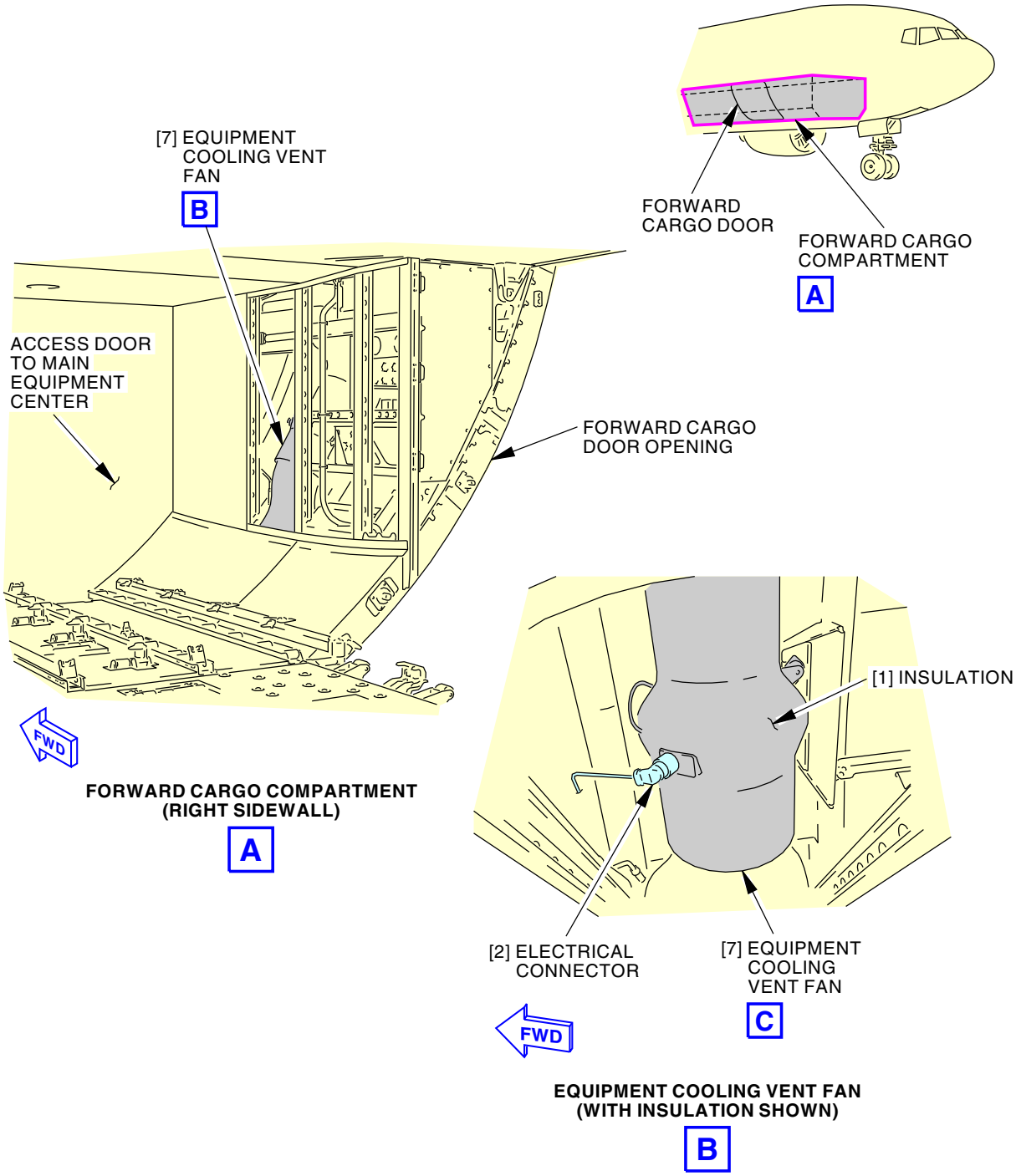

Equipment Cooling Vent Fan Installation
Figure 401/21-27-20-990-801 (Sheet 1 of 2)

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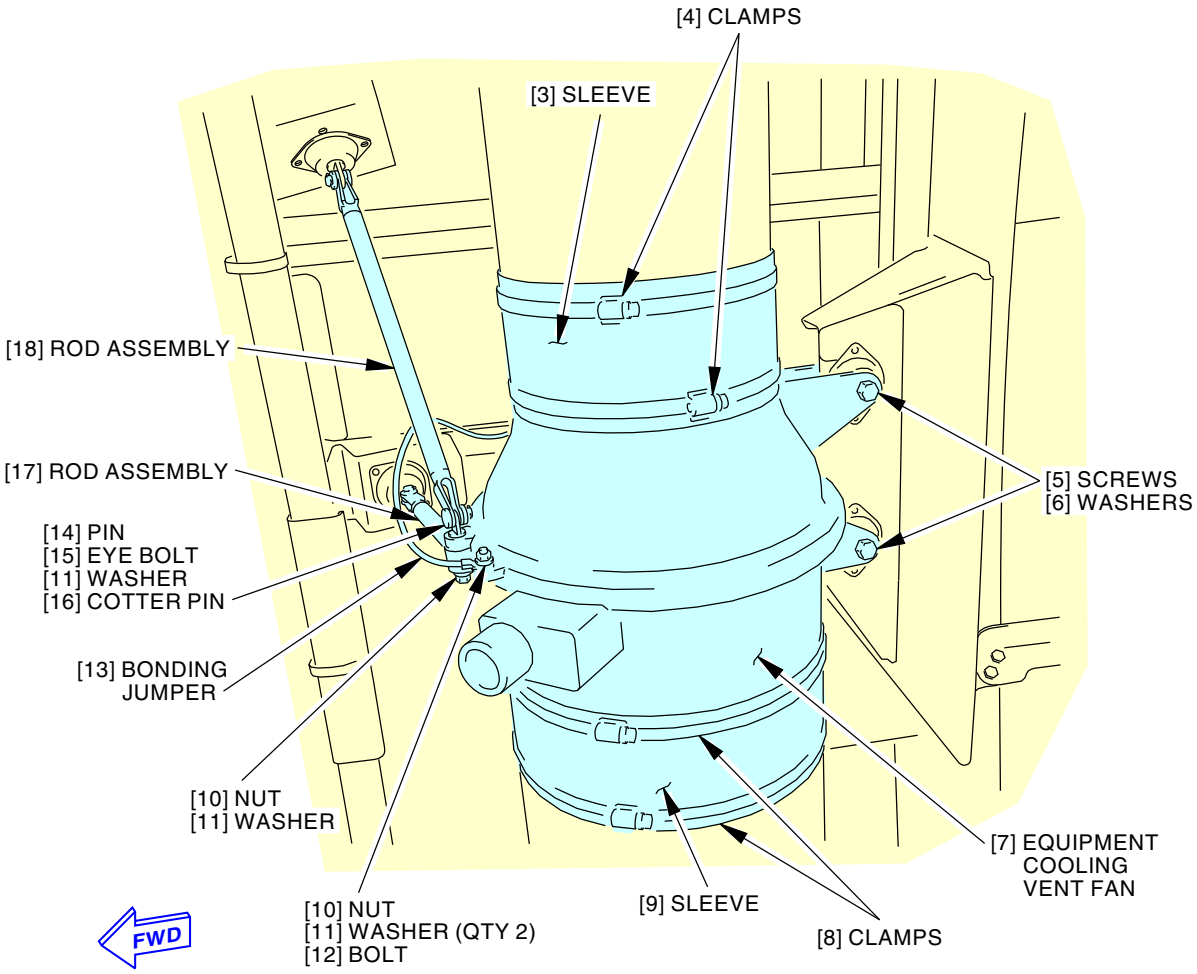

EQUIPMENT COOLING VENT FAN
(WITHOUT INSULATION SHOWN)

C

C99702 S0006403340_V3

Equipment Cooling Vent Fan Installation
Figure 401/21-27-20-990-801 (Sheet 2 of 2)

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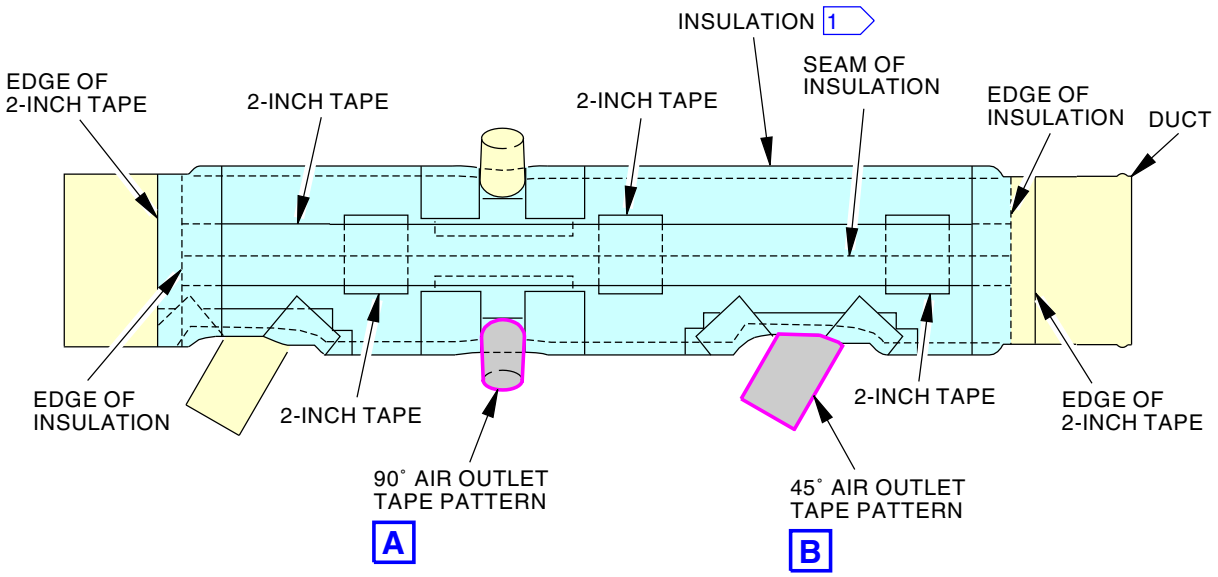
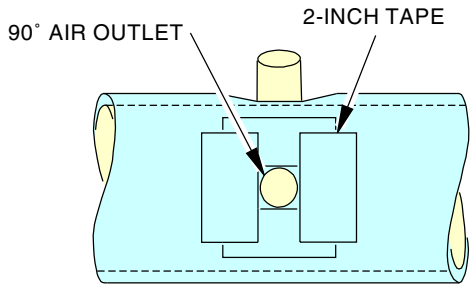
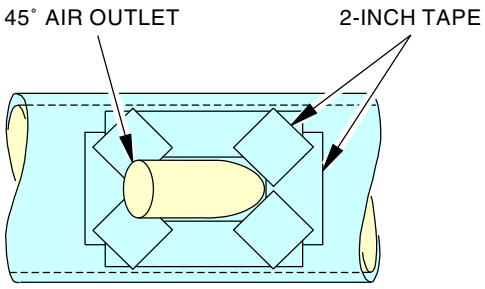


FOAM WRAPPED INSULATED DUCT (EXAMPLE)



90˚ AIR OUTLET TAPE PATTERN

A



45˚ AIR OUTLET TAPE PATTERN

B

1 FOR INSULATION DAMAGE APPLY A MINIMUM 2-INCH PATCH OF PRESSURE SENSITIVE ADHESIVE TAPE TO THE DAMAGED AREA. MAKE SURE YOU HAVE FULL COVERAGE OF THE DAMAGED OR TORN AREA WITH NO LESS THAN 1/2-INCH OVERLAP.

L45379 S0006403001_V4

Air Conditioning System Insulated Duct Repair (Foam Wrapped)
Figure 402/21-27-20-990-803 (Sheet 1 of 2)

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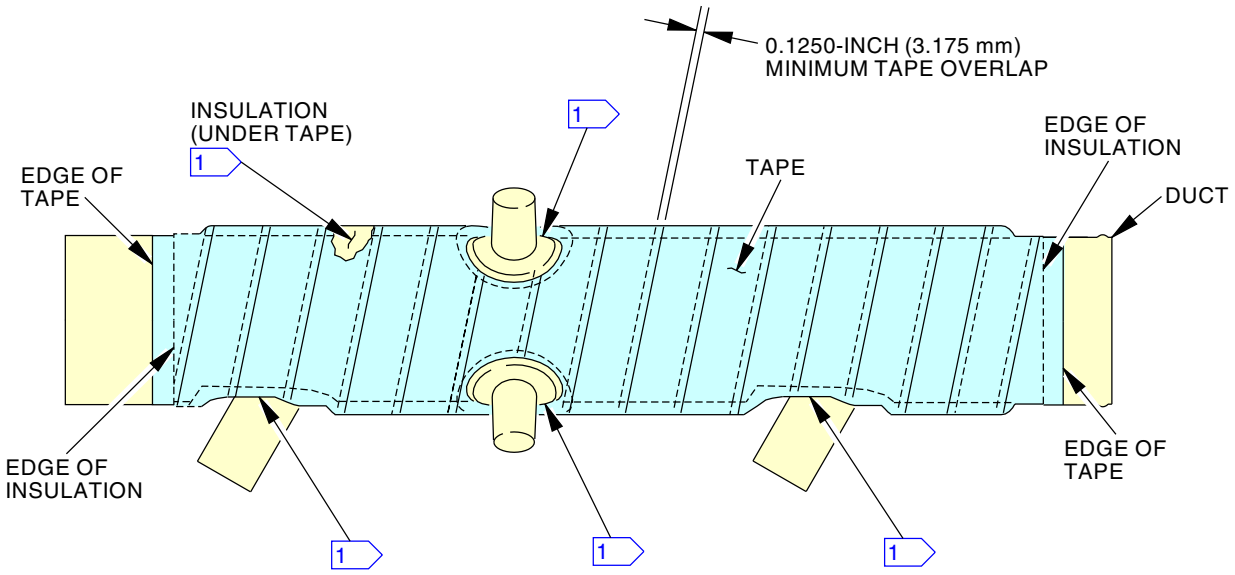

**REWORK POLYIMIDE FOAM INSULATED DUCT
(EXAMPLE)**

NOTE:

- 2-INCH WIDE, 3-INCH WIDE OR 12-INCH WIDE TAPE (BMS 5-157 TYPE I, CLASS 1, GRADE B) MUST COVER 100% OF THE BROWN HYPALON INSULATION SURFACE.
- TAPE MAY BE INSTALLED SPIRAL WRAPPED AS SHOWN OR LENGTHWISE DOWN THE DUCT DEPENDING ON THE INSTALLERS PREFERENCE.
- SHOWN PATTERN IS FOR REFERENCE ONLY. TAPE MAY BE APPLIED IN ANY CONFIGURATION AS LONG AS COMPLETE BMS 8-300 COVERAGE IS OBTAINED.
- WIDER TAPE MAY BE CUT INTO NARROWER STRIPS OR ANY UNIQUE SHAPE IF DESIRED TO ASSIST IN OBTAINING COMPLETE BMS 8-300 COVERAGE.
- MAINTAIN MINIMUM 0.1250-INCH (3.175 mm) OVERLAP OF TAPE.
- AVOID COMPRESSION OF BMS 8-300 INSULATION.
- WRINKLES IN TAPE ARE ACCEPTABLE IF PINCHED TOGETHER AND CONTAIN NO VOIDS.
- COVERING OF EXISTING BMS 5-157 TAPE IS NOT REQUIRED.
- TAPE MAY BE APPLIED TO THE BLANKET PRIOR TO THE BLANKET INSTALLATION ON THE DUCT IF DESIRED BY THE INSTALLER.
- FOR BLANKETS INSTALLED ON DUCT JOINTS, TAPE MAY BE APPLIED TO THE BLANKET BEFORE OR AFTER THE BLANKET IS INSTALLED OVER THE DUCT JOINT. TAPE ORIENTATION IS OPTIONAL.

1 COVER ALL EXPOSED INSULATION (BMS 8-300 TYPE II, GRADE 5) WITH TAPE (BMS 5-157 TYPE I, CLASS 1, GRADE B). CUT TAPE AS REQUIRED TO FIT AROUND AIR OUTLETS, BRANCHES AND INSULATION VENT HOLES.

J80470 S0000179691_V2

**Air Conditioning System Insulated Duct Repair (Foam Wrapped)
Figure 402/21-27-20-990-803 (Sheet 2 of 2)**

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TASK 21-27-20-400-801

3. Equipment Cooling Vent Fan Installation

(Figure 401)

A. General

(1) Some of the ducts in the air distribution system are wrapped with insulation material. CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

(a) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) The foam insulation, G51169, and foam insulation, G51170, are new, qualified materials optional to foam insulation, G50449.

(c) Melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

(d) Do not use foam, G50025, polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(e) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

(f) Air conditioning ducts with polyimide foam insulation, G02470, must be wrapped with tape, G50327, tape, G51202, or tape, G50789, to meet the flammability/flame propagation requirement. Wrap tape, G50327, tape, G51202, or tape, G50789, across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50025	Foam - Flexible Urethane	BMS8-39 Type 1 Grade 2.5 Class A-65
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK
G51169	Foam - Flexible Melamine,	BMS8-385 Type 6
G51170	Foam - Flexible Polyimide	BMS8-300 Type VIII

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(Continued)

Reference	Description	Specification
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Fan	21-27-20-02-130	ARO ALL

E. Location Zones

Zone	Area
122	Forward Cargo Compartment, Right
212	Flight Compartment, Right

F. Equipment Cooling Vent Fan Installation

SUBTASK 21-27-20-420-001

(1) Hold the equipment cooling vent fan [7] in its position while you install two screws [5] and two washers [6].

SUBTASK 21-27-20-420-002

(2) Install the eye bolt [15], washer [11], and nut [10] to connect the rod assembly [17] to the equipment cooling vent fan [7].

(a) Make sure that the eye bolt [15] aligns correctly with the rod assembly [18] before you tighten the nut [10].

SUBTASK 21-27-20-420-007

(3) Install the pin [14], washer [11], and cotter pin [16] to connect the rod assembly [18] to the eye bolt [15].

SUBTASK 21-27-20-420-003

(4) Move the sleeve [3] and two clamps [4] onto the equipment cooling vent fan [7], and tighten the clamps [4].

SUBTASK 21-27-20-420-004

(5) Move the sleeve [9] and two clamps [8] onto the equipment cooling vent fan [7], and tighten the clamps [8].

SUBTASK 21-27-20-210-001

(6) Make sure the bonding jumper [13], bolt [12], two washers [11] and the nut [10] are clean.

SUBTASK 21-27-20-420-005

(7) Install the bolt [12], two washers [11], and nut [10] to connect the bonding jumper [13] to the equipment cooling vent fan [7].

SUBTASK 21-27-20-410-004

(8) Use new tape, G50327, tape, G51202, or tape, G50789, to install the insulation [1] onto the equipment cooling vent fan [7].

(a) If the insulation [1] is replaced, then make sure the replacement insulation material meets the flame propagation requirement of CFR 14 Part 25.856.

NOTE: The existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

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(b) Melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

SUBTASK 21-27-20-420-008

(9) If the insulation material is foam insulation, G02470, polyimide foam, then do the following steps to completely cover all exposed surfaces of the foam insulation, G02470, insulation [1] the tape, G50327, tape, G51202, or tape, G50789, (Figure 402).

NOTE: The foam insulation, G02470, polyimide foam insulation material must be covered with the tape, G50789, tape to meet the CFR 14 Part 25.856 flame propagation requirement.

(a) Cut tape, G50327, tape, G51202, or tape, G50789, as required to fit around the air outlets, branches and insulation vent holes.

(b) Apply tape, G50327, tape, G51202, or tape, G50789, in any configuration as long as complete coverage of the foam insulation, G02470, insulation [1] is obtained and there is a ⅛ in. (3.2 mm) overlap.

NOTE: The tape may be installed spiral wrapped or lengthwise down the duct as desired.

(c) Wrinkles in the tape, G50327, tape, G51202, or tape, G50789, are acceptable if pinched together without voids and the foam insulation, G02470, insulation [1] is not compressed.

(d) The tape, G50327, tape, G51202, or tape, G50789, can be applied to the outer surface of the foam insulation, G02470, insulation [1] prior to installation on the duct if desired.

SUBTASK 21-27-20-420-006

(10) Connect the electrical connector [2] to the equipment cooling vent fan [7].

G. Equipment Cooling Vent Fan Installation Test

SUBTASK 21-27-20-860-002

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

SUBTASK 21-27-20-740-001

(2) Use a Maintenance Access Terminal (MAT) to do the System Test of the Equipment Cooling Vent Fan (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Equipment Cooling
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.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-20-410-002

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

SUBTASK 21-27-20-410-003

(2) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

——— END OF TASK ———

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EQUIPMENT COOLING VENT VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling vent valve

(2) An installation of the equipment cooling vent valve.

B. The equipment cooling vent valve opens when the forward cargo heat valve closes. When the equipment cooling vent valve is open, warm air that is removed from the main equipment center, the flight deck overhead panels, and the flight deck instruments, is sent overboard through the forward outflow valve.

TASK 21-27-21-000-801

2. Equipment Cooling Vent Valve Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You must remove electrical power from the airplane before you remove the equipment cooling vent valve. This will make sure the electrical/electronic equipment does not receive electrical power when the equipment cooling system is not in operation.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-53-03-000-801	Roller Tray - Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left

D. Prepare for the Removal

SUBTASK 21-27-21-010-001

(1) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-27-21-860-001

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE AFT EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-21-010-002

(3) Do the steps that follow to get access to the equipment cooling vent valve [1]:

(a) Remove the floor panel and the walkway on the left side of the compartment and just forward of the cargo door opening (TASK 25-52-10-000-801).

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(b) Remove the roller tray which is above the equipment cooling vent valve [1] (TASK 25-53-03-000-801).

E. Equipment Cooling Vent Valve Removal

SUBTASK 21-27-21-020-005

(1) Remove the moisture shroud [2] from the equipment cooling vent valve [1].

SUBTASK 21-27-21-020-001

(2) Disconnect the electrical connector [9] from the equipment cooling vent valve [1].

SUBTASK 21-27-21-020-002

(3) Remove the nut [5], bolt [8], and two washers [6] to disconnect the bonding jumper [7] from the equipment cooling vent valve [1].

SUBTASK 21-27-21-020-003

(4) Loosen the couplings [3], then move them and the sleeves [4] away from the equipment cooling vent valve [1].

SUBTASK 21-27-21-020-004

(5) Remove the equipment cooling vent valve [1].

(a) Lower the equipment vent valve [1], then turn it vertically and lift it through the opening in the floor.

——— END OF TASK ———

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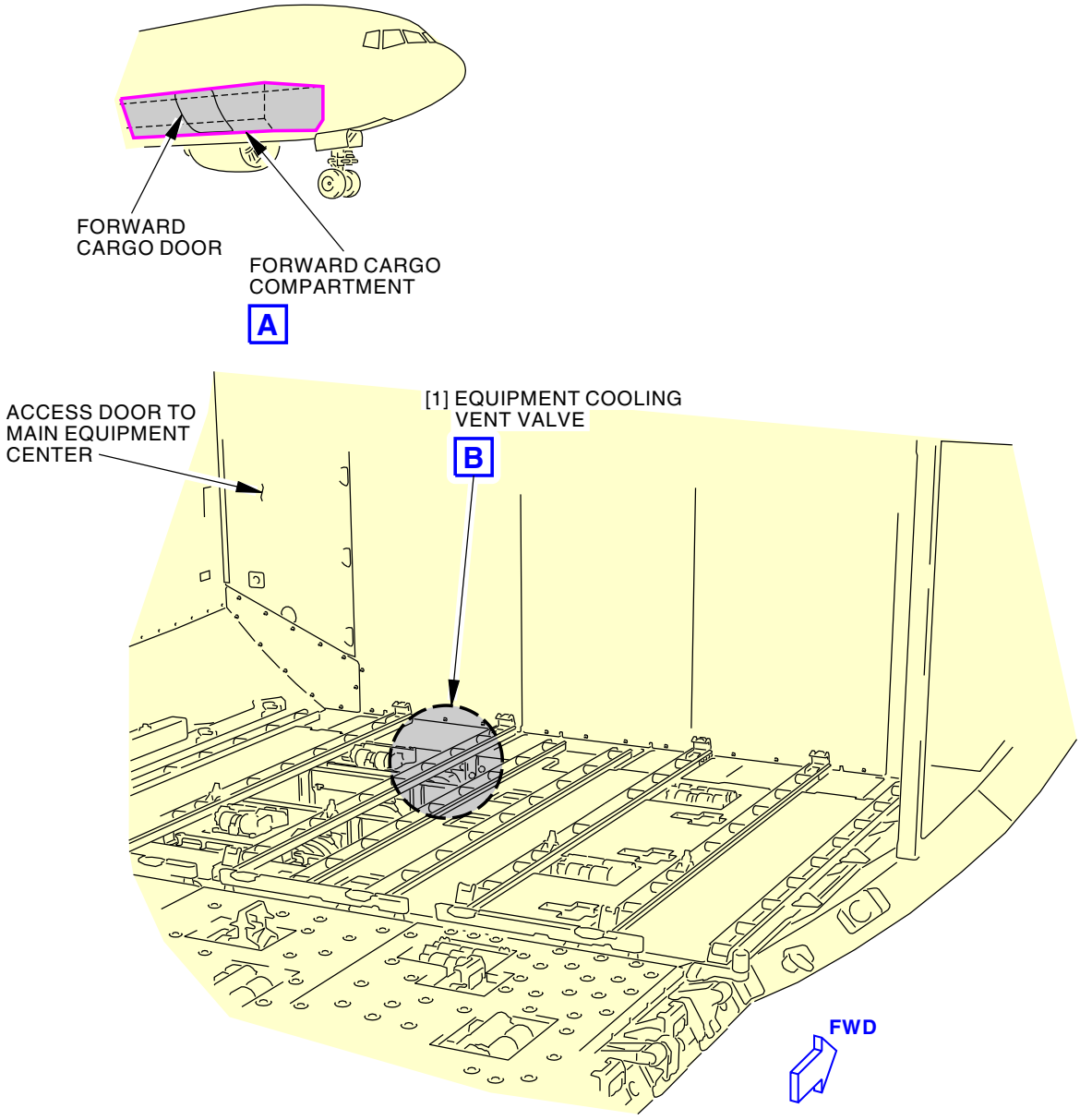

NOTE:

THE FLOOR PANEL AND THE
WALKWAY ARE NOT SHOWN.

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Equipment Cooling Vent Valve Installation
Figure 401/21-27-21-990-801 (Sheet 1 of 2)

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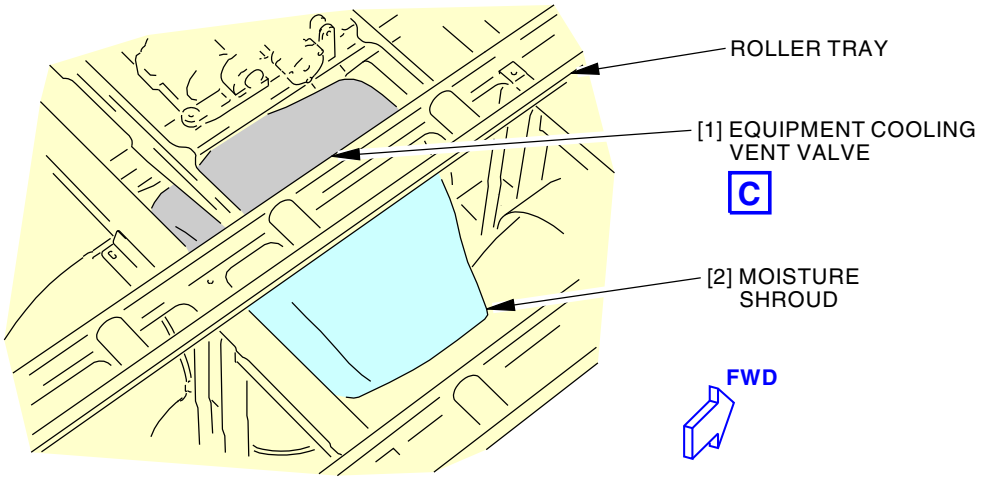
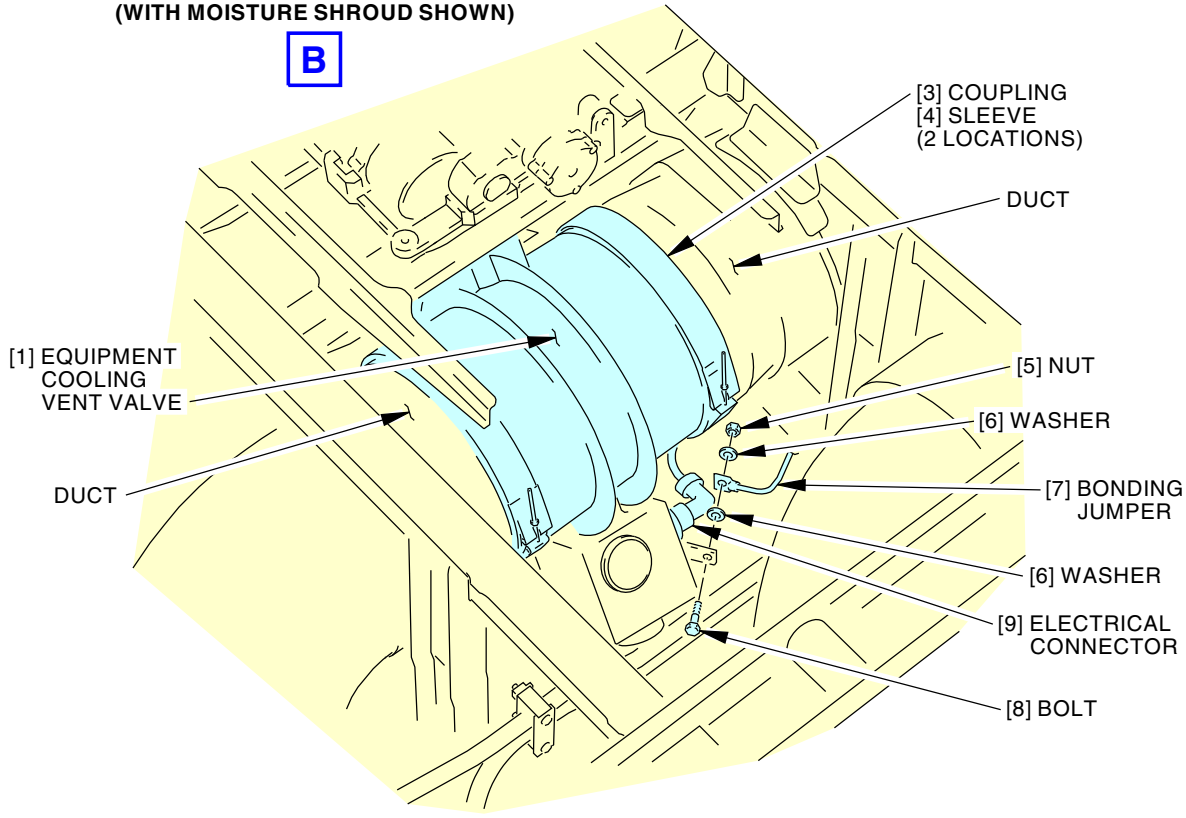


EQUIPMENT COOLING VENT VALVE (WITH MOISTURE SHROUD SHOWN)

B



EQUIPMENT COOLING VENT VALVE (WITHOUT MOISTURE SHROUD SHOWN)

C

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Equipment Cooling Vent Valve Installation
Figure 401/21-27-21-990-801 (Sheet 2 of 2)

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TASK 21-27-21-400-801

3. Equipmemt Cooling Vent Valve Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
25-53-03-400-801	Roller Tray - Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-27-22-03-065	ARO ALL

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Equipment Cooling Vent Valve Installation

SUBTASK 21-27-21-420-001

(1) Align and hold the equipment cooling vent valve [1] between the two ducts.

SUBTASK 21-27-21-420-002

(2) Move the sleeves [4] onto the equipment cooling vent valve [1].

SUBTASK 21-27-21-420-003

(3) Move the couplings [3] onto the sleeves [4].

(a) Tighten the nut on the couplings [3] from the 45 in-lb (5 N·m) to 55 in-lb (6 N·m).

SUBTASK 21-27-21-210-001

(4) Make sure that the bonding jumper [7], bolt [8], washers [6], and nut [5] are clean.

SUBTASK 21-27-21-420-004

(5) Install the bolt [8], washers [6], and nut [5] to connect the bonding jumper [7] to the equipment cooling vent valve [1].

SUBTASK 21-27-21-420-005

(6) Connect the electrical connector [9] to the equipment cooling vent valve [1].

SUBTASK 21-27-21-420-006

(7) Install the moisture shroud [2] around the equipment cooling vent valve [1].

E. Equipment Cooling Vent Valve Installation Test

SUBTASK 21-27-21-860-002

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

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SUBTASK 21-27-21-740-001

(2) Use a Maintenance Access Terminal (MAT) to do an LRU Replacement test of the equipment cooling vent valve [1] (TASK 45-10-00-740-808).

NOTE: While the MAT test is in operation, the equipment cooling vent valve [1] will open. A second person should put their hand approximately six inches away from the couplings on the equipment cooling vent valve [1] to feel for air leakage while the test is in operation. If air leakage is felt, the equipment cooling vent valve [1] and couplings must be adjusted until air leakage is not felt.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) LRU REPLACEMENT TEST
6) Equipment Cooling
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.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-21-410-001

(1) Do this task: Roller Tray - Installation, TASK 25-53-03-400-801.

SUBTASK 21-27-21-010-003

(2) Do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801.

SUBTASK 21-27-21-010-004

(3) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

——— END OF TASK ———

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FORWARD CARGO HEAT VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the forward cargo heat valve

(2) An installation of the forward cargo heat valve.

B. The forward cargo heat valve opens when the forward cargo air conditioning (FCAC) temperature selector is in the OFF position and the Total Air Temperature is less than 50 °F (10 °C).

C. The forward cargo heat valve closes for these conditions:

(1) The FCAC temperature selector is in the OFF position and the Total Air Temperature is more than 55 °F (12.8 °C).

(2) The FCAC temperature selector is in the AUTO position.

D. When the forward cargo heat valve is open, warm air from the main equipment center, the flight deck overhead panels, and the flight deck instruments, is sent to the forward cargo compartment.

TASK 21-27-22-000-802-002

2. Forward Cargo Heat Valve Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane before you remove the forward cargo heat valve. The equipment cooling vent fan must be off to prevent airflow to the forward cargo heat valve. Removing electrical power will make sure that the electrical/electronic equipment does not overheat when the equipment cooling vent fan is off.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-53-02-000-801	Ball Panel Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left

D. Prepare for the Removal

SUBTASK 21-27-22-860-004-002

CAUTION

MAKE SURE THAT YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-22-010-005-002

(2) 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.

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SUBTASK 21-27-22-010-017-002

(3) Remove the center ball panel, do this task: Ball Panel Removal, TASK 25-53-02-000-801.

E. Forward Cargo Heat Valve Removal

SUBTASK 21-27-22-020-007-002

(1) Remove the moisture shroud [2] from the forward cargo heat valve [1].

SUBTASK 21-27-22-020-008-002

(2) Disconnect the electrical connector [5] from the forward cargo heat valve [1].

SUBTASK 21-27-22-020-009-002

(3) Loosen the two couplings [3] and move them away from the forward cargo heat valve [1].

SUBTASK 21-27-22-020-010-002

(4) Move the two sleeves [4] away from the forward cargo heat valve [1].

SUBTASK 21-27-22-020-011-002

(5) Remove the forward cargo heat valve [1].

——— END OF TASK ———

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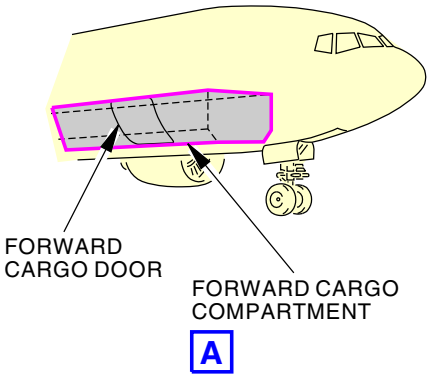

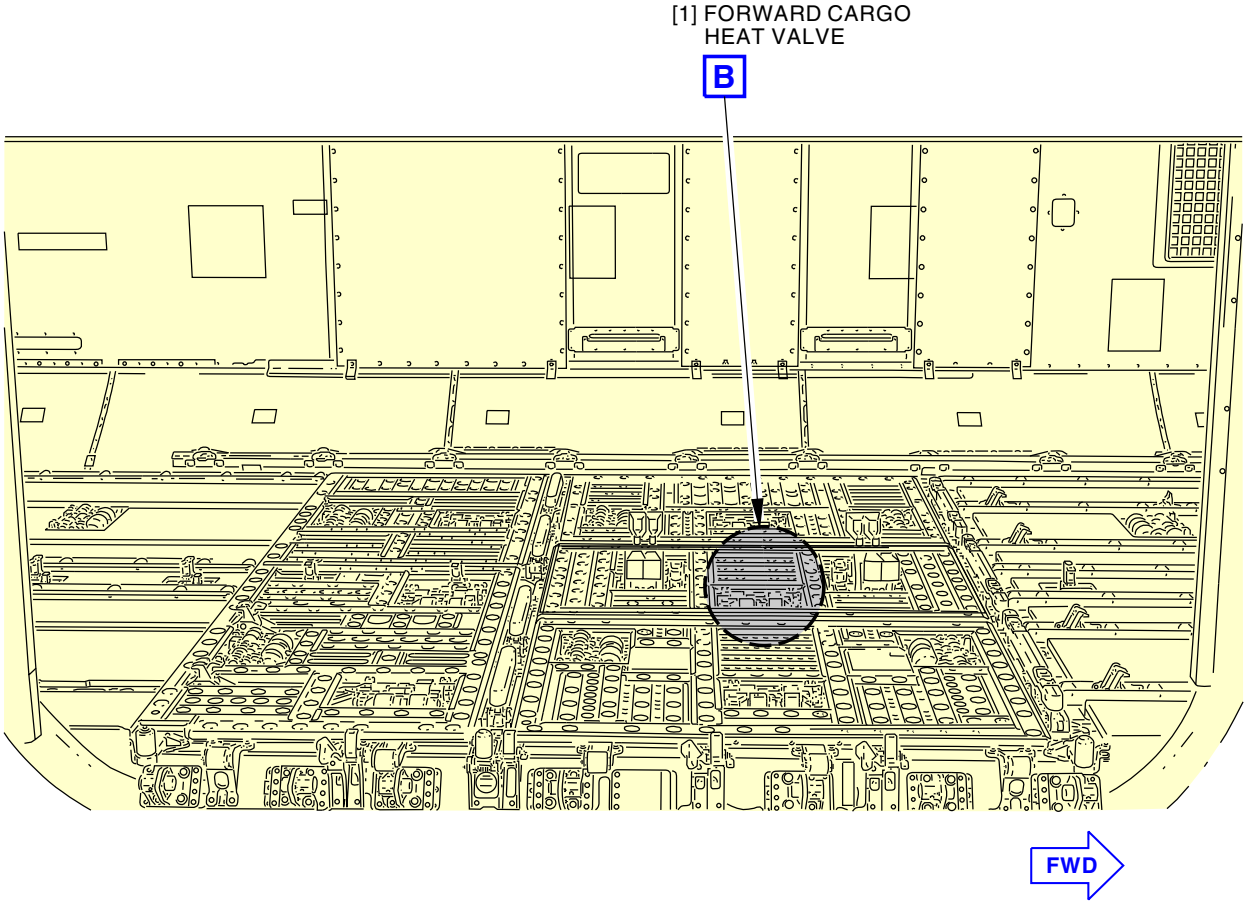

Forward Cargo Heat Valve Installation
Figure 401/21-27-22-990-802-002 (Sheet 1 of 2)

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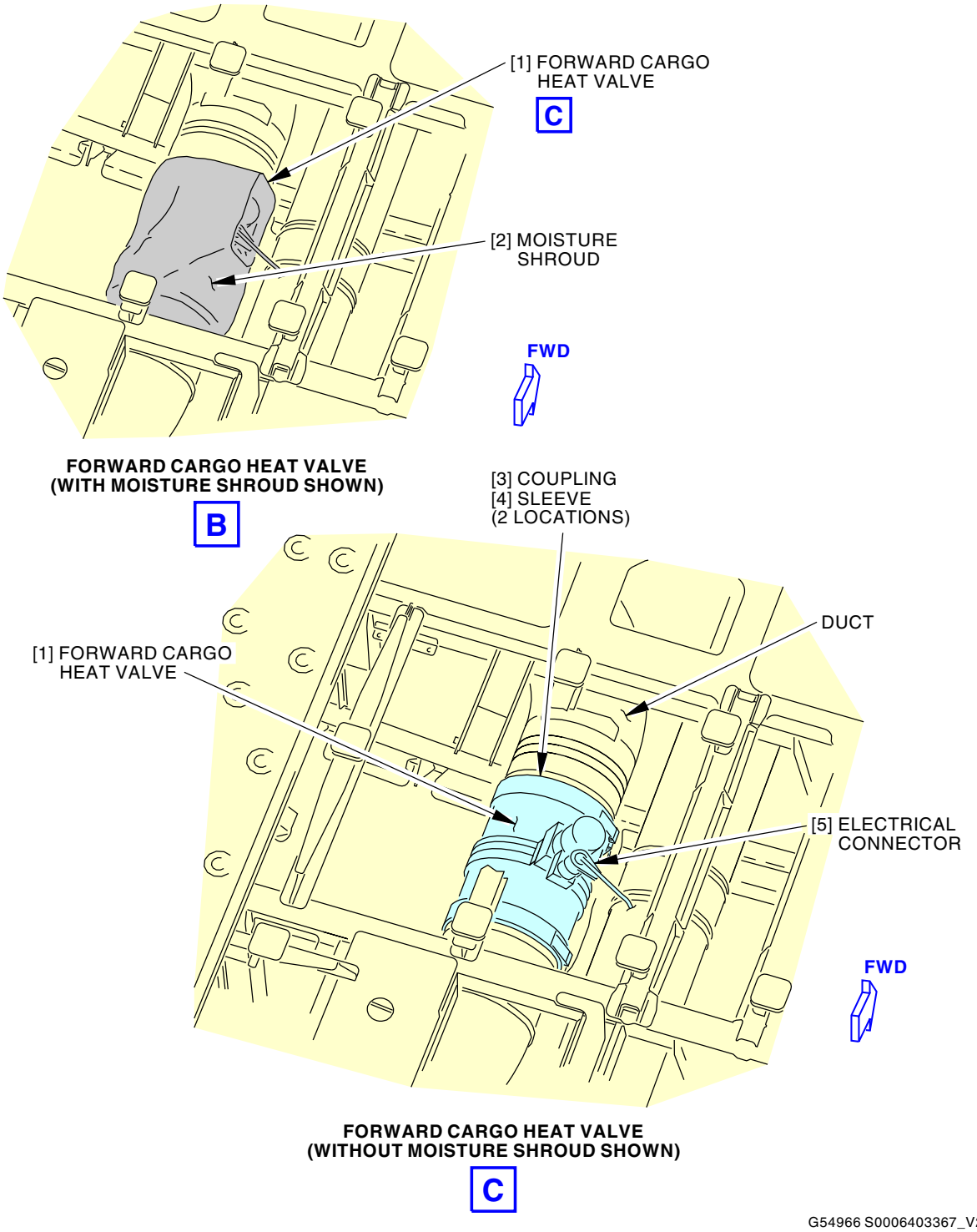

Forward Cargo Heat Valve Installation
Figure 401/21-27-22-990-802-002 (Sheet 2 of 2)

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TASK 21-27-22-400-802-002

3. Forward Cargo Heat Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-53-02-400-801	Ball Panel Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-43-01-04-095	ARO ALL

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Forward Cargo Heat Valve Installation

SUBTASK 21-27-22-420-007-002

(1) Put the forward cargo heat valve [1] between the two ducts.

SUBTASK 21-27-22-420-008-002

(2) Put the two sleeves [4] onto the forward cargo heat valve [1] duct connections.

SUBTASK 21-27-22-420-009-002

(3) Put the two couplings [3] over the sleeves [4] and tighten them to 30 in-lb (3.39 N·m)-35 in-lb (3.95 N·m).

SUBTASK 21-27-22-420-010-002

(4) Connect the electrical connector [5] to the forward cargo heat valve [1].

SUBTASK 21-27-22-420-011-002

(5) Install the moisture shroud [2] around the forward cargo heat valve [1].

E. Forward Cargo Heat Valve Installation Test

SUBTASK 21-27-22-860-005-002

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

SUBTASK 21-27-22-740-002-002

(2) Use a maintenance access terminal (MAT) to do the installation test of the forward cargo heat valve (TASK 45-10-00-740-808):

NOTE: While the MAT test is in operation, the forward cargo heat valve will open. A second person should put their hand approximately six inches away from the couplings on the forward cargo heat valve to feel for air leakage while the test is in operation. If air leakage is felt, the forward cargo heat valve and couplings must be adjusted until air leakage is not felt.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

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2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) LRU REPLACEMENT TEST
6) Equipment Cooling
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.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-22-410-005-002

(1) Install the center ball panel, do this task: Ball Panel Installation, TASK 25-53-02-400-801.

SUBTASK 21-27-22-010-008-002

(2) 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.

——— END OF TASK ———

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EQUIPMENT COOLING INBOARD VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling inboard valve

(2) An installation of the equipment cooling inboard valve.

B. The equipment cooling inboard valve opens when forward cargo compartment air conditioning (FCAC) is on and the airplane is in flight. Warm air from the main equipment center is sent to the mix manifold for recirculation when the equipment cooling inboard valve is open.

C. The equipment cooling inboard valve closes for these conditions:

(1) FCAC is off

(2) Smoke is detected in the forward cargo compartment

(3) The FWD CARGO FIRE switch on the Forward Overhead Panel, P5 is in the ARMED position.

TASK 21-27-23-000-801

2. Equipment Cooling Inboard Valve Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane before you remove the equipment cooling inboard valve. The equipment cooling vent fan must be off to prevent airflow to the equipment cooling inboard valve. Removing electrical power will make sure that the electrical/electronic equipment does not overheat when the equipment cooling vent fan is off.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-53-03-000-801	Roller Tray - Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left

D. Prepare for the Removal

SUBTASK 21-27-23-860-001

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-23-010-001

(2) 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.

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SUBTASK 21-27-23-010-002

(3) Remove the aft floor panel and the aft walkway in the center of the forward cargo compartment, do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801.

SUBTASK 21-27-23-010-003

(4) Remove the roller tray [2] from above the equipment cooling inboard valve [1], do this task: Roller Tray - Removal, TASK 25-53-03-000-801.

SUBTASK 21-27-23-010-004

(5) Remove the moisture shroud [3] from the equipment cooling inboard valve [1].

NOTE: Keep the moisture shroud [3] for the installation.

E. Equipment Cooling Inboard Valve Removal

SUBTASK 21-27-23-020-001

(1) Disconnect the electrical connector [4] from the equipment cooling inboard valve [1].

SUBTASK 21-27-23-020-002

(2) Loosen the couplings [5] and move them away from the equipment cooling inboard valve [1].

SUBTASK 21-27-23-020-003

(3) Move the sleeves [6] away from the equipment cooling inboard valve [1] duct connections.

SUBTASK 21-27-23-020-004

(4) Remove the equipment cooling inboard valve [1].

END OF TASK

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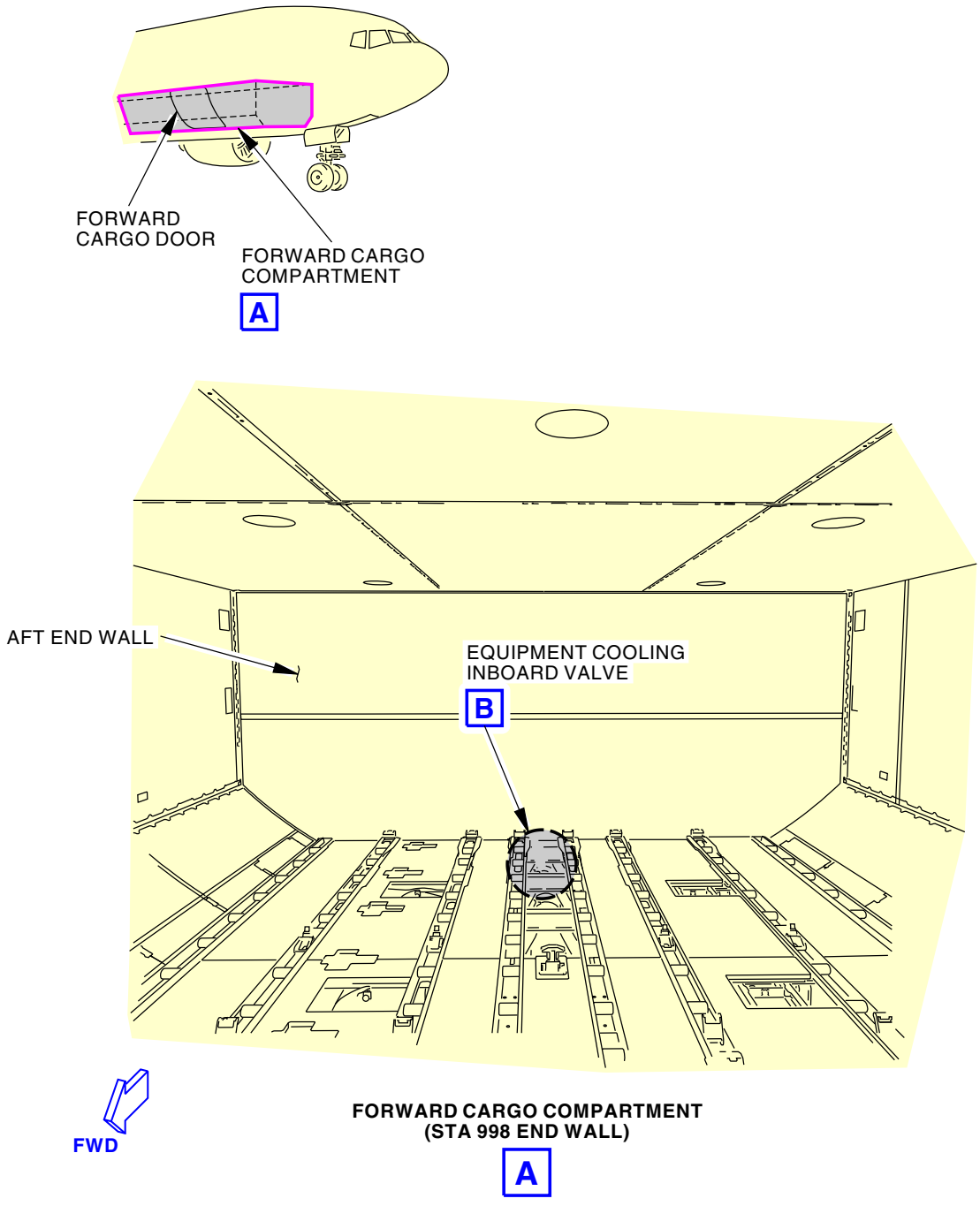

Equipment Cooling Inboard Valve Installation
Figure 401/21-27-23-990-801 (Sheet 1 of 2)

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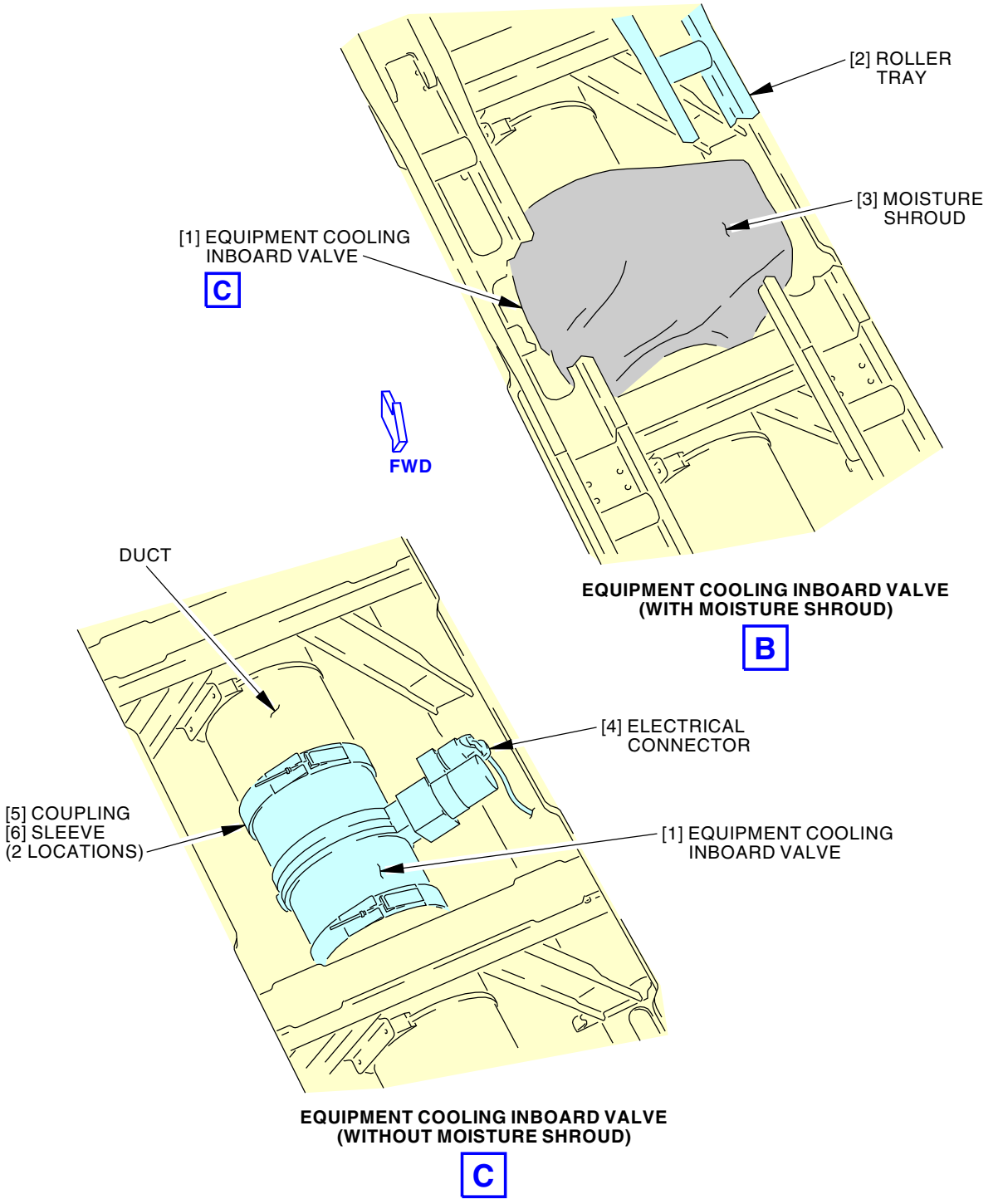

Equipment Cooling Inboard Valve Installation
Figure 401/21-27-23-990-801 (Sheet 2 of 2)

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TASK 21-27-23-400-801

3. Equipment Cooling Inboard Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
25-53-03-400-801	Roller Tray - Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-28-01-05A-070	ARO ALL

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Equipment Cooling Inboard Valve Installation

SUBTASK 21-27-23-420-001

(1) Put the equipment cooling inboard valve [1] between the two ducts.

SUBTASK 21-27-23-420-002

(2) Put the sleeves [6] over the equipment cooling inboard valve [1] duct connections.

SUBTASK 21-27-23-420-003

(3) Put the couplings [5] over the sleeves [6] and tighten them 30 in-lb (3.39 N·m) to 35 in-lb (3.95 N·m).

SUBTASK 21-27-23-420-004

(4) Reconnect the electrical connector [4] to the equipment cooling inboard valve [1].

E. Equipment Cooling Inboard Valve Installation Test

SUBTASK 21-27-23-860-002

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

SUBTASK 21-27-23-740-001

(2) Use a maintenance access terminal (MAT) to do the installation test of the equipment cooling inboard valve [1] (TASK 45-10-00-740-808).

NOTE: While the MAT test is in operation, the equipment cooling inboard valve will open. A second person should put their hand approximately six inches away from the couplings on the valve to feel for air leakage while the test is in operation. If air leakage is felt, the equipment cooling inboard valve couplings must be adjusted until air leakage is not felt.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

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3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Forward Cargo Air Conditioning
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, then do the procedures in the Fault Isolation Manual to correct the fault.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-23-420-005

(1) Reinstall the moisture shroud [3] around the equipment cooling inboard valve [1].

SUBTASK 21-27-23-010-005

(2) Reinstall the roller tray [2], do this task: Roller Tray - Installation, TASK 25-53-03-400-801.

SUBTASK 21-27-23-010-006

(3) Reinstall the floor panel and the walkway, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801.

SUBTASK 21-27-23-010-007

(4) 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.

——— END OF TASK ———

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EQUIPMENT COOLING DIVERT VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling divert valve

(2) An installation of the equipment cooling divert valve.

B. The equipment cooling divert valve opens when forward cargo air conditioning (FCAC) is off or when the airplane is on the ground and FCAC is on. When the equipment cooling divert valve is open, warm air from the main equipment center is sent to either the forward cargo compartment or the forward outflow valve.

C. The equipment cooling divert valve closes when the airplane is in the air and FCAC is on. When the equipment cooling divert valve is closed, warm air from the main equipment center is sent to the mix manifold for recirculation.

TASK 21-27-25-000-801

2. Equipment Cooling Divert Valve Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane before you remove the equipment cooling divert valve. The equipment cooling vent fan must be off to prevent airflow to the equipment cooling divert valve. Removing electrical power will make sure that the electrical/electronic equipment does not overheat when the equipment cooling vent fan is off.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-53-03-000-801	Roller Tray - Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left

D. Prepare for the Removal

SUBTASK 21-27-25-010-001

(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.

SUBTASK 21-27-25-860-001

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

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SUBTASK 21-27-25-010-002

(3) Do the steps that follow to get access to the equipment cooling divert valve [1]:

(a) Remove the floor panel and the walkway on the left side of the compartment and forward of the cargo door, do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801.

(b) Remove the roller tray which is above the equipment cooling divert valve [1], do this task: Roller Tray - Removal, TASK 25-53-03-000-801.

E. Equipment Cooling Divert Valve Removal

SUBTASK 21-27-25-020-001

(1) Remove the moisture shroud [2] from the equipment cooling divert valve [1].

SUBTASK 21-27-25-020-002

(2) Disconnect the electrical connector [5] from the equipment cooling divert valve [1].

SUBTASK 21-27-25-020-003

(3) Remove the nut [9], bolt [7], and washers [8] to disconnect the bonding jumper [6] from the equipment cooling divert valve [1].

SUBTASK 21-27-25-020-004

(4) Loosen the two couplings [3] and move them away from the equipment cooling divert valve [1].

SUBTASK 21-27-25-020-005

(5) Move the two sleeves [4] away from the equipment cooling divert valve [1].

SUBTASK 21-27-25-020-006

(6) Remove the equipment cooling divert valve [1].

——— END OF TASK ———

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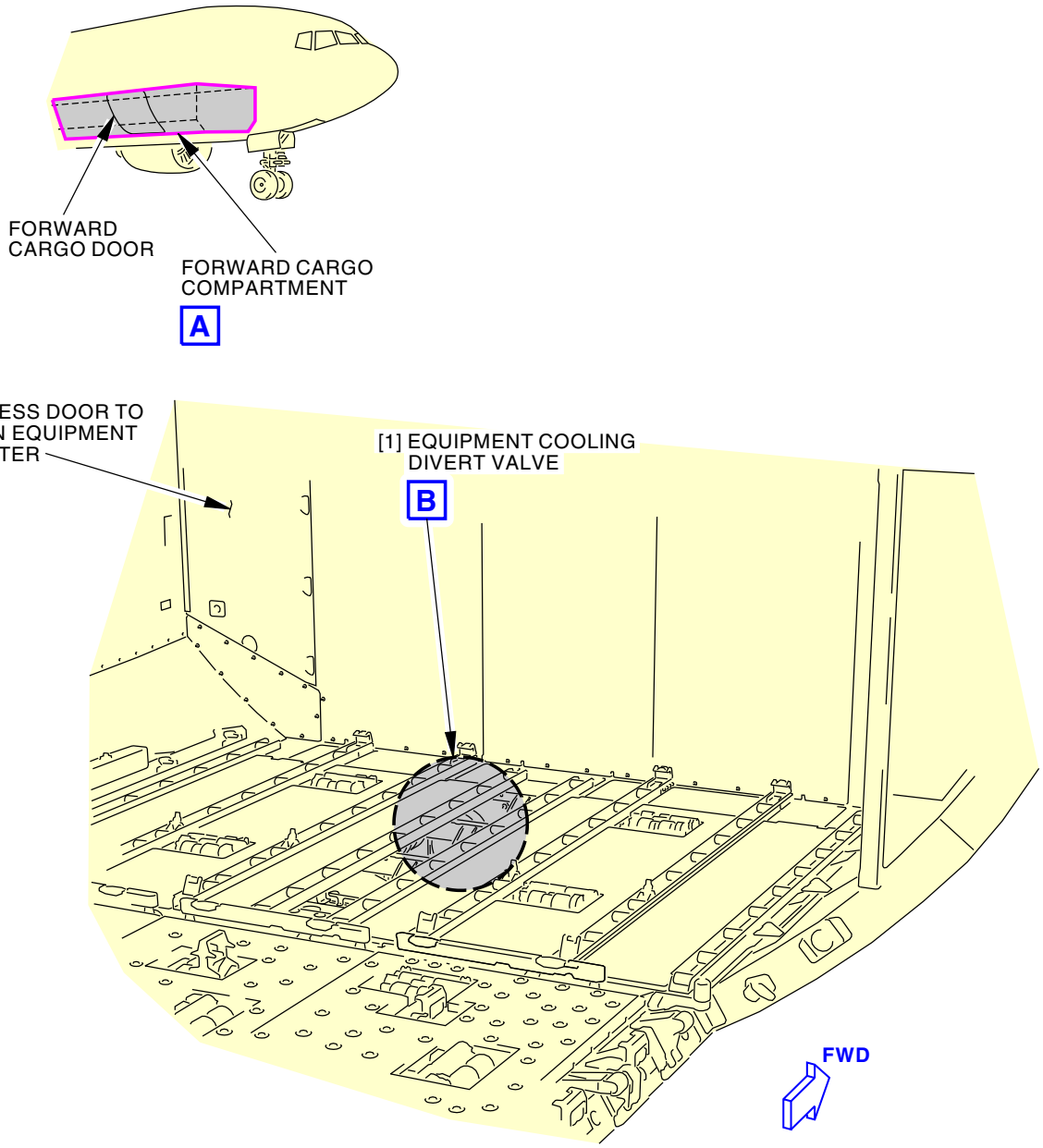

FORWARD CARGO COMPARTMENT

A

NOTE:

THE FLOOR PANEL AND THE
WALKWAY ARE NOT SHOWN.

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Equipment Cooling Divert Valve Installation
Figure 401/21-27-25-990-801 (Sheet 1 of 2)

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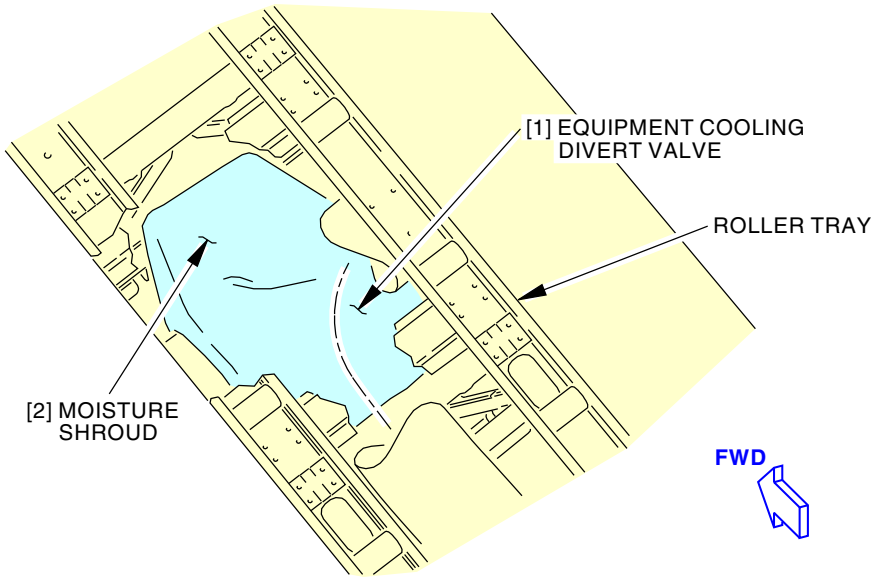
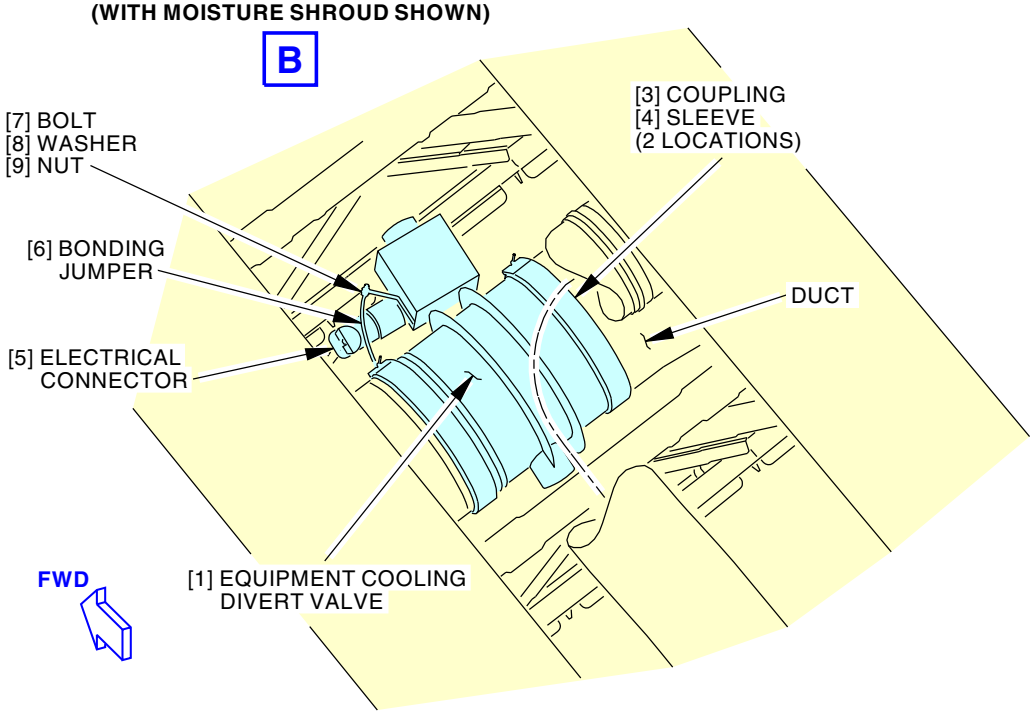


EQUIPMENT COOLING DIVERT VALVE (WITH MOISTURE SHROUD SHOWN)

B



EQUIPMENT COOLING DIVERT VALVE (WITHOUT MOISTURE SHROUD SHOWN)

C

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Equipment Cooling Divert Valve Installation
Figure 401/21-27-25-990-801 (Sheet 2 of 2)

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TASK 21-27-25-400-801

3. Equipmemt Cooling Divert Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
25-53-03-400-801	Roller Tray - Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
212	Flight Compartment, Right

C. Equipment Cooling Divert Valve Installation

SUBTASK 21-27-25-420-001

(1) Put the equipment cooling divert valve [1] between the two ducts.

SUBTASK 21-27-25-420-002

(2) Put the two sleeves [4] onto the equipment cooling divert valve [1] duct connections.

SUBTASK 21-27-25-420-003

(3) Put the two couplings [3] onto the sleeves [4].

(a) Tighten the couplings [3] to 30 in-lb (3.39 N·m) - 35 in-lb (3.95 N·m).

SUBTASK 21-27-25-420-004

(4) Install the bolt [7], washers [8], and nut [9] to connect the bonding jumper [6] to the equipment cooling divert valve [1].

(a) Make sure the bonding jumper [6], bolt [7], washers [8], and nut [9] are clean.

SUBTASK 21-27-25-420-005

(5) Connect the electrical connector [5] to the equipment cooling divert valve [1].

SUBTASK 21-27-25-420-006

(6) Install the moisture shroud [2] around the equipment cooling divert valve [1].

D. Equipment Cooling Divert Valve Installation Test

SUBTASK 21-27-25-860-002

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

SUBTASK 21-27-25-740-001

(2) Use a maintenance access terminal (MAT) to do the installation test of the equipment cooling divert valve (TASK 45-10-00-740-808).

NOTE: While the MAT test is in operation, the equipment cooling divert valve will open. A second person should put their hand approximately six inches away from the couplings on the equipment cooling divert valve to feel for air leakage while the test is in operation. If air leakage is felt, the equipment cooling divert valve couplings must be adjusted until air leakage is not felt.

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(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Forward Cargo Air Conditioning
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. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-25-410-001

(1) Reinstall the roller tray, do this task: Roller Tray - Installation, TASK 25-53-03-400-801.

SUBTASK 21-27-25-010-003

(2) Reinstall the floor panel and the walkway, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801.

SUBTASK 21-27-25-010-004

(3) 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.

——— END OF TASK ———

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IFE COOLING CHECK VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the In-Flight Entertainment (IFE) cooling check valve

(2) An installation of the IFE cooling check valve.

B. The IFE cooling system removes warm air from the IFE equipment enclosures. The warm air is sent to either the forward outflow valve through the IFE cooling overboard valve, or to the mix manifold through the IFE mix manifold valve.

C. The IFE cooling check valve prevents a reverse flow of warm air from the equipment cooling vent fan into the IFE equipment enclosures.

TASK 21-27-28-000-801

2. In-Flight Entertainment (IFE) Cooling Check Valve Removal

(Figure 401)

A. References

Reference	Title
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
123	Area Below Forward Cargo Compartment, Left

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-27-28-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-28-860-001

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

Left Power Management Panel, P110

Row	Col	Number	Name
Z	2	C21339	IFE CLG FAN

NOTE: This will ensure that there is no airflow in the duct when you remove the valve.

SUBTASK 21-27-28-010-002

(3) Open the forward cargo door (TASK 52-34-00-860-801).

SUBTASK 21-27-28-010-007

(4) Remove the floor panel and the walkway on the left side of the forward cargo compartment just forward of the aft end wall (TASK 25-52-10-000-801).

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E. IFE Cooling Check Valve Removal

SUBTASK 21-27-28-020-001

(1) Loosen the four clamps [1] and move them away from the check valve [4].

SUBTASK 21-27-28-020-002

(2) Move the sleeve [2] and the sleeve [3] away from the check valve [4].

SUBTASK 21-27-28-020-003

(3) Remove the check valve [4].

——— END OF TASK ———

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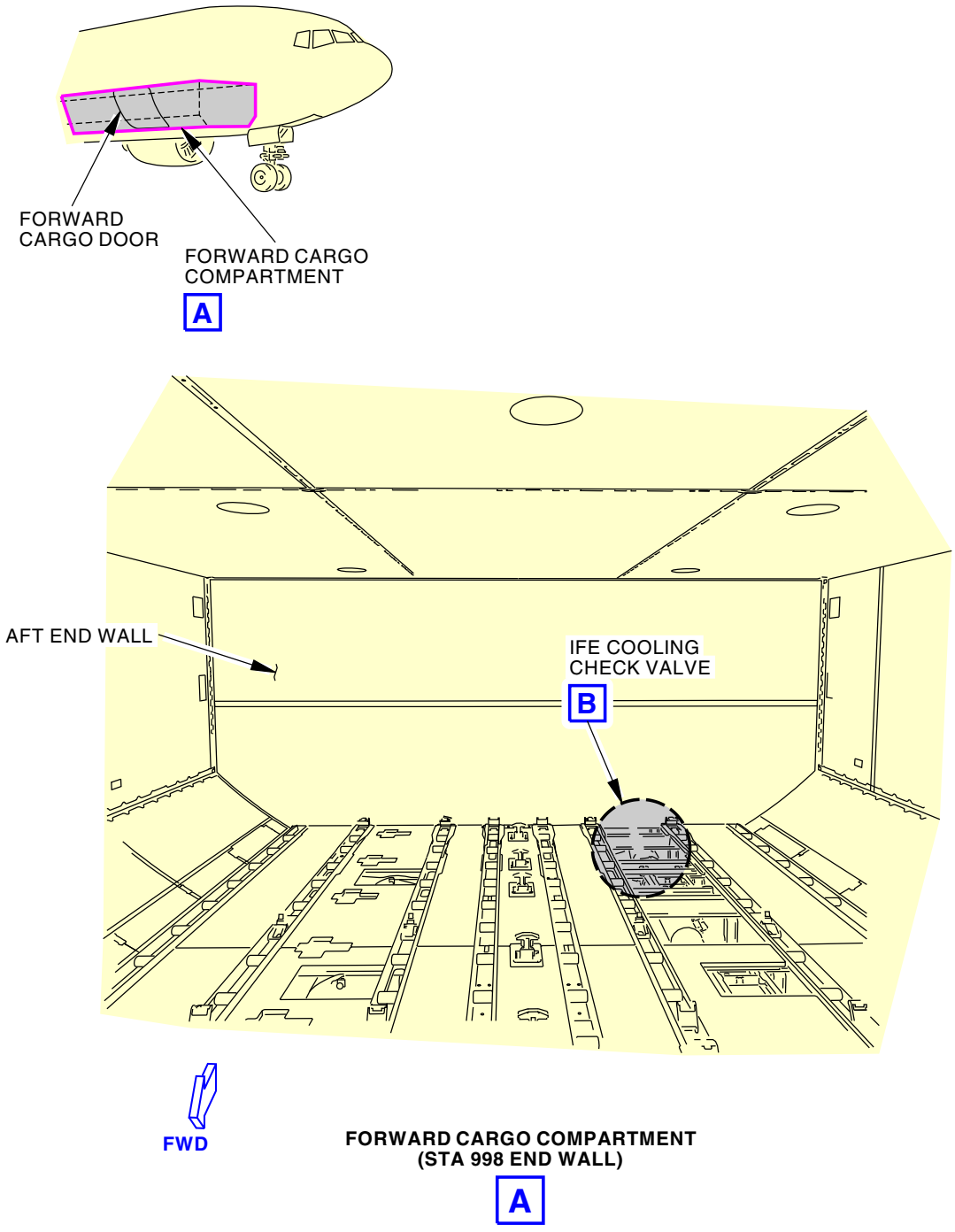

IFE Cooling Check Valve Installation
Figure 401/21-27-28-990-802 (Sheet 1 of 2)

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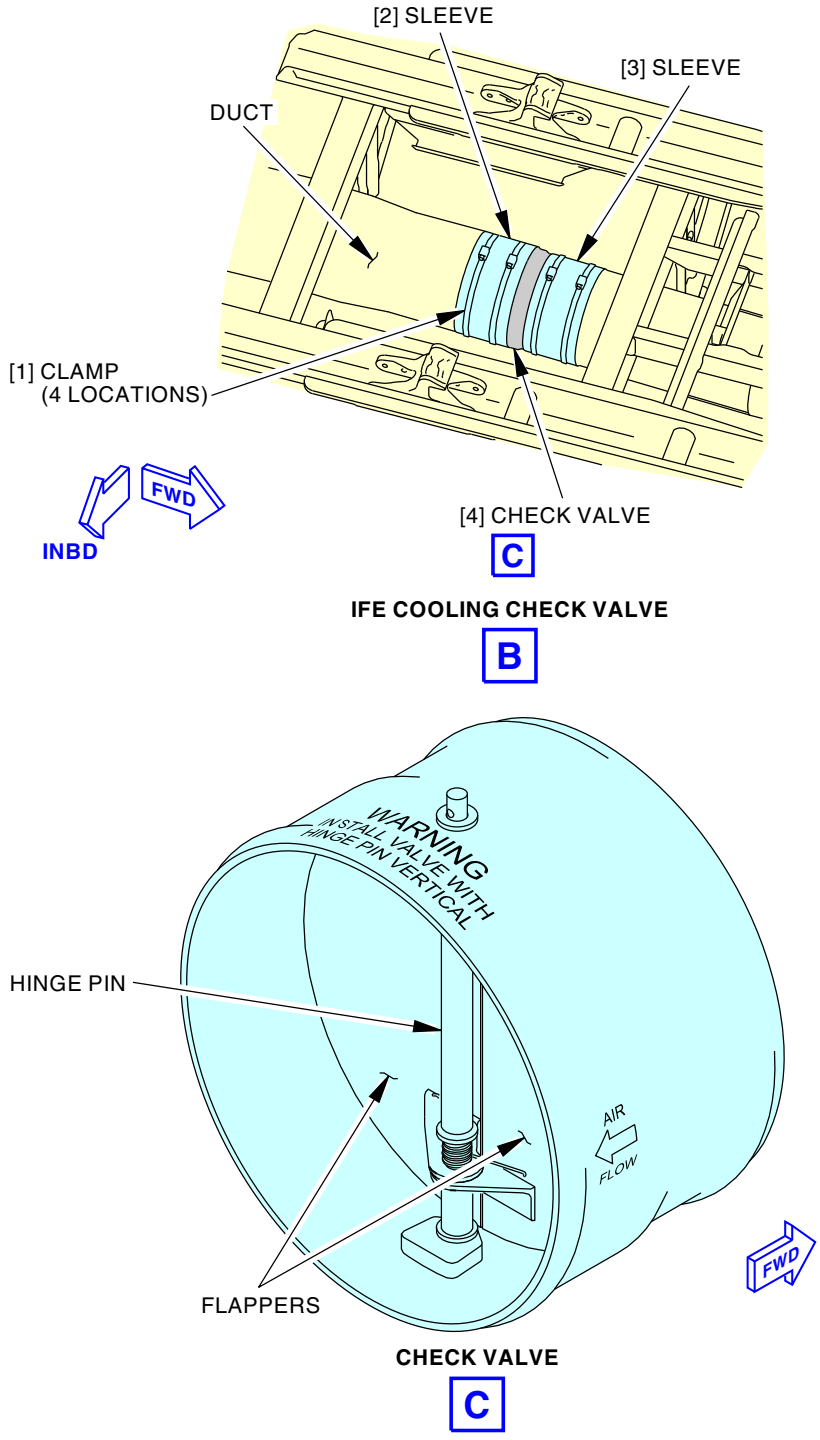

IFE Cooling Check Valve Installation
Figure 401/21-27-28-990-802 (Sheet 2 of 2)

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TASK 21-27-28-400-801

3. In-Flight Entertainment (IFE) Cooling Check Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Valve	21-27-51-33A-310	ARO 001-010

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
123	Area Below Forward Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. IFE Cooling Check Valve Installation

SUBTASK 21-27-28-420-001

(1) Install the IFE cooling check valve [4] between the two ducts:

(a) Make sure the flapper hinge pin is in the vertical orientation.

(b) Make sure the airflow arrow points in the aft direction.

SUBTASK 21-27-28-420-002

(2) Move the sleeve [2] and the sleeve [3] onto the IFE check valve [4].

SUBTASK 21-27-28-420-003

(3) Install the four clamps [1] and tighten them to 13-18 pound-inches (1.5-2.0 newton-meters).

F. IFE Cooling Check Valve Installation Test

SUBTASK 21-27-28-860-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
Z	2	C21339	IFE CLG FAN

SUBTASK 21-27-28-860-003

(2) Supply electrical power (TASK 24-22-00-860-805)

SUBTASK 21-27-28-790-001

(3) Put your hand near the sleeve [2] and the sleeve [3] to feel for air leakage.

SUBTASK 21-27-28-790-002

(4) If you feel air leakage, then adjust the sleeves and clamps until air leakage is not felt.

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-28-010-004

(1) Install the floor panel and the walkway (TASK 25-52-10-400-801).

SUBTASK 21-27-28-010-005

(2) Close the forward cargo door (TASK 52-34-00-860-803).

SUBTASK 21-27-28-010-006

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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SATCOM BACKUP COOLING FAN - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) SATCOM backup cooling fan - deactivation

(2) SATCOM backup cooling fan - activation.

TASK 21-27-30-040-801

2. SATCOM Backup Cooling Fan - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the SATCOM backup cooling fan in these equipment rack(s):

(a) Electronic equipment rack, E11.

(b) Electronic equipment rack, E13.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)
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
244	Area Above Passenger Compartment Ceiling, Right - Section 44
251	Passenger Compartment, Left - Section 46
253	Area Above Passenger Compartment Ceiling, Left - Section 46

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-27-30-860-019

CAUTION

REMOVE ELECTRICAL POWER FROM THE AIRPLANE. WHILE THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THERE IS NO AIRFLOW. WITHOUT AIRFLOW, ELECTRICAL, AND ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

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SUBTASK 21-27-30-860-020

(2) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-27-30-010-013

(3) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-30-020-007

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(4) Do this step to deactivate the left SATCOM backup cooling fan:

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
E	15	C21453	L SATCOM BACKUP CLG FAN
H	18	C21691	L SATCOM BACKUP CLG FAN CTRL

SUBTASK 21-27-30-860-024

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(5) Do this step to deactivate the right SATCOM backup cooling fan:

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
E	12	C21452	R SATCOM BACKUP CLG FAN
H	7	C21692	R SATCOM BACKUP CLG FAN CTRL

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SUBTASK 21-27-30-860-025

(6) Do these steps to access the SATCOM backup cooling fan in the equipment rack, E11:

(a) Remove the applicable inboard ceiling panel in the passenger compartment to get access to the electronic equipment rack. To remove the inboard ceiling panel, do this task: Main Ceiling Panel - Removal, TASK 25-21-06-000-801.

SUBTASK 21-27-30-860-026

(7) Do this step to access the SATCOM backup cooling fan in the equipment rack, E13:

(a) Remove the applicable inboard ceiling panel in the passenger compartment to get access to the electronic equipment rack, E13. To remove the inboard ceiling panel, do this task: Main Ceiling Panel - Removal, TASK 25-21-06-000-801.

F. SATCOM Backup Cooling Fan - Tryout

NOTE: This tryout is to make sure that the SATCOM backup cooling fans are in a zero energy state.

SUBTASK 21-27-30-860-023

(1) Use a maintenance access terminal (MAT) to do a system test of the SATCOM Backup Cooling Fan. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) System Test
6) Equipment Cooling
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.

SUBTASK 21-27-30-210-011

(2) Do a visual inspection of the SATCOM backup cooling fan.

(a) Make sure that the cooling fan is not on.

——— END OF TASK ———

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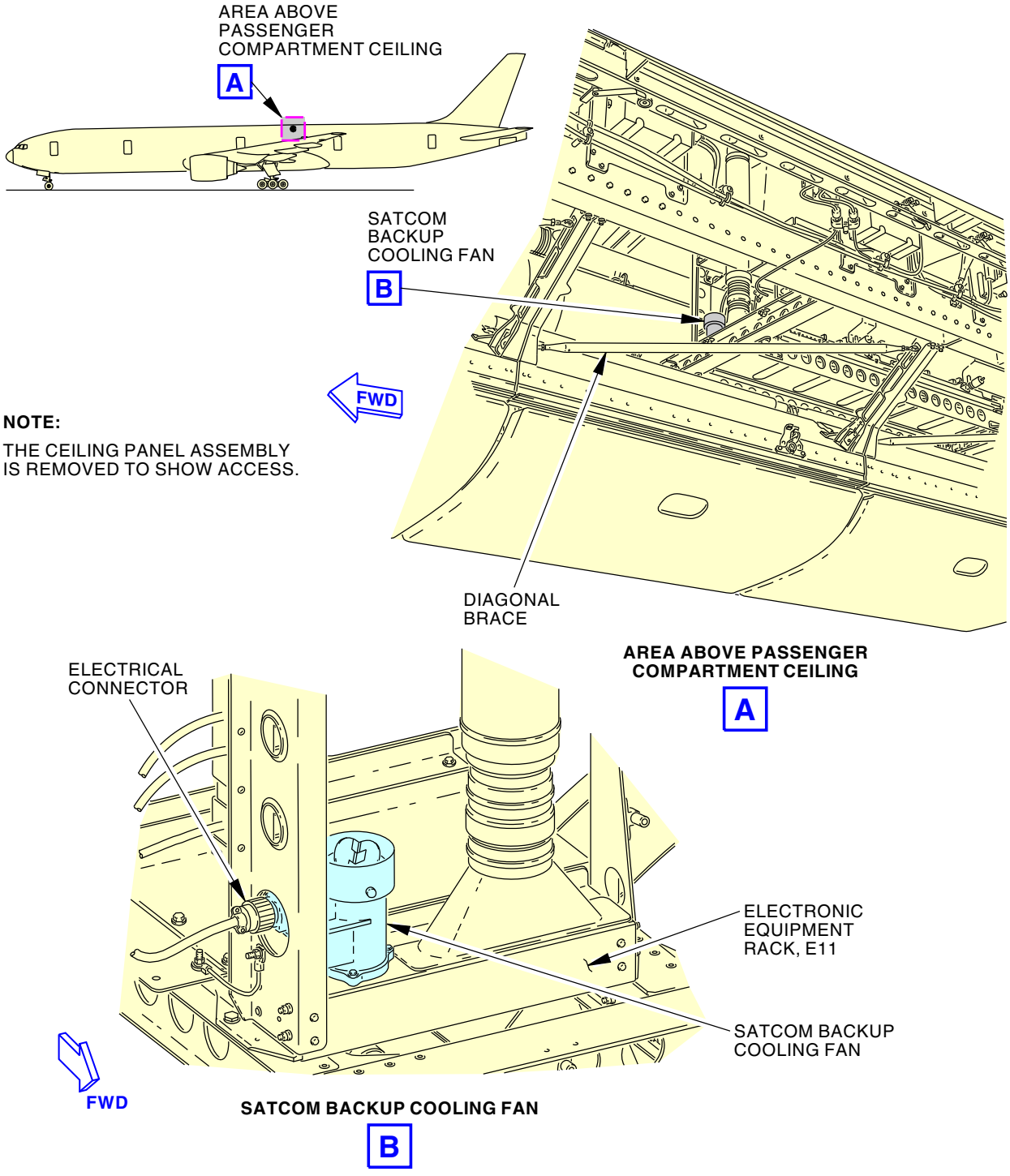

SATCOM Backup Cooling Fan
Figure 201/21-27-30-990-814 (Sheet 1 of 2)

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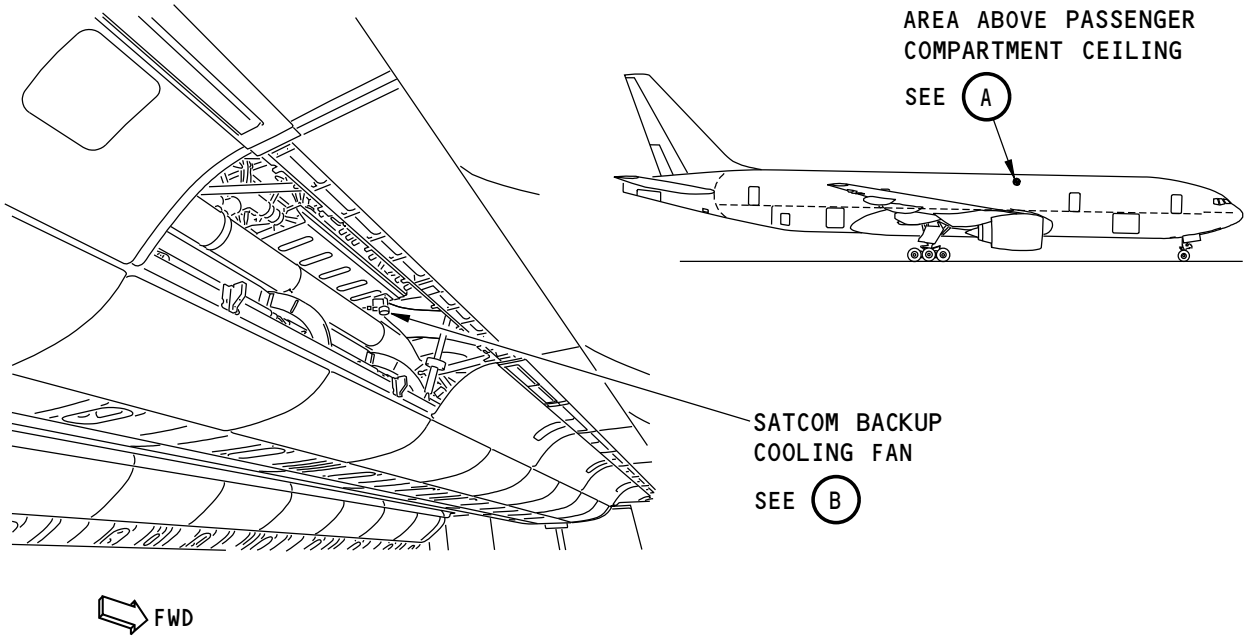
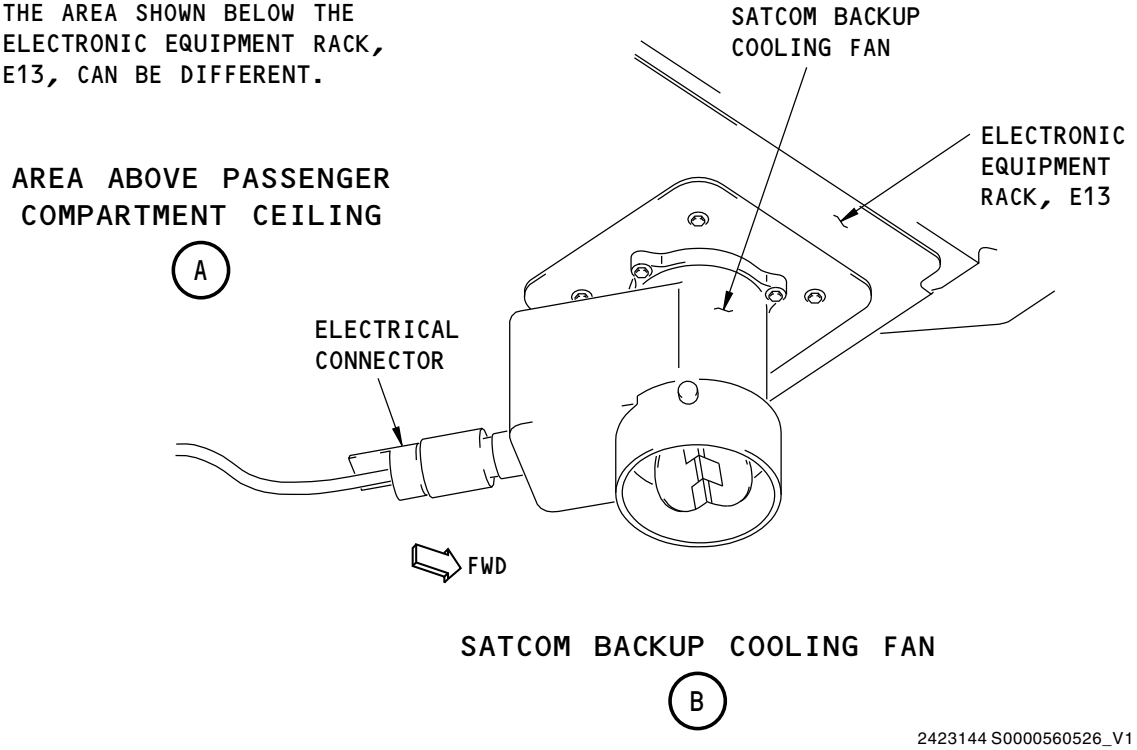


NOTE: THE CEILING PANEL ASSEMBLY IS REMOVED TO SHOW ACCESS. THE AREA SHOWN BELOW THE ELECTRONIC EQUIPMENT RACK, E13, CAN BE DIFFERENT.



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SATCOM Backup Cooling Fan
Figure 201/21-27-30-990-814 (Sheet 2 of 2)

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TASK 21-27-30-440-801

3. SATCOM Backup Cooling Fan - Activation

(Figure 201)

A. General

(1) This task will activate the SATCOM backup cooling fan in these electronic equipment rack(s):

(a) Electronic equipment rack, E11.

(b) Electronic equipment rack, E13.

B. References

Reference	Title
24-22-00-860-814	Remove Primary External Power From the Ground Handling Bus (P/B 201)
24-22-00-860-815	Remove Primary External Power from the Ground Service Bus (P/B 201)
25-21-06-400-801	Main Ceiling Panel - Installation (P/B 401)
25-21-07-400-801	Lowered Ceiling Panel Installation (P/B 401)
25-21-08-400-801	Overdoor Panel Installation/Closing (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right
244	Area Above Passenger Compartment Ceiling, Right - Section 44
251	Passenger Compartment, Left - Section 46
253	Area Above Passenger Compartment Ceiling, Left - Section 46

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-27-30-860-033

(1) Do these steps to close access the SATCOM backup cooling fan in the equipment rack, E11:

(a) Install the applicable inboard ceiling panel in the passenger compartment (TASK 25-21-06-400-801).

SUBTASK 21-27-30-420-007

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(2) Do this step to activate the left SATCOM backup cooling fan:

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Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
E	15	C21453	L SATCOM BACKUP CLG FAN
H	18	C21691	L SATCOM BACKUP CLG FAN CTRL

SUBTASK 21-27-30-860-034

(3) Do these steps to close access the SATCOM backup cooling fan in the equipment rack, E13:

(a) Install the applicable inboard ceiling panel in the passenger compartment (TASK 25-21-06-400-801 or TASK 25-21-07-400-801 or TASK 25-21-08-400-801).

SUBTASK 21-27-30-420-008

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(4) Do this step to activate the right SATCOM backup cooling fan:

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
E	12	C21452	R SATCOM BACKUP CLG FAN
H	7	C21692	R SATCOM BACKUP CLG FAN CTRL

SUBTASK 21-27-30-410-001

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-30-860-035

(6) If it is necessary, remove external power from the Ground Handling Bus and the Ground Service Bus:

(a) Do this task: Remove Primary External Power From the Ground Handling Bus, TASK 24-22-00-860-814.

(b) Do this task: Remove Primary External Power from the Ground Service Bus, TASK 24-22-00-860-815.

END OF TASK

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SATCOM BACKUP COOLING FAN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the SATCOM backup cooling fan.

(2) An installation of the SATCOM backup cooling fan.

(3) There is a SATCOM backup cooling fan installed on these electronic equipment rack(s):

(a) The electronic equipment rack, E11.

(b) The electronic equipment rack, E13.

TASK 21-27-30-000-801

2. SATCOM Backup Cooling Fan Removal - Electronic Equipment Rack, E11

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You must remove electrical power from the airplane before you remove the SATCOM backup cooling fan. This will make sure that the electrical/electronic equipment does not receive electrical power when the SATCOM Cooling System is not in operation.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)

C. Location Zones

Zone	Area
251	Passenger Compartment, Left - Section 46
253	Area Above Passenger Compartment Ceiling, Left - Section 46

D. Prepare for the Removal

SUBTASK 21-27-30-860-001

CAUTION

MAKE SURE THAT YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-30-860-017

(2) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

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(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-27-30-010-011

(3) Remove the applicable inboard ceiling panel in the passenger compartment to get access to the electronic equipment rack, E11 (TASK 25-21-06-000-801).

E. SATCOM Backup Cooling Fan Removal

SUBTASK 21-27-30-020-001

(1) Disconnect the electrical connector [4].

SUBTASK 21-27-30-140-001

(2) Remove as much of the sealant as you can from the SATCOM backup cooling fan [1] and the electronic equipment rack, E11.

SUBTASK 21-27-30-020-002

(3) Remove the three screws [2] and three washers [3] which attach the SATCOM backup cooling fan [1] to the electronic equipment rack, E11.

SUBTASK 21-27-30-020-003

(4) Remove the SATCOM backup cooling fan [1] from the electronic equipment rack, E11.

SUBTASK 21-27-30-140-002

(5) Remove the remaining sealant from the SATCOM backup cooling fan [1] and the electronic equipment rack, E11.

——— END OF TASK ———

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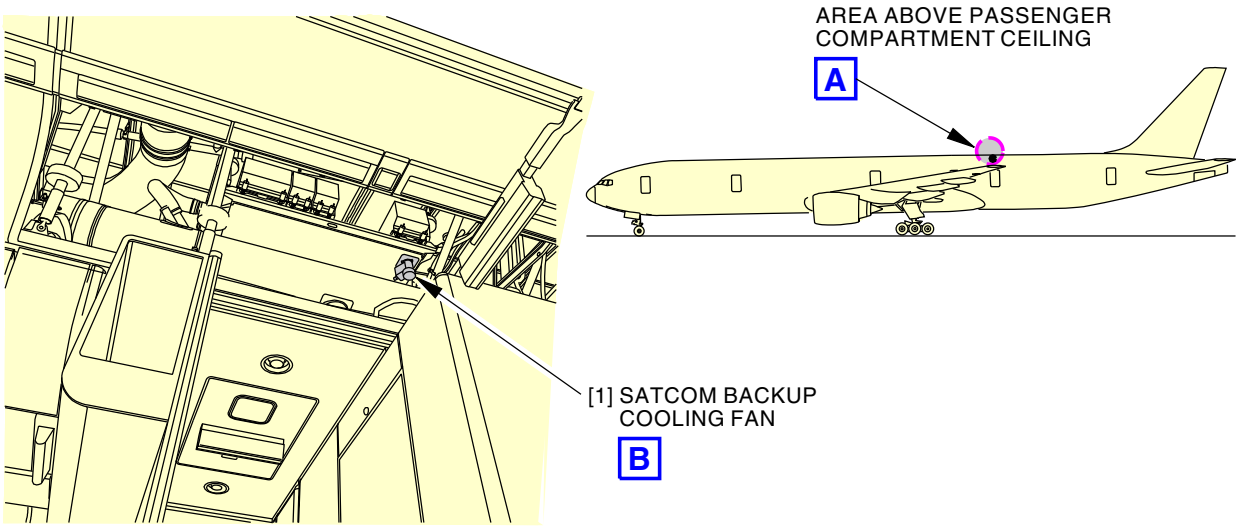


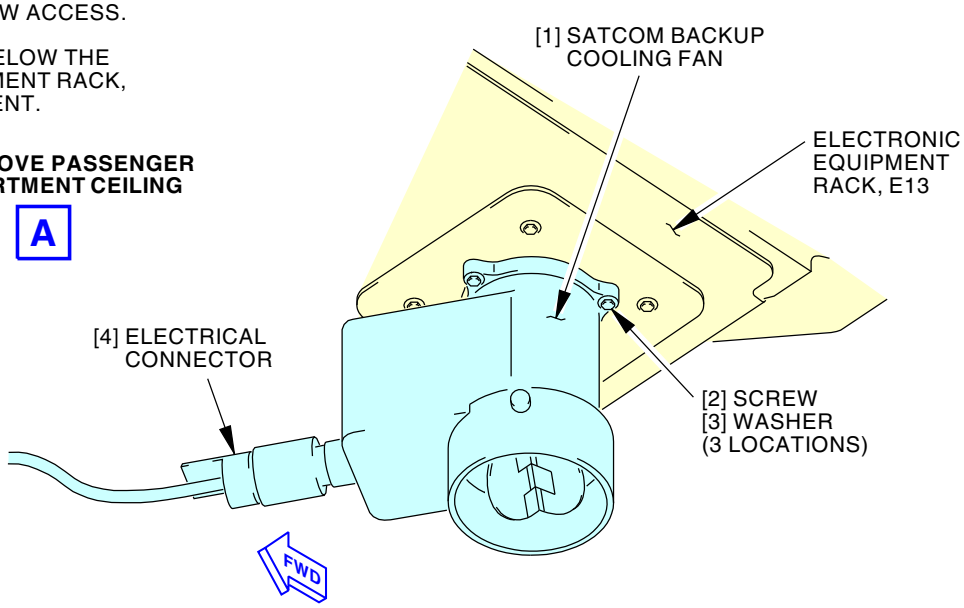
NOTE:

THE CEILING PANEL ASSEMBLY IS REMOVED TO SHOW ACCESS.

THE AREA SHOWN BELOW THE ELECTRONIC EQUIPMENT RACK, E13, CAN BE DIFFERENT.

AREA ABOVE PASSENGER COMPARTMENT CEILING

A



SATCOM BACKUP COOLING FAN

B

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Electronic Equipment Rack, E11, SATCOM Backup Cooling Fan Installation
Figure 401/21-27-30-990-806

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TASK 21-27-30-400-801

3. SATCOM Backup Cooling Fan Installation - Electronic Equipment Rack, E11

NOTE: (Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

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

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	21-27-30-35B-525	ARO ALL

D. Location Zones

Zone	Area
212	Flight Compartment, Right
253	Area Above Passenger Compartment Ceiling, Left - Section 46

E. SATCOM Backup Cooling Fan Installation

SUBTASK 21-27-30-210-001

(1) Make sure the mating surfaces of the SATCOM backup cooling fan [1] and the electronic equipment rack, E11, are clean.

SUBTASK 21-27-30-390-001

(2) Apply a layer of the sealant, A00247 to the mating surfaces of the SATCOM backup cooling fan [1] and the electronic equipment rack, E11.

SUBTASK 21-27-30-420-001

(3) Put the SATCOM backup cooling fan [1] in its position on the electronic equipment rack, E11.

SUBTASK 21-27-30-420-002

(4) Install the three screws [2] and three washers [3] which attach the SATCOM backup cooling fan [1] to the electronic equipment rack, E11.

SUBTASK 21-27-30-420-003

(5) Connect the electrical connector [4].

F. SATCOM Backup Cooling Fan Installation Test

SUBTASK 21-27-30-860-002

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

SUBTASK 21-27-30-740-001

(2) Use a Maintenance Access Terminal (MAT) to do a system test of the SATCOM Backup Cooling Fan (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

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2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) System Test
6) Equipment Cooling
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.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-30-010-002

(1) Install the applicable inboard ceiling panel in the passenger compartment (TASK 25-21-06-400-801).

——— END OF TASK ———

TASK 21-27-30-000-802

4. SATCOM Backup Cooling Fan Removal - Electronic Equipment Rack, E13

(Figure 402)

A. General

(1) You must remove electrical power from the airplane before you remove the SATCOM backup cooling fan. This will make sure the electrical/electronic equipment does not receive electrical power when the SATCOM Cooling System is not in operation.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)

C. Location Zones

Zone	Area
244	Area Above Passenger Compartment Ceiling, Right - Section 44

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D. Prepare for the Removal

SUBTASK 21-27-30-860-004

CAUTION	MAKE SURE THAT YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-30-860-018

(2) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-27-30-010-003

(3) Remove the applicable inboard ceiling panel in the passenger compartment to get access to the electronic equipment rack, E13 (TASK 25-21-06-000-801).

E. SATCOM Backup Cooling Fan Removal

SUBTASK 21-27-30-020-004

(1) Disconnect the electrical connector [24].

SUBTASK 21-27-30-140-003

(2) Remove as much of the sealant as you can from the SATCOM backup cooling fan [21] and the electronic equipment rack, E13.

SUBTASK 21-27-30-020-005

(3) Remove the three screws [22] and three washers [23] which attach the SATCOM backup cooling fan [21] to the electronic equipment rack, E13.

SUBTASK 21-27-30-020-006

(4) Remove the SATCOM backup cooling fan [21] from the electronic equipment rack, E13.

SUBTASK 21-27-30-140-004

(5) Remove the remaining sealant from the SATCOM backup cooling fan [21] and the electronic equipment rack, E13.

END OF TASK

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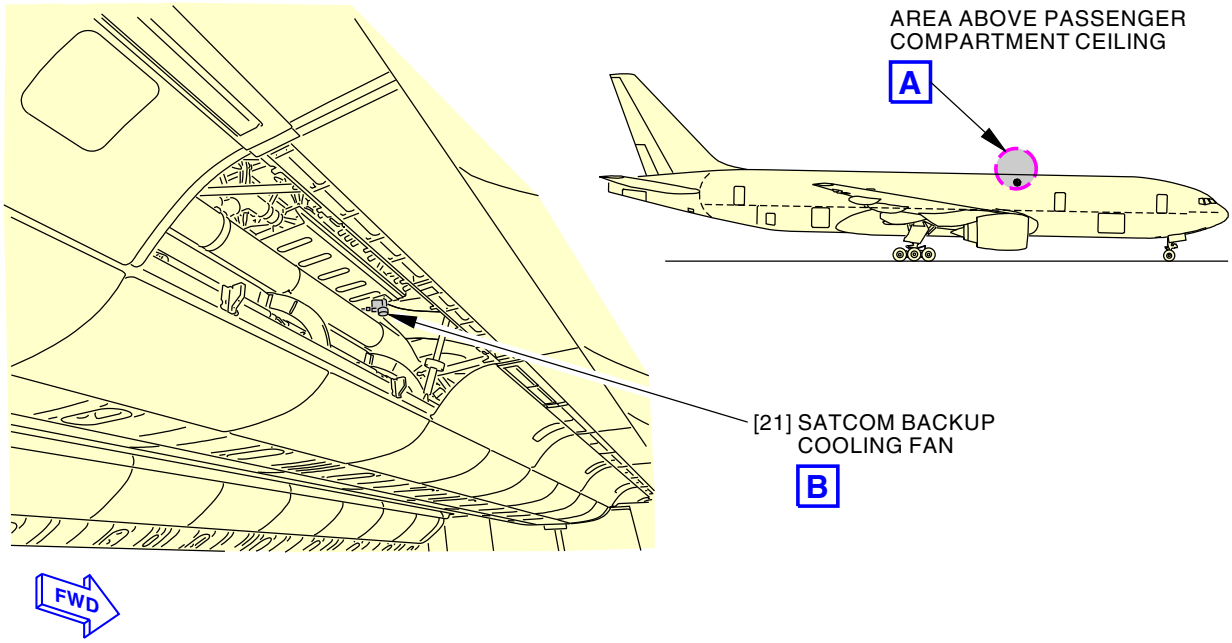
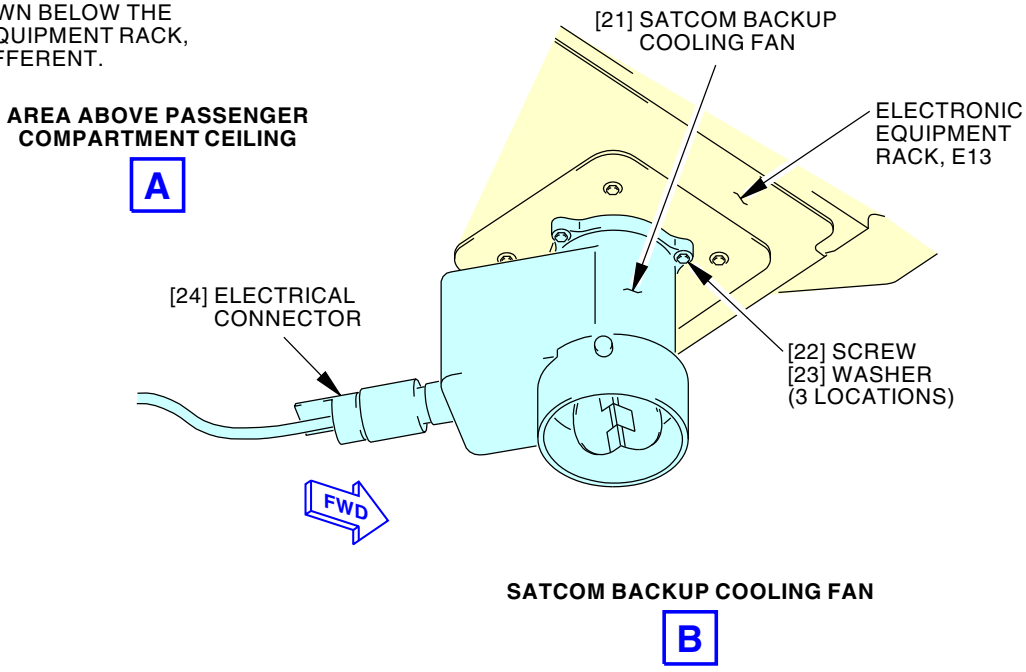


NOTE:

THE CEILING PANEL ASSEMBLY IS REMOVED TO SHOW ACCESS.

THE AREA SHOWN BELOW THE ELECTRONIC EQUIPMENT RACK, E13, CAN BE DIFFERENT.



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Electronic Equipment Rack, E13, SATCOM Backup Cooling Fan Installation
Figure 402/21-27-30-990-802

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TASK 21-27-30-400-802

5. SATCOM Backup Cooling Fan Installation - Electronic Equipment Rack, E13

(Figure 401)

A. References

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

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Fan	21-27-30-35A-120	ARO ALL

D. Location Zones

Zone	Area
212	Flight Compartment, Right
244	Area Above Passenger Compartment Ceiling, Right - Section 44

E. SATCOM Backup Cooling Fan Installation

SUBTASK 21-27-30-210-002

(1) Make sure the mating surfaces of the SATCOM backup cooling fan [21] and the electronic equipment rack, E13, are clean.

SUBTASK 21-27-30-390-002

(2) Apply a layer of the sealant, A00247 to the mating surfaces of the SATCOM backup cooling fan [21] and the electronic equipment rack, E13.

SUBTASK 21-27-30-420-004

(3) Put the SATCOM backup cooling fan [21] in its position on the electronic equipment rack, E13.

SUBTASK 21-27-30-420-005

(4) Install the three screws [22] and three washers [23] which attach the SATCOM backup cooling fan [21] to the electronic equipment rack, E13.

SUBTASK 21-27-30-420-006

(5) Connect the electrical connector [24].

F. SATCOM Backup Cooling Fan Installation Test

SUBTASK 21-27-30-860-005

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

SUBTASK 21-27-30-740-002

(2) Use a Maintenance Access Terminal (MAT) to do a system test of the SATCOM Backup Cooling Fan (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

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3) GROUND TESTS

4) 21 Environmental Control System

5) System Test

6) Equipment Cooling

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.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-30-010-004

(1) Install the applicable inboard ceiling panel in the passenger compartment (TASK 25-21-06-400-801).

——— END OF TASK ———

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SATCOM BACKUP COOLING FAN - INSPECTION/CHECK

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) A check of the SATCOM backup cooling fan flappers.

NOTE: The SATCOM backup cooling fan has two flappers.

(2) There is a SATCOM backup cooling fan installed on these electronic equipment rack(s):

(a) The electronic equipment rack, E11.

(b) The electronic equipment rack, E13.

TASK 21-27-30-200-801

2. SATCOM Backup Cooling Fan Check - Electronic Equipment Rack, E11

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You must remove electrical power from the 115V AC Bus before you do a check of the flappers inside the SATCOM backup cooling fan.

NOTE: This will make sure that the lavatory/galley ventilation fans do not operate when you do the check. If the lavatory/galley ventilation fans do operate, the flappers will not move freely when you do the check.

(2) You can supply external ground service power to use the airplanes internal lighting.

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)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (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)

C. Location Zones

Zone	Area
251	Passenger Compartment, Left - Section 46
253	Area Above Passenger Compartment Ceiling, Left - Section 46

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D. Prepare for the Check

SUBTASK 21-27-30-860-013

CAUTION	MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE 115V AC BUS. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE LAVATORY/GALLEY VENTILATION SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT MAY BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-30-860-014

(2) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-27-30-010-005

(3) Remove the applicable inboard ceiling panel in the passenger compartment to get access to the electronic equipment rack, E11. To remove the inboard ceiling panel, do this task: Main Ceiling Panel - Removal, TASK 25-21-06-000-801.

E. SATCOM Backup Cooling Fan Check

SUBTASK 21-27-30-210-003

(1) Use a small screwdriver to open each flapper.

(a) Make sure that each flapper opens fully and freely.

SUBTASK 21-27-30-210-004

(2) Make sure that each flapper closes fully and freely.

SUBTASK 21-27-30-210-005

(3) Make sure there is no damage to the flappers.

SUBTASK 21-27-30-210-006

(4) Make sure there is no corrosion or lint on the flappers or the hinge pin.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-30-860-009

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

SUBTASK 21-27-30-010-006

(2) Do this task: Main Ceiling Panel - Installation, TASK 25-21-06-400-801.

END OF TASK

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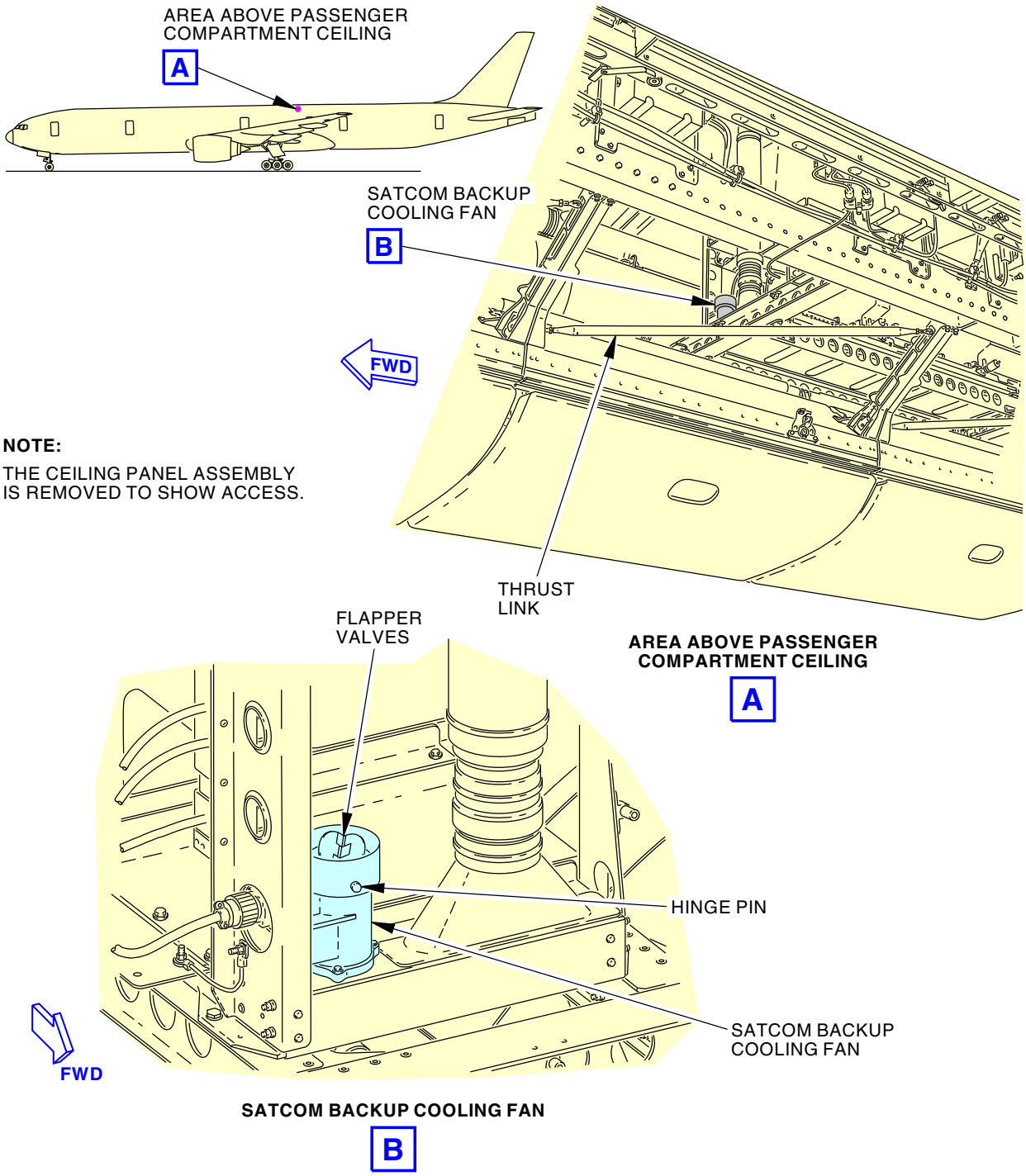

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Electronic Equipment Rack, E11, SATCOM Backup Cooling Fan Inspection
Figure 601/21-27-30-990-809

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TASK 21-27-30-200-802

3. SATCOM Backup Cooling Fan Check - Electronic Equipment Rack, E13

(Figure 602)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You must remove electrical power from the 115V AC Bus before you do a check of the flappers inside the SATCOM backup cooling fan.

NOTE: This will make sure that the lavatory/galley ventilation fans do not operate when you do the check. If the lavatory/galley ventilation fans do operate, the flappers will not move freely when you do the check.

(2) You can supply external ground service power to use the airplanes internal lighting.

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)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (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)

C. Location Zones

Zone	Area
244	Area Above Passenger Compartment Ceiling, Right - Section 44

D. Prepare for the Check

SUBTASK 21-27-30-860-015

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE 115V AC BUS. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE LAVATORY/GALLEY VENTILATION SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT MAY BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-30-860-016

(2) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

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SUBTASK 21-27-30-010-007

(3) Remove the applicable inboard ceiling panel in the passenger compartment to get access to the electronic equipment rack, E13. To remove the inboard ceiling panel, do this task: Main Ceiling Panel - Removal, TASK 25-21-06-000-801.

E. SATCOM Backup Cooling Fan Check

SUBTASK 21-27-30-210-007

(1) Use a small screwdriver to open each flapper.

NOTE: The flappers should move fully and freely.

SUBTASK 21-27-30-210-008

(2) Make sure each flapper closes.

NOTE: The flapper valves should move fully and freely.

SUBTASK 21-27-30-210-009

(3) Make sure there is no damage to the flappers.

SUBTASK 21-27-30-210-010

(4) Make sure there is no corrosion or lint on the flappers or the hinge pin.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-30-860-010

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

SUBTASK 21-27-30-010-008

(2) Do this task: Main Ceiling Panel - Installation, TASK 25-21-06-400-801.

——— END OF TASK ———

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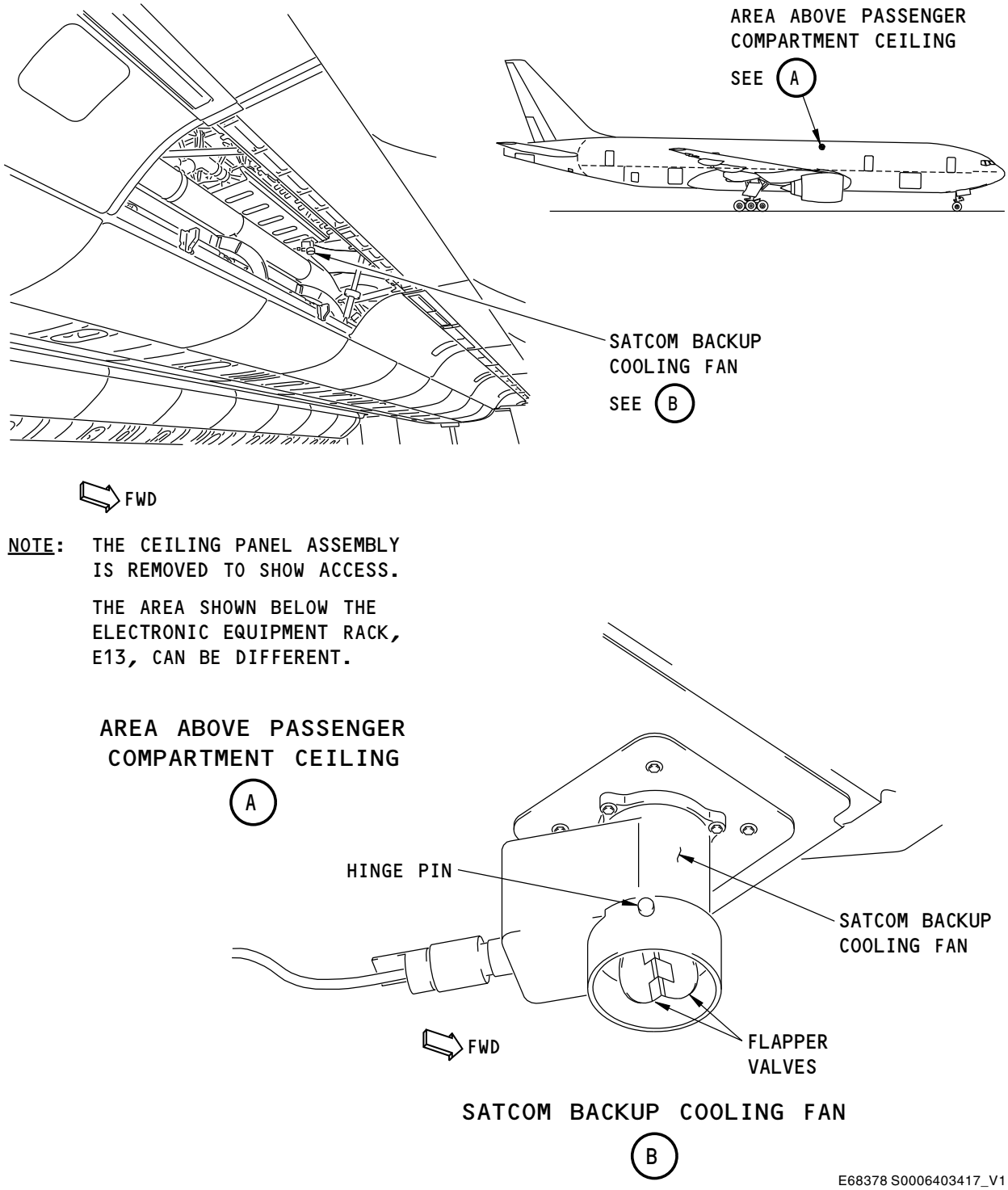

Electronic Equipment Rack, E13, SATCOM Backup Cooling Fan Inspection
Figure 602/21-27-30-990-804

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SATCOM BACKUP COOLING CHECK VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A removal of the SATCOM backup cooling check valve.

(2) An installation of the SATCOM backup cooling check valve.

C. There is a SATCOM backup cooling check valve installed on the electronic equipment rack that follows:

(1) The electronic equipment rack, E11.

(2) The electronic equipment rack, E13.

D. In the normal mode, the SATCOM equipment is cooled by one of the lavatory/galley ventilation fans. If the two lavatory/galley ventilation fans fail, the SATCOM backup cooling check valve closes and lets the SATCOM backup cooling fan cool the SATCOM equipment.

TASK 21-27-31-000-801

2. SATCOM Backup Cooling Check Valve Removal - Electronic Equipment Rack, E11

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You must remove electrical power from the 115V AC Bus before you remove the SATCOM backup cooling check valve. This will make sure that the electrical/electronic equipment does not receive electrical power when the SATCOM Cooling System is not in operation.

(2) You can supply external ground service power to use the airplanes internal lighting.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)

C. Location Zones

Zone	Area
251	Passenger Compartment, Left - Section 46
253	Area Above Passenger Compartment Ceiling, Left - Section 46

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D. Prepare for the Removal

SUBTASK 21-27-31-860-009

CAUTION	MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE 115V AC BUS. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE SATCOM COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT MAY BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-31-860-010

(2) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-27-31-010-001

(3) Remove the applicable inboard ceiling panel to get access to the SATCOM backup cooling check valve. To remove the inboard ceiling panel, do this task: Main Ceiling Panel - Removal, TASK 25-21-06-000-801.

E. SATCOM Backup Cooling Check Valve Removal

SUBTASK 21-27-31-020-001

(1) Remove the plastic strap [3] which keeps the sleeve [2] on the SATCOM backup cooling check valve [1].

SUBTASK 21-27-31-020-002

(2) Remove the plastic strap [3] which keeps the flex duct on the SATCOM backup cooling check valve [1].

SUBTASK 21-27-31-020-003

(3) Remove the SATCOM backup cooling check valve [1].

SUBTASK 21-27-31-210-002

(4) Examine the SATCOM backup cooling check valve [1] as follows:

(a) Use your finger or a pencil to push on each flapper to open them.

1) Make sure that each flapper opens fully and freely.

(b) Make sure each flapper closes fully and freely.

(c) Make sure there is no damage to the flappers.

(d) Make sure there is no corrosion or lint on the flappers or the hinge pin.

END OF TASK

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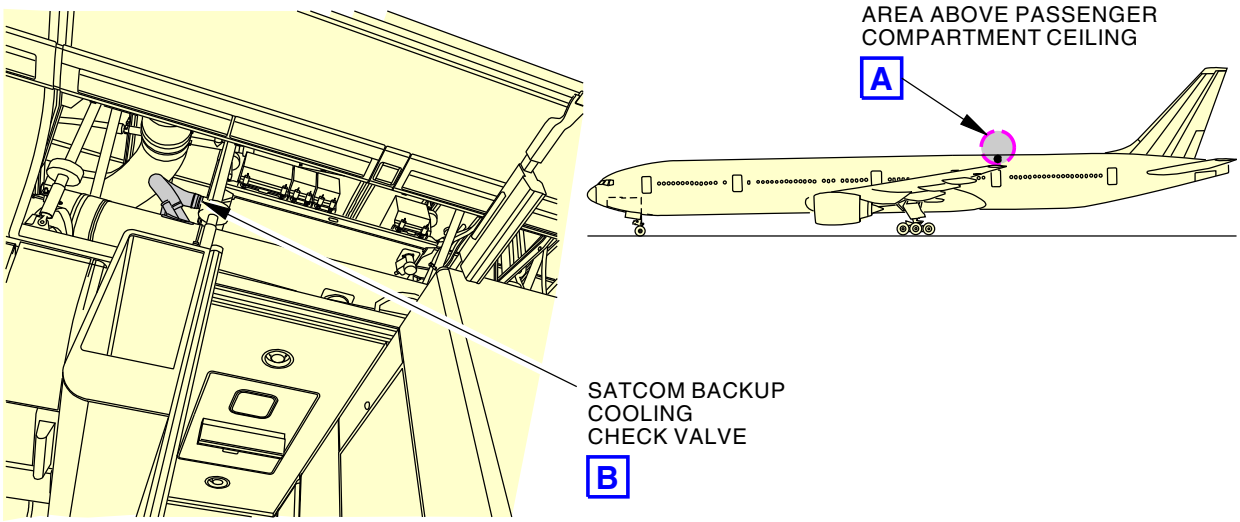
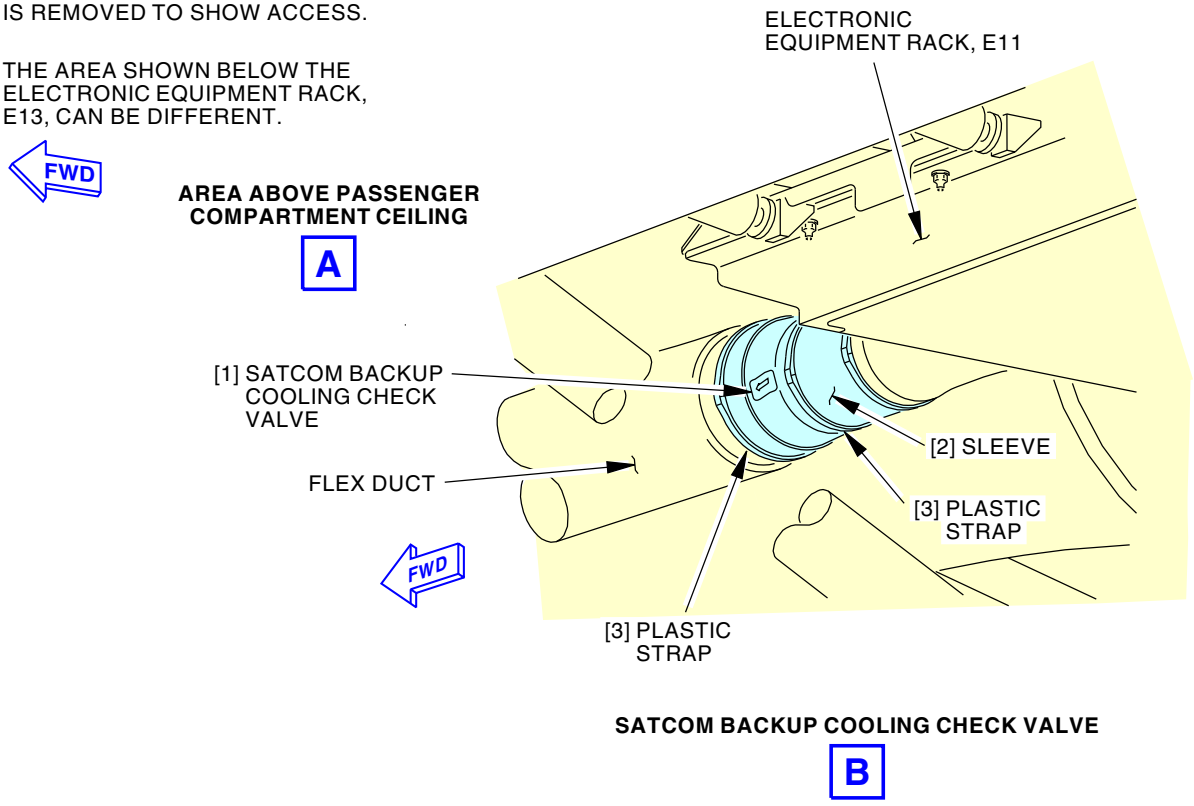


NOTE:

THE CEILING PANEL ASSEMBLY IS REMOVED TO SHOW ACCESS.

THE AREA SHOWN BELOW THE ELECTRONIC EQUIPMENT RACK, E13, CAN BE DIFFERENT.



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Electronic Equipment Rack, E11, SATCOM Backup Cooling Check Valve Installation
Figure 401/21-27-31-990-803

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TASK 21-27-31-400-801

3. SATCOM Backup Cooling Check Valve Installation - Electronic Equipment Rack, E11

NOTE: (Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-21-06-400-801	Main Ceiling Panel - Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-27-30-35B-560	ARO ALL
3	Strap	21-27-30-35B-565	ARO ALL

C. Location Zones

Zone	Area
251	Passenger Compartment, Left - Section 46
253	Area Above Passenger Compartment Ceiling, Left - Section 46

D. SATCOM Backup Cooling Check Valve Installation

SUBTASK 21-27-31-420-007

(1) Put the SATCOM backup cooling check valve [1] into the sleeve [2] and the flex duct.

NOTE: Make sure the flow arrow points forward.

SUBTASK 21-27-31-420-002

(2) Install a new plastic strap [3] on the sleeve [2].

SUBTASK 21-27-31-420-003

(3) Install a new plastic strap [3] on the flex duct.

E. SATCOM Backup Cooling Check Valve Leakage Test

SUBTASK 21-27-31-860-002

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

SUBTASK 21-27-31-210-001

(2) Make sure there is no air leakage where the sleeve [2] and the flex duct are attached to the SATCOM backup cooling check valve [1].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-31-010-002

(1) To install the inboard ceiling panel, do this task: Main Ceiling Panel - Installation, TASK 25-21-06-400-801.

——— END OF TASK ———

TASK 21-27-31-000-802

4. SATCOM Backup Cooling Check Valve Removal - Electronic Equipment Rack, E13

(Figure 402)

NOTE: This procedure is a scheduled maintenance task.

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A. General

(1) You must remove electrical power from the 115V AC Bus before you remove the SATCOM backup cooling check valve. This will make sure that the electrical/electronic equipment does not receive electrical power when the SATCOM Cooling System is not in operation.

(2) You can supply external ground service power to use the airplanes internal lighting.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
24-22-00-860-811	Supply Primary External Power to the Ground Handling Bus (P/B 201)
24-22-00-860-812	Supply Primary External Power to the Ground Service Bus (P/B 201)
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)

C. Location Zones

Zone	Area
253	Area Above Passenger Compartment Ceiling, Left - Section 46

D. Prepare for the Removal

SUBTASK 21-27-31-860-011

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE 115V AC BUS. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE SATCOM COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT MAY BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-31-860-012

(2) If it is necessary, supply external power to the Ground Handling Bus and the Ground Service Bus:

NOTE: You can supply external ground service power to use the airplanes internal lighting to do the task.

(a) Do this task: Supply Primary External Power to the Ground Handling Bus, TASK 24-22-00-860-811.

(b) Do this task: Supply Primary External Power to the Ground Service Bus, TASK 24-22-00-860-812.

SUBTASK 21-27-31-010-003

(3) Remove the applicable inboard ceiling panel to get access to the SATCOM backup cooling check valve. To remove the inboard ceiling panel, do this task: Main Ceiling Panel - Removal, TASK 25-21-06-000-801.

E. SATCOM Backup Cooling Check Valve Removal

SUBTASK 21-27-31-020-004

(1) Remove the plastic strap [23] which keeps the sleeve [22] on the SATCOM backup cooling check valve [21].

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SUBTASK 21-27-31-020-005

(2) Remove the plastic strap [23] which keeps the flex duct on the SATCOM backup cooling check valve [21].

SUBTASK 21-27-31-020-006

(3) Remove the SATCOM backup cooling check valve [21].

SUBTASK 21-27-31-210-003

(4) Examine the SATCOM backup cooling check valve [21] as follows:

(a) Use your finger or a pencil to push on each flapper to open them.

1) Make sure that each flapper opens fully and freely.

(b) Make sure each flapper closes fully and freely.

(c) Make sure there is no damage to the flappers.

(d) Make sure there is no corrosion or lint on the flappers or the hinge pin.

——— END OF TASK ———

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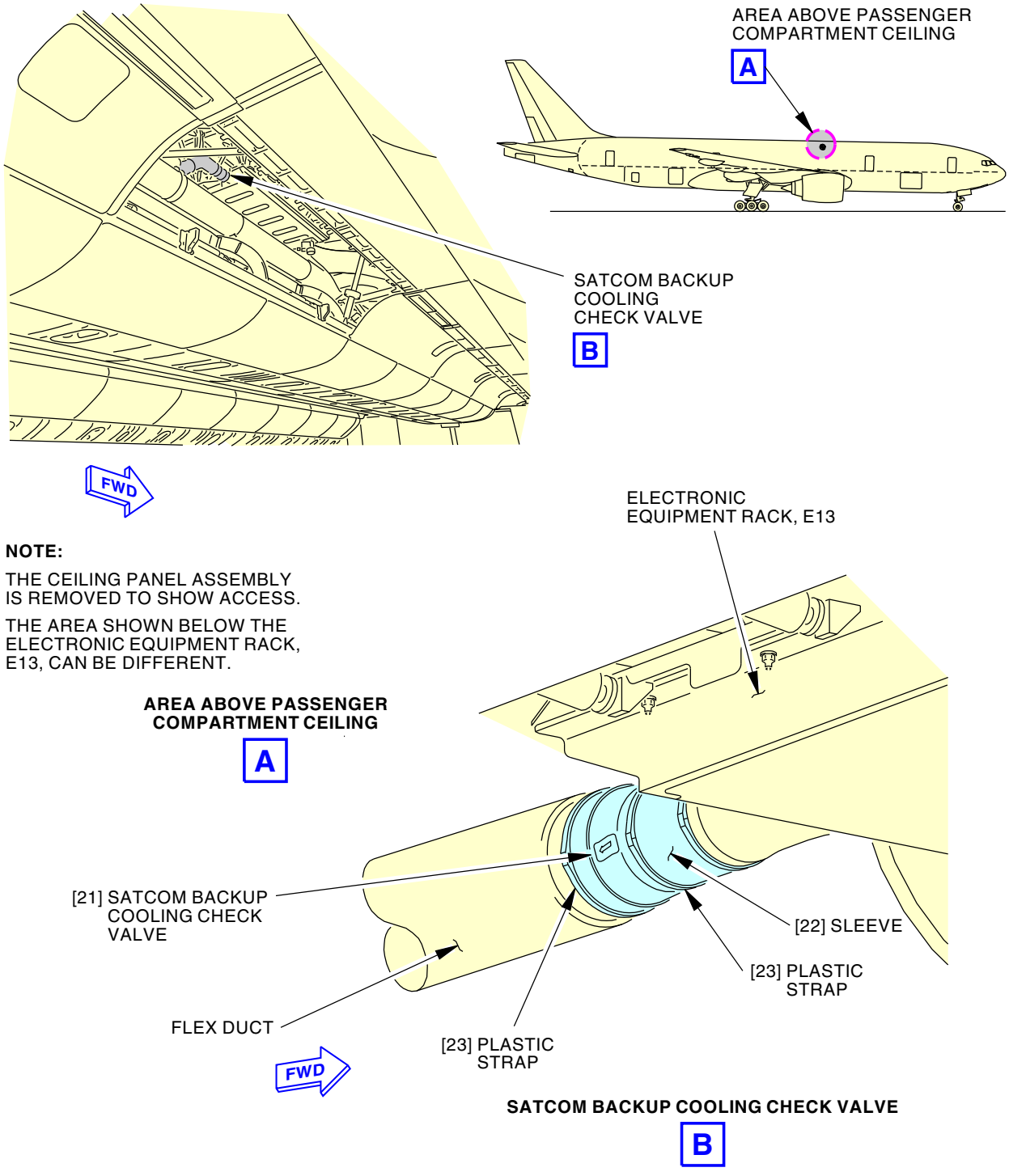

Electronic Equipment Rack, E13, SATCOM Backup Cooling Check Valve Installation
Figure 402/21-27-31-990-802

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TASK 21-27-31-400-802

5. SATCOM Backup Cooling Check Valve Installation - Electronic Equipment Rack, E13

(Figure 402)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-21-06-400-801	Main Ceiling Panel - Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Valve	21-27-30-35A-155	ARO ALL
23	Strap	21-27-30-35A-160	ARO ALL

C. Location Zones

Zone	Area
253	Area Above Passenger Compartment Ceiling, Left - Section 46

D. SATCOM Backup Cooling Check Valve Installation

SUBTASK 21-27-31-420-004

(1) Put the SATCOM backup cooling check valve [21] into the sleeve [22] and the flex duct.

NOTE: Make sure the flow arrow points forward.

SUBTASK 21-27-31-420-005

(2) Install a new plastic strap [23] on the sleeve [22].

SUBTASK 21-27-31-420-006

(3) Install a new plastic strap [23] on the flex duct.

E. SATCOM Backup Cooling Check Valve Leakage Test

SUBTASK 21-27-31-860-005

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

SUBTASK 21-27-31-210-004

(2) Make sure there is no air leakage where the sleeve [22] and the flex duct are attached to the SATCOM backup cooling check valve [21].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-31-010-004

(1) To install the inboard ceiling panel, do this task: Main Ceiling Panel - Installation, TASK 25-21-06-400-801.

——— END OF TASK ———

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IFE AIR SUPPLY FLOW CONTROL ORIFICE - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) A removal of a flow control orifice.

(2) An installation of a flow control orifice.

(3) A cleaning of the flow control orifice.

B. There are two different types of flow control orifices installed in the IFE air supply ducts. There is a single hole orifice and a multi-holed orifice. Orifices control and balance the flow of conditioned air to the IFE compartment. An orifice is usually found where a small duct is connected to a larger duct.

C. The orifice and the duct connection are sealed in a flexible sleeve. The orifice has identification tags that extend out of the sleeve. You can look for these orifice identification tags to determine if a duct has an orifice installed.

TASK 21-27-34-000-801

2. Flow Control Orifice Removal

Figure 201

A. References

Reference	Title
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Prepare for the Removal

SUBTASK 21-27-34-860-001

(1) Make sure that there is no air flow in the duct which contains the orifice. To do this, turn off this system:

CAUTION

REMOVE ELECTRICAL POWER FROM THE AIRPLANE. WHILE THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THERE IS NO AIRFLOW. WITHOUT AIRFLOW, ELECTRICAL, AND ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(a) The equipment cooling system.

SUBTASK 21-27-34-010-001

(2) Get access to the applicable duct.

(a) Remove the applicable ceiling panel. To do this, do this task: (Main Ceiling Panel - Removal, TASK 25-21-06-000-801).

D. Orifice Removal

SUBTASK 21-27-34-020-001

(1) If the flexible sleeve is attached to the duct with plastic straps, remove and discard the plastic straps.

SUBTASK 21-27-34-020-002

(2) If the flexible sleeve is attached to the duct with clamps, do these steps:

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(a) Loosen the clamps.

(b) Move the clamps away from the flexible sleeve.

SUBTASK 21-27-34-020-003

(3) Move the flexible sleeve away from the orifice identifier tags.

SUBTASK 21-27-34-020-004

(4) Remove the orifice from the end of the duct.

——— END OF TASK ———

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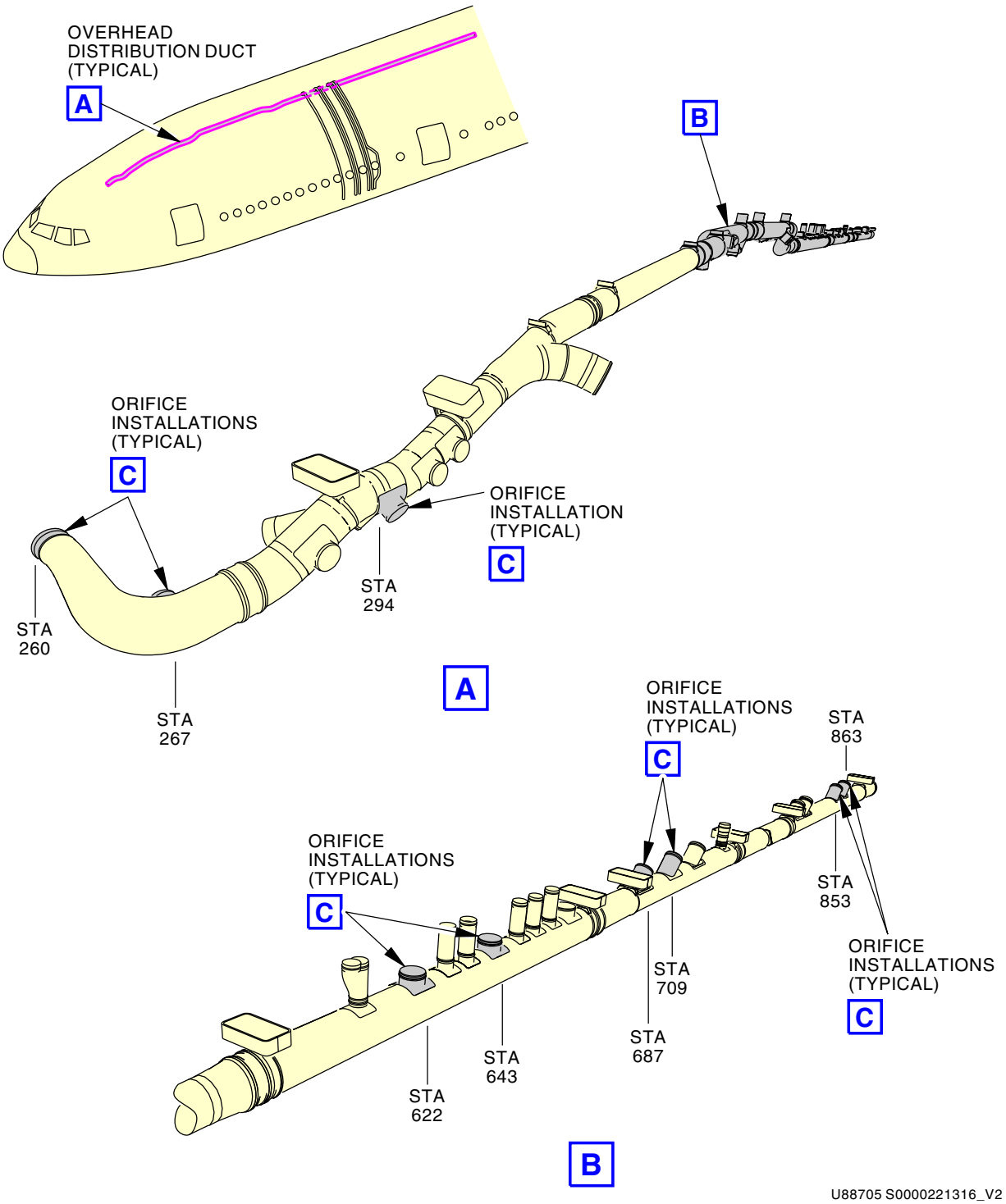

IFE Air Supply Flow Control Orifice Installation
Figure 201/21-27-34-990-801 (Sheet 1 of 3)

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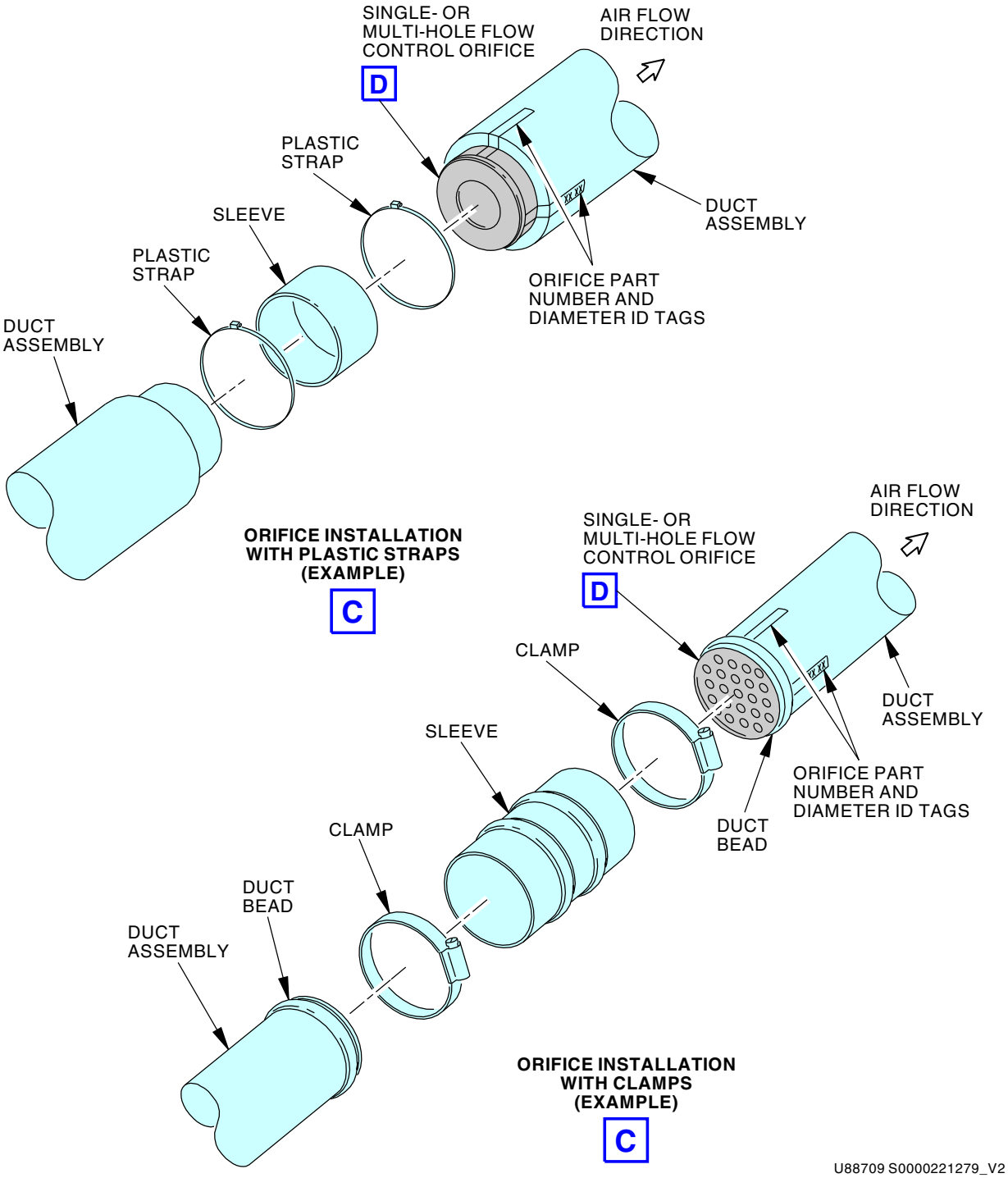

IFE Air Supply Flow Control Orifice Installation
Figure 201/21-27-34-990-801 (Sheet 2 of 3)

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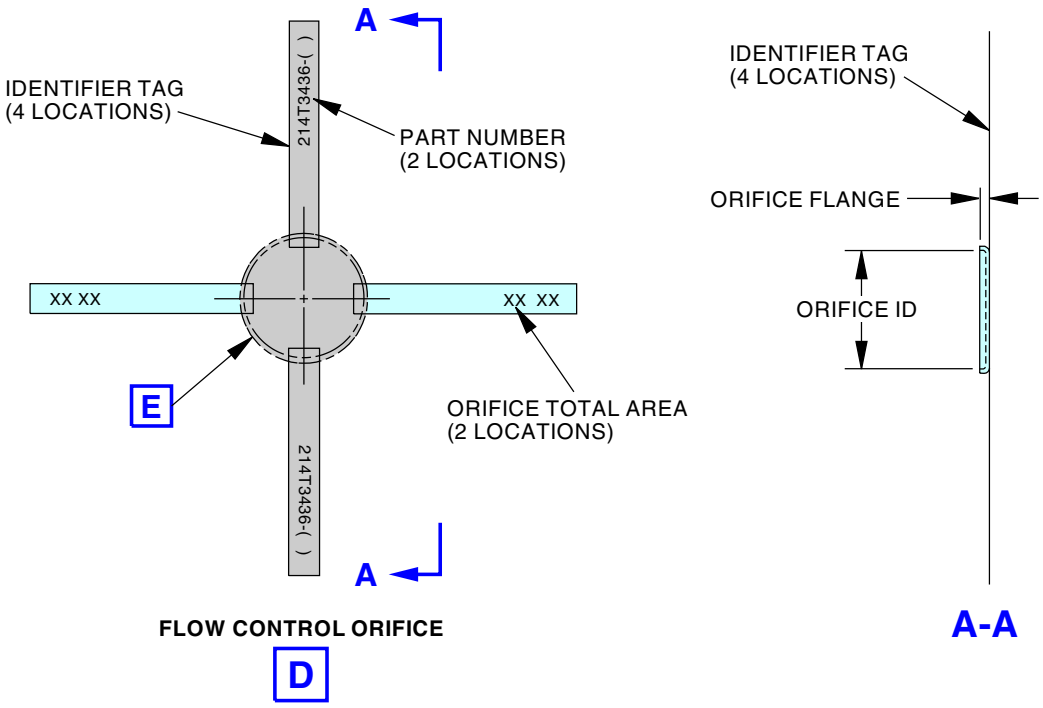
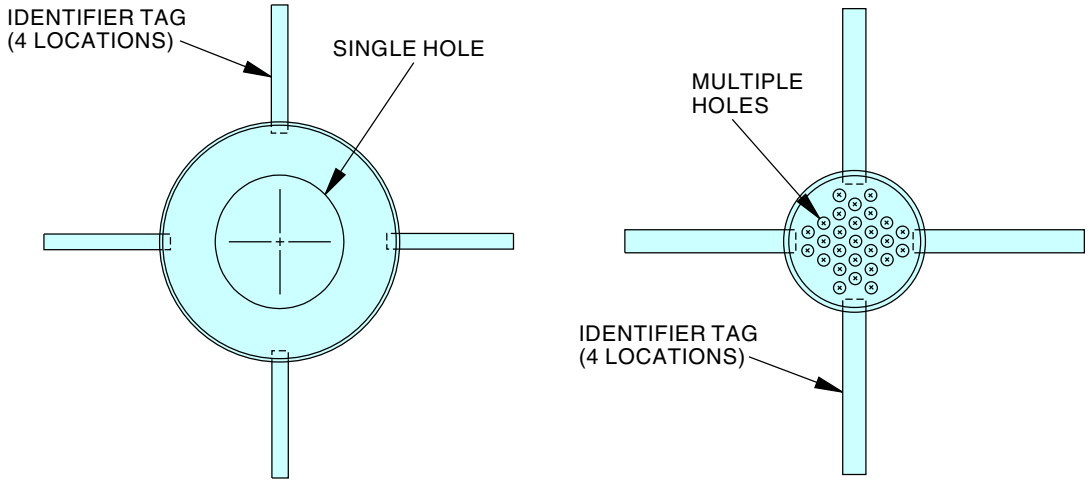


FLOW CONTROL ORIFICE

D

A-A



SINGLE-HOLE FLOW CONTROL ORIFICE (TYPICAL)

E

MULTI-HOLE FLOW CONTROL ORIFICE (TYPICAL)

E

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IFE Air Supply Flow Control Orifice Installation
Figure 201/21-27-34-990-801 (Sheet 3 of 3)

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TASK 21-27-34-400-801

3. Flow Control Orifice Installation

Figure 201

A. References

Reference	Title
25-21-06-400-801	Main Ceiling Panel - Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
A00028	Adhesive - Modified Epoxy For Rigid PVC, Foam Cored Sandwiches	BAC5010 Type 70 (BMS5-92 Type 1)

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Prepare for the Installation

SUBTASK 21-27-34-210-001

(1) Make sure that the new orifice is the same as the orifice that was removed.

SUBTASK 21-27-34-100-001

(2) Clean the mating surfaces of the orifice.

SUBTASK 21-27-34-100-002

(3) Clean the mating surfaces of the duct.

NOTE: The new adhesive will not make a good bond to the duct unless the used adhesive is removed.

E. Orifice Installation

SUBTASK 21-27-34-420-001

(1) Do these steps to install the orifice in the duct:

(a) Apply the adhesive, A00028 to the mating surfaces of the duct and the orifice.

(b) When the adhesive is tacky, put the orifice on the end of the duct.

1) Make sure that none of the holes in the orifice are blocked by the adhesive.

(c) Remove the unwanted adhesive from the outer side of the duct and the orifice.

NOTE: The flexible sleeve can be bonded to the duct if the unwanted adhesive is not removed.

(d) Bend the identification tags to the same shape as the end of the duct.

1) If it is possible, bend the identification tags in the direction of the airflow through the duct.

(e) Make sure that all of the identification tags are on the outer side of the duct.

(f) Make sure that none of the identification tags are bonded to the duct.

(g) Make sure that the orifice is tightly attached to the duct.

SUBTASK 21-27-34-420-002

(2) Do these steps to install the flexible sleeve on the duct:

(a) Move the flexible sleeve onto the duct connection.

(b) Make sure that the flexible sleeve has the same overlap on each side of the duct connection.

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(c) Make sure that you can see the part number on the orifice identification tags.

SUBTASK 21-27-34-420-003

(3) Do these steps to install the plastic straps or clamps on the sleeve:

(a) If the flexible sleeve was attached to the duct with plastic straps, install new straps on the sleeve.

(b) If the flexible sleeve was attached to the duct with clamps, move the clamps onto the sleeve.

(c) Align the straps or the clamps with the duct wall.

NOTE: Do not align the straps or the clamps with the duct bead. The flexible sleeve will not make a good seal if it is tightened against the duct bead.

(d) Tighten the clamps or the straps.

F. Orifice Installation Test

SUBTASK 21-27-34-840-001

(1) Make sure that there is air flow in the duct which contains the orifice. To do this, operate this system:

(a) The equipment cooling system.

SUBTASK 21-27-34-790-002

(2) Make sure that there is no air leakage from the duct connections.

SUBTASK 21-27-34-790-001

(3) Make sure that the conditioned air outlet does not have excessive noise or excessive airflow.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-34-410-001

(1) Install the applicable ceiling panels that were removed. To do this, do this task: (Main Ceiling Panel - Installation, TASK 25-21-06-400-801).

——— END OF TASK ———

TASK 21-27-34-100-801

4. Flow Control Orifice Cleaning

Figure 201

A. Location Zones

Zone	Area
200	Upper Half of Fuselage

B. Prepare for Cleaning the Flow Control Orifice

SUBTASK 21-27-34-010-002

(1) Remove the flow control orifice:

(a) To remove the flow control orifice, do this task: (Flow Control Orifice Removal, TASK 21-27-34-000-801).

NOTE: It is not necessary to remove the flow control orifice from the duct assembly for this procedure. The orifice can be cleaned on the duct if the orifice is in serviceable condition.

C. Clean the Orifice

SUBTASK 21-27-34-160-001

(1) Do these steps to clean the orifice:

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(a) Remove all dirt and unwanted material from the orifice and duct assembly.

1) Make sure to remove all contamination from each hole on the multi-holed orifices.

WARNING

WHEN YOU USE THE COMPRESSED AIR TO CLEAN, TO COOL OR TO DRY, DO NOT USE EXCEED 30 PSIG (207 KPA). MAKE SURE YOU WEAR EYE PROTECTION AND DO NOT DIRECT COMPRESSED AIR AT YOURSELF AND OTHERS. INJURY TO PERSONNEL CAN OCCUR.

(b) Blow dry, filtered, compressed air through the orifice to remove contamination from the orifice and duct assembly.

D. Restore the Airplane to Its Usual Condition

SUBTASK 21-27-34-410-002

(1) Reinstall the flow control orifice:

(a) To install the flow control orifice, do this task: (Flow Control Orifice Installation, TASK 21-27-34-400-801).

——— END OF TASK ———

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IFE AIR SUPPLY FLOW CONTROL ORIFICE - INSPECTION/CHECK

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has one task. This task gives instructions to do a visual inspection of the condition of the flow control orifices installed in the IFE air conditioning ducts.

C. If the orifices in the IFE cooling system are single-hole type installed. Then the Flow Control Orifice Inspection Check is not necessary.

TASK 21-27-34-700-801

2. Flow Control Orifice - Inspection/Check

Figure 601

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) If the orifices in the IFE cooling system are single-hole type installed. Then the Flow Control Orifice Inspection Check is not necessary.

B. References

Reference	Title
21-27-34-000-801	Flow Control Orifice Removal (P/B 201)
21-27-34-400-801	Flow Control Orifice Installation (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)

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Prepare for the Inspection

SUBTASK 21-27-34-860-002

CAUTION

DO NOT OPERATE THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN YOU DO THIS PROCEDURE. IF YOU OPERATE THE ELECTRICAL EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS OFF, YOU CAN CAUSE THE ELECTRICAL EQUIPMENT TO BECOME TOO HOT.

(1) Turn off the IFE cooling system to make sure that there is no air flow in the duct which contains the orifice.

SUBTASK 21-27-34-010-003

(2) Get access to the applicable IFE cooling duct.

(a) Remove the applicable ceiling panel. To do this, do this task: (Main Ceiling Panel - Removal, TASK 25-21-06-000-801).

SUBTASK 21-27-34-210-003

(3) Look at the orifice part number tags and use the following table to determine if the IFE orifice is a multi-hole type.

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Flow Control Orifice Type

Orifice Assy P/N	Multi- Hole
214T3436-732	X
214T3436-1000	X
214T3436-1003	X
214T3436-1202	X
214T3436-1208	X
214T3436-1742	X
214T3436-1744	X

E. Orifice Inspection

SUBTASK 21-27-34-210-006

(1) If the orifice is a multi-hole type, then do the inspection steps below.

SUBTASK 21-27-34-020-005

(2) Do these steps to get access to the IFE flow control orifice(s):

NOTE: It is not necessary to remove the flow control orifice from the duct assembly for this procedure. The orifice can be inspected on the duct.

(a) If the flexible sleeve is attached to the duct with plastic straps, remove and discard the plastic straps.

(b) If the flexible sleeve is attached to the duct with clamps, do these steps:

1) Loosen the clamps.

2) Move the clamps away from the flexible sleeve.

(c) Move the flexible sleeve away from the orifice identifier tags.

SUBTASK 21-27-34-210-002

(3) Examine the flow control orifice and make sure that the restrictor hole(s) are free from blockage and contamination.

(a) Remove all blockage from the restrictor hole(s) to restore proper airflow.

NOTE: Blockage of the airflow in the IFE air supply system can prevent the smoke detector in the system from operating correctly.

(4) Examine the duct and make sure that it is free from blockage and contamination.

(a) Remove all the blockage that is found.

(5) Examine the orifice for damage.

(a) Replace the orifice if it is damaged. These are the tasks:

Flow Control Orifice Removal, TASK 21-27-34-000-801,

Flow Control Orifice Installation, TASK 21-27-34-400-801.

(6) Make sure that the orifice is attached to the duct.

(a) If the orifice is loose, then reattach the orifice using the applicable steps from this task: (Flow Control Orifice Installation, TASK 21-27-34-400-801).

SUBTASK 21-27-34-420-004

(7) Do these steps to reinstall the flexible sleeve on the duct:

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(a) Move the flexible sleeve onto the duct connection.

(b) Make sure that the flexible sleeve has the same overlap on each side of the duct connection.

(c) Make sure that you can see the part number on the orifice identification tags.

SUBTASK 21-27-34-420-005

(8) Do these steps to install the plastic straps or clamps on the sleeve:

(a) If the flexible sleeve was attached to the duct with plastic straps, install new straps on the sleeve.

(b) If the flexible sleeve was attached to the duct with clamps, move the clamps onto the sleeve.

(c) Align the straps or the clamps with the duct wall.

NOTE: Do not align the straps or the clamps with the duct bead. The flexible sleeve will not make a good seal if it is tightened against the duct bead.

(d) Tighten the clamps or the straps.

F. Restore the Airplane to Its Usual Condition

SUBTASK 21-27-34-410-005

(1) Install the applicable ceiling panels that were removed. To do this, do this task: (Main Ceiling Panel - Installation, TASK 25-21-06-400-801).

——— END OF TASK ———

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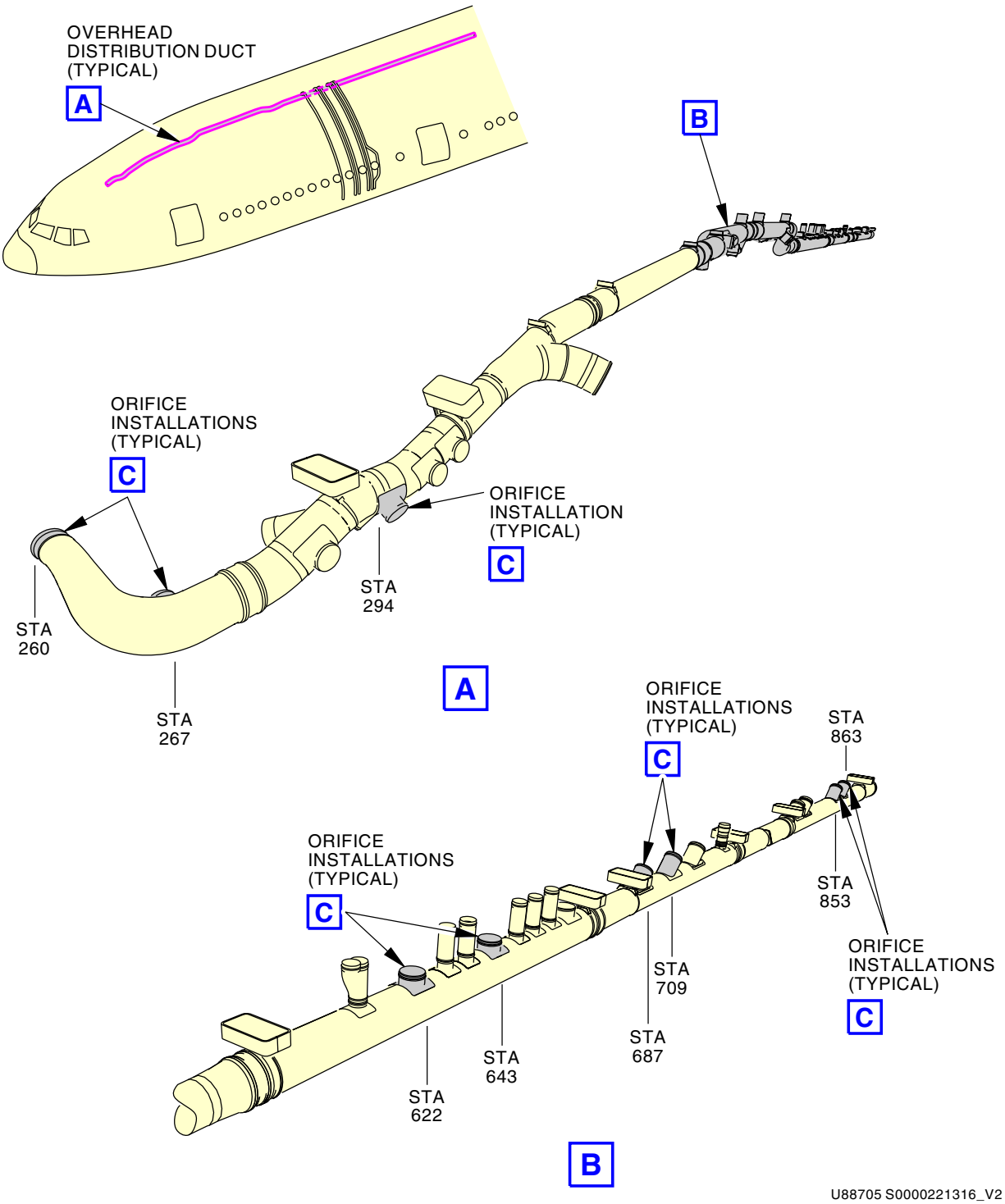

IFE Air Supply Flow Control Orifice Installation
Figure 601/21-27-34-990-802 (Sheet 1 of 3)

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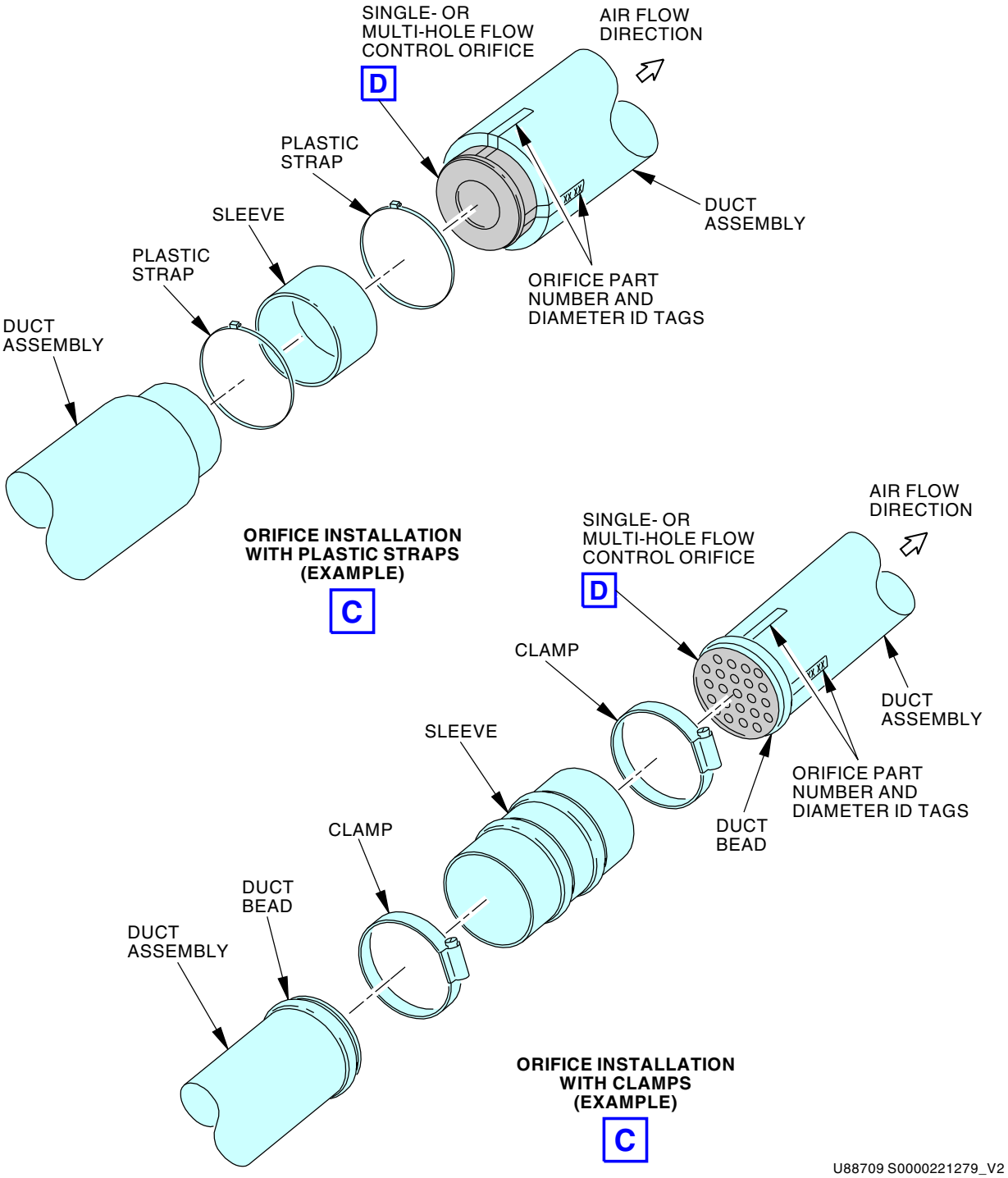

IFE Air Supply Flow Control Orifice Installation
Figure 601/21-27-34-990-802 (Sheet 2 of 3)

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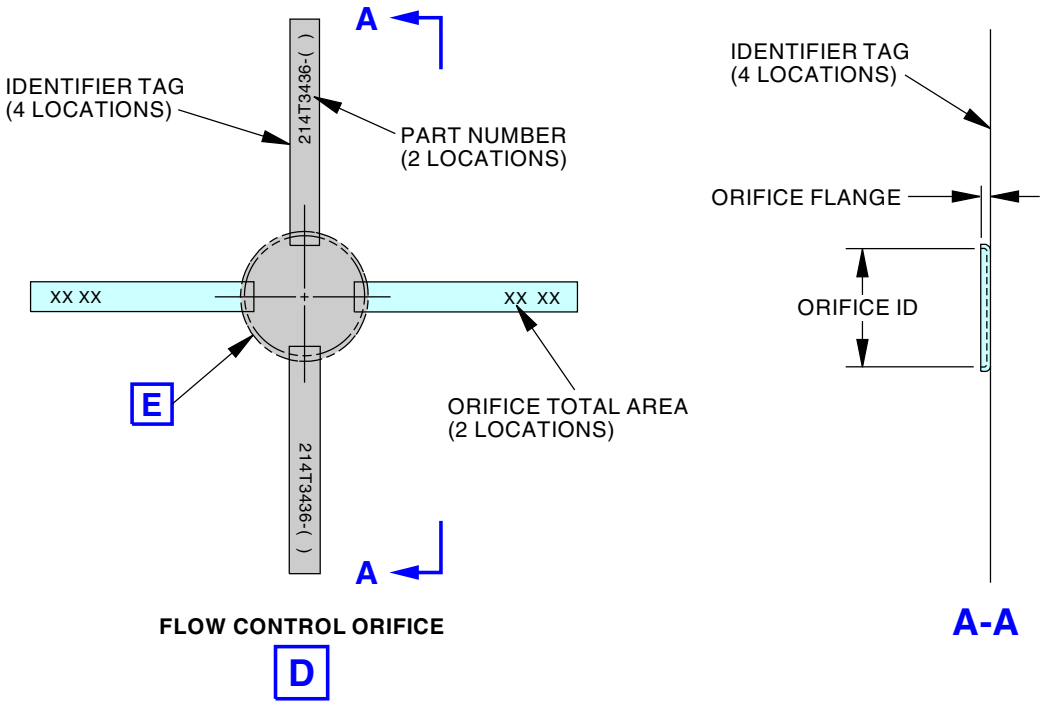
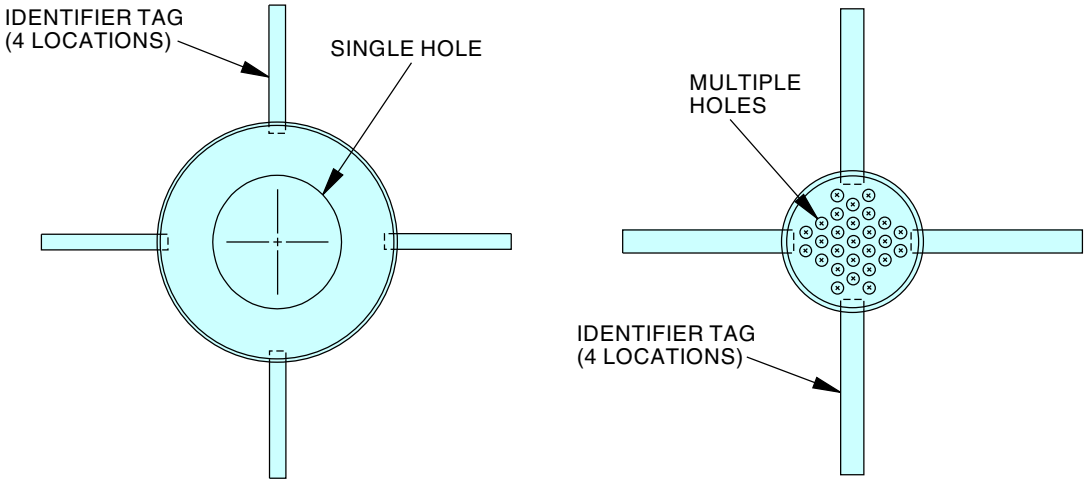


FLOW CONTROL ORIFICE

D



SINGLE-HOLE FLOW CONTROL ORIFICE (TYPICAL)

E

MULTI-HOLE FLOW CONTROL ORIFICE (TYPICAL)

E

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IFE Air Supply Flow Control Orifice Installation
Figure 601/21-27-34-990-802 (Sheet 3 of 3)

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IFE COOLING FAN - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) IFE cooling fan - deactivation.

(2) IFE cooling fan - activation.

TASK 21-27-35-040-801

2. IFE Cooling Fan - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the IFE cooling fan.

B. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
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)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-27-35-010-008

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-35-020-018

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

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(WARNING PRECEDES)

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	19	C21656	IFE CLG FAN CTRL
Z	2	C21339	IFE CLG FAN

SUBTASK 21-27-35-860-006

(3) 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.

SUBTASK 21-27-35-860-007

(4) Remove the left sidewall liner in the forward cargo compartment to get access to the fan, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

F. IFE Cooling Fan - Tryout

NOTE: This tryout is to make sure that the IFE cooling fan is in a zero energy state.

SUBTASK 21-27-35-860-005

(1) Use a maintenance access terminal (MAT) to do an operational test of the IFE cooling fan.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) IFE Equipment Cooling
7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE
2) START TEST

(c) Make sure that the IFE cooling fan does not come on.

NOTE: An observer must be in voice contact with an operator in the flight deck at all times to complete this step.

(d) After the test, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

SUBTASK 21-27-35-420-017

(2) Install the left sidewall liner in the forward cargo compartment (TASK 25-52-06-400-801).

SUBTASK 21-27-35-420-018

(3) Close the forward cargo door (TASK 52-34-00-860-803).

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SUBTASK 21-27-35-420-021

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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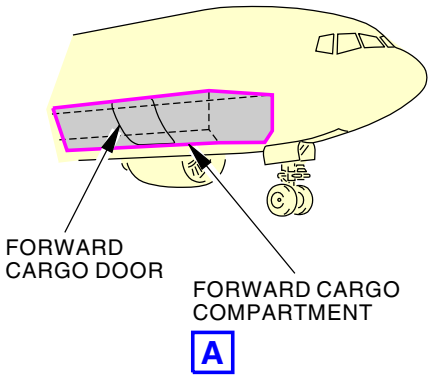

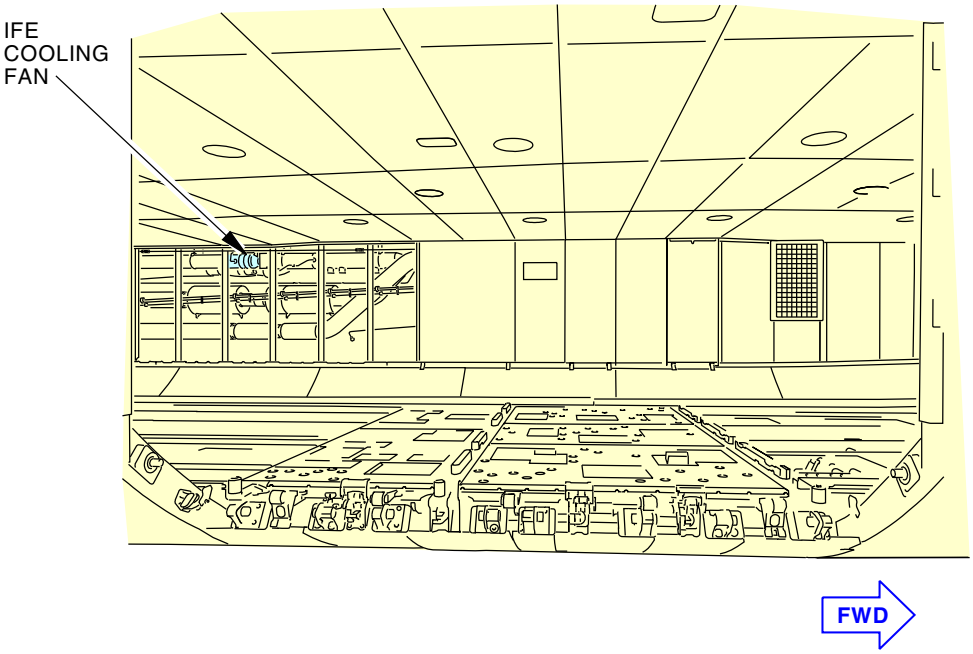

FORWARD CARGO COMPARTMENT

A

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IFE Cooling Fan
Figure 201/21-27-35-990-803

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TASK 21-27-35-440-801

3. IFE Cooling Fan - Activation

(Figure 201)

A. General

(1) This task will activate the IFE cooling fan.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left

C. Procedure

SUBTASK 21-27-35-420-016

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	19	C21656	IFE CLG FAN CTRL
Z	2	C21339	IFE CLG FAN

END OF TASK

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IFE COOLING FAN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the In-Flight Entertainment (IFE) cooling fan

(2) An installation of the IFE cooling fan.

ARO 001-016 POST SB 777-21-0189

(3) A removal of the IFE cooling fan vibration monitor.

(4) An installation of the IFE cooling fan vibration monitor.

ARO ALL

B. The IFE cooling system removes warm air from the IFE equipment enclosures. The warm air is sent to the mix bay for recirculation.

C. The IFE cooling fan operates continuously when power is supplied to the airplane.

TASK 21-27-35-000-801

2. In-Flight Entertainment (IFE) Cooling Fan Removal

(Figure 401)

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-27-35-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-35-860-001

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

Left Power Management Panel, P110

Row	Col	Number	Name
Z	2	C21339	IFE CLG FAN

SUBTASK 21-27-35-010-002

(3) 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.

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SUBTASK 21-27-35-010-003

(4) Remove the left sidewall liner in the forward cargo compartment to get access to the fan, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

E. IFE Cooling Fan Removal

SUBTASK 21-27-35-020-001

(1) Disconnect the electrical connector [12] from the IFE cooling fan [1].

ARO 001-016 POST SB 777-21-0189

SUBTASK 21-27-35-020-031

(2) Disconnect the fan electrical connector plug [58] from the vibration monitor [68].

(3) Remove the vibration monitor [68] from the fan housing (Lower Recirculation Fan Vibration Monitor Removal (In-Flight Entertainment (IFE) Cooling Fan Vibration Monitor Removal, TASK 21-27-35-000-804).

ARO ALL

SUBTASK 21-27-35-020-002

(4) Remove the nut [9], washers [18], washer [17] and screw [16] from the IFE cooling fan [1].

SUBTASK 21-27-35-020-003

(5) Disconnect the bonding jumper [8] from the IFE cooling fan [1].

SUBTASK 21-27-35-020-004

(6) Loosen the clamps [2] which hold the sleeve [3] to the duct and the IFE cooling fan [1].

SUBTASK 21-27-35-020-005

(7) Move the clamps [2] and the sleeve [3] away from the fan.

SUBTASK 21-27-35-020-006

(8) Loosen the clamp [6] which holds the sleeve [7] to the IFE cooling fan [1].

SUBTASK 21-27-35-020-007

(9) Move the clamp [6] away from the fan.

SUBTASK 21-27-35-020-012

(10) Do these steps to disconnect the fan [1] from the airplane structure.

(a) Remove the nut [13], washers [14], and bolt [15] that attaches the support rod to the IFE cooling fan [1].

CAUTION

HOLD THE FAN WHEN YOU REMOVE THE SCREWS. WHEN YOU REMOVE THE SCREWS, THE FAN CAN FALL. IF YOU DO NOT OBEY, YOU CAN DAMAGE THE FAN.

(b) Remove the screws [4] and washers [5] that hold the fan [1] to the mounting bracket.

SUBTASK 21-27-35-020-009

(11) Remove the IFE cooling fan [1] from the sleeve [7].

END OF TASK

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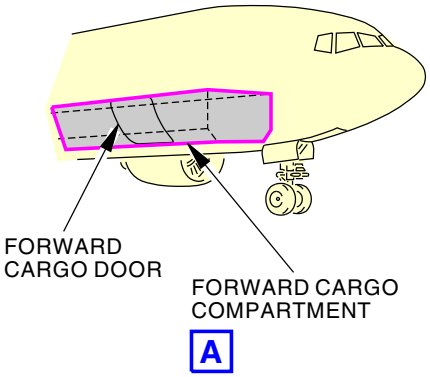

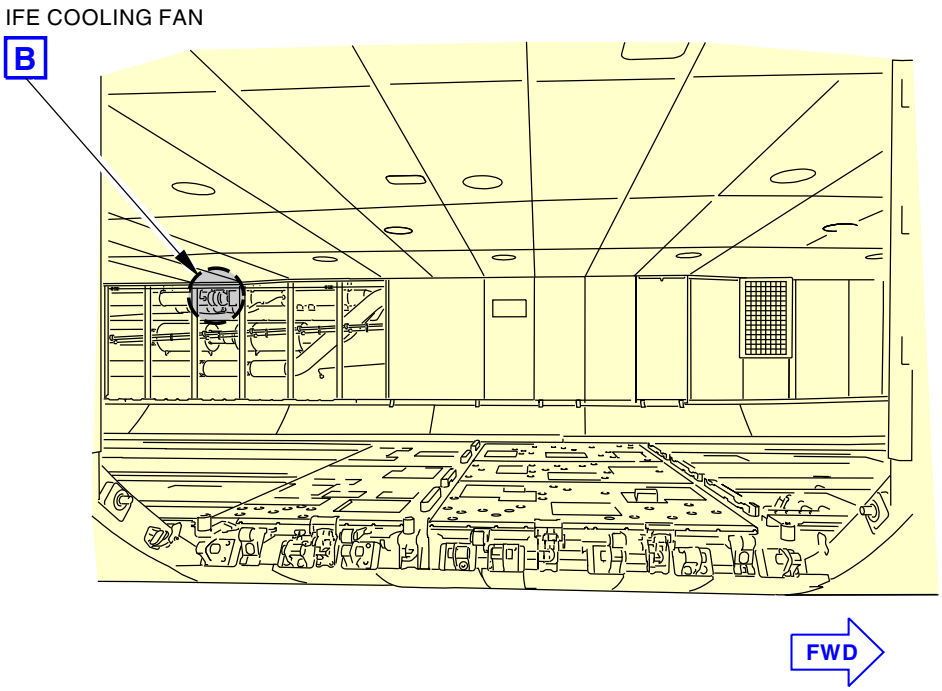

FORWARD CARGO COMPARTMENT

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IFE Cooling Fan Installation
Figure 401/21-27-35-990-801 (Sheet 1 of 2)

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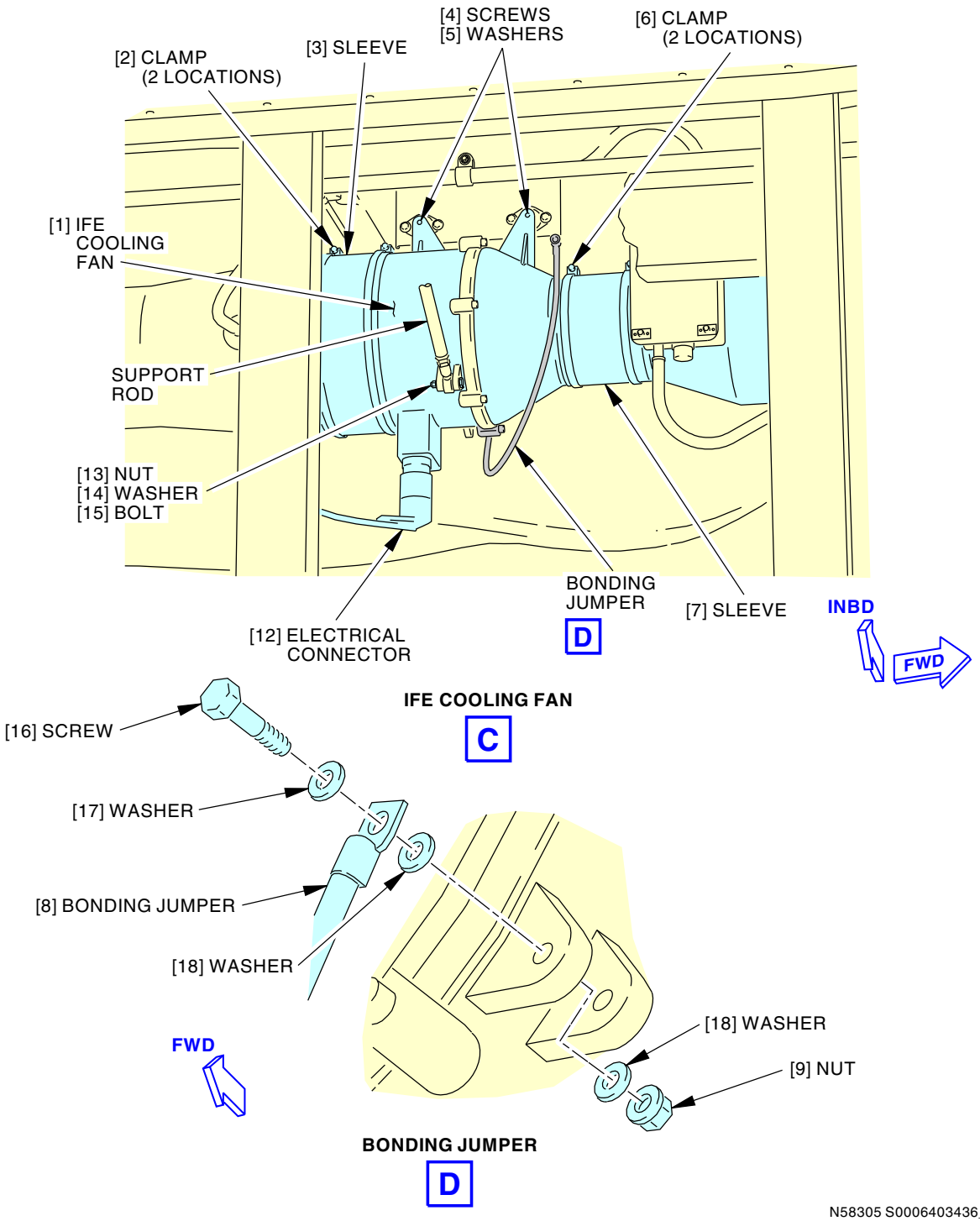

IFE Cooling Fan Installation
Figure 401/21-27-35-990-801 (Sheet 2 of 2)

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TASK 21-27-35-400-801

3. In-Flight Entertainment (IFE) Cooling Fan Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Consumable Materials

Reference	Description	Specification
G00440	Lockwire - MS20995C41, Corrosion Resistant Steel - 0.041 Inch (1.0414 mm) Diameter	NASM20995

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. IFE Cooling Fan Installation

SUBTASK 21-27-35-420-001

(1) Put the IFE cooling fan [1] into the sleeve [7] and align the screw holes with the mounting bracket.

SUBTASK 21-27-35-420-011

(2) Do these steps to attach the fan to the mounting bracket and the support rod.

(a) Loosely install the washers [5] and the screws [4] that hold the fan [1] to the mounting bracket.

(b) Install the bolt [15], the washer [14], and the nut [13] that attach the support rod to the fan [1].

(c) Tighten the screws [4] that hold the fan [1] to the mounting bracket.

(d) Install a new MS20995C41 lockwire, G00440 on the screws [4].

SUBTASK 21-27-35-420-003

(3) Put the clamp [6] onto the IFE cooling sleeve [7] and tighten it to 13-18 inch-pounds (1.5-2.0 newton-meters).

SUBTASK 21-27-35-420-004

(4) Move the sleeve [3] onto the IFE cooling fan [1].

(a) Make sure that the sleeve [3] is installed equally over the duct and the IFE cooling fan [1].

SUBTASK 21-27-35-420-005

(5) Move the clamps [2] onto the sleeve [3].

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(a) Make sure that the clamps [2] are installed equally between the edge of the sleeve [3] and the edge of the duct.

SUBTASK 21-27-35-420-006

(6) Tighten the clamps [2] to 13-18 inch-pounds (1.5-2.0 newton-meters).

SUBTASK 21-27-35-420-007

(7) Reconnect the bonding jumper [8] to the IFE cooling fan [1]:

(a) Make sure the bonding jumper, fan and washers are clean.

(b) Install the screw [16], washer [17], washers [18] and nut [9] that hold the bonding jumper [8] to the IFE cooling fan [1].

SUBTASK 21-27-35-420-008

(8) Reconnect the electrical connector [12] to the IFE cooling fan [1].

ARO 001-016 POST SB 777-21-0189

SUBTASK 21-27-35-420-035

(9) Install the vibration monitor [68] to the fan housing, and reconnect the fan electrical connector plug [58] to the fan vibration monitor [68].

(10) Do this task: In-Flight Entertainment (IFE) Cooling Fan Vibration Monitor Installation, TASK 21-27-35-400-805.

ARO ALL

F. IFE Cooling Fan Installation Test

SUBTASK 21-27-35-860-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
Z	2	C21339	IFE CLG FAN

SUBTASK 21-27-35-860-003

(2) Supply electrical power, do this task: Supply Electrical Power, TASK 24-22-00-860-805

SUBTASK 21-27-35-740-001

(3) Use a maintenance access terminal (MAT) to do the installation test of the IFE cooling fan, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) IFE Equipment Cooling
7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE
2) START TEST

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(c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

(d) If FAILED shows, then do the procedures in the Fault Isolation Manual to correct the fault.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-35-410-001

(1) Reinstall the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-27-35-410-002

(2) Close the forward cargo compartment door, do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

SUBTASK 21-27-35-010-004

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

ARO 001-016 POST SB 777-21-0189

TASK 21-27-35-000-804

4. In-Flight Entertainment (IFE) Cooling Fan Vibration Monitor Removal

(Figure 402)

A. General

(1) This procedure removes the In-Flight Entertainment (IFE) Cooling Fan Vibration Monitor.

B. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-27-35-010-009

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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ARO 001-016 POST SB 777-21-0189 (Continued)

SUBTASK 21-27-35-860-012

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

Left Power Management Panel, P110

Row	Col	Number	Name
Z	2	C21339	IFE CLG FAN

SUBTASK 21-27-35-010-010

(3) 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.

SUBTASK 21-27-35-010-011

(4) Remove the left sidewall liner in the forward cargo compartment to get access to the fan, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

F. IFE Cooling Fan Vibration Monitor Removal

SUBTASK 21-27-35-020-025

(1) Disconnect the fan electrical connector plug [58] from the vibration monitor electrical receptacle [59].

SUBTASK 21-27-35-020-026

(2) Disconnect the vibration monitor electrical connector plug [60] from the fan electrical receptacle [61].

SUBTASK 21-27-35-020-027

(3) If installed, remove the screw [62], washers [63], and nut [64] to disconnect the vibration monitor bonding strap [65] from the fan ground lug [69].

NOTE: This step only applies to fans that have a bonding strap or ground stud.

SUBTASK 21-27-35-020-028

(4) Remove the two screws [66] from the L-brackets that hold the vibration monitor [68] to the fan [1].

SUBTASK 21-27-35-020-029

(5) Remove the band clamp from the vibration monitor [68] and the fan [1].

SUBTASK 21-27-35-020-030

(6) Remove the vibration monitor [68].

——— END OF TASK ———

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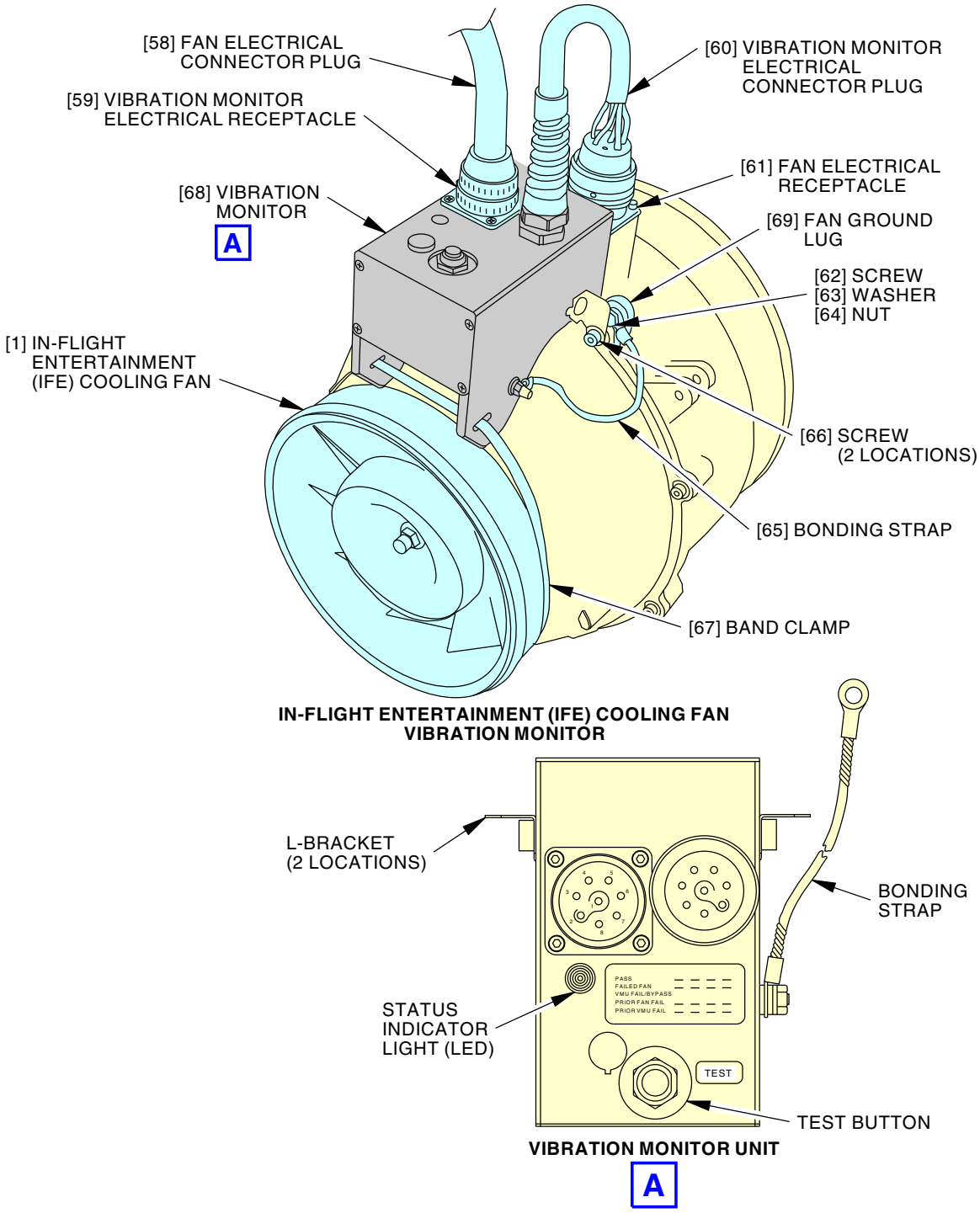

In-Flight Entertainment (IFE) Cooling Fan Vibration Monitor
Figure 402/21-27-35-990-805

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TASK 21-27-35-400-805

5. In-Flight Entertainment (IFE) Cooling Fan Vibration Monitor Installation

(Figure 402)

A. General

(1) This procedure installs the In-Flight Entertainment (IFE) Cooling Fan Vibration Monitor.

B. References

Reference	Title
24-22-00 P/B 201	AC GENERATION AND BUS CONTROL - MAINTENANCE PRACTICES
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. IFE Cooling Fan Vibration Monitor Installation

SUBTASK 21-27-35-420-028

(1) Put the band clamp [67] thru the slots in the legs of the vibration monitor [68].

SUBTASK 21-27-35-420-037

(2) Loosely install the band clamp [67] around the fan housing.

SUBTASK 21-27-35-820-002

(3) Align the L-brackets on each side of the vibration monitor [68] with the two split line holes on the fan housing.

SUBTASK 21-27-35-420-029

(4) Install the two screws [66] to secure the vibration monitor L-brackets to the fan housing.

(a) Tighten each screw to 51-56 pound-inches (5.76-6.32 newton-meters).

SUBTASK 21-27-35-420-030

(5) Tighten the band clamp [67] to 12-15 pound-inches (1.35-1.69 newton-meters).

(a) Make sure that the band clamp engages fully around the entire circumference of the fan housing.

(b) Make sure that both legs of the vibration monitor are in full contact with the fan housing.

SUBTASK 21-27-35-420-031

(6) If applicable, reconnect the vibration monitor bonding strap [65] to the fan ground lug [69] with the screw [62], washers [63], and nut [64].

NOTE: This step only applies to fans that have a bonding strap or ground stud.

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ARO 001-016 POST SB 777-21-0189 (Continued)

(a) Make sure that the fan ground lug [69] is positioned with the bolt head on the monitor side.

(b) Do an electrical bonding and resistance check of the fan and vibration monitor (SWPM 20-20-00, Electrical Bonds and Grounds, Standard Wiring Practice Manual, D6-54446).

SUBTASK 21-27-35-420-032

(7) Reconnect the vibration monitor electrical connector plug [60] to the fan electrical receptacle [61].

SUBTASK 21-27-35-420-033

(8) Reconnect the fan electrical connector plug [58] to the vibration monitor electrical receptacle [59].

F. IFE Cooling Fan Vibration Monitor Installation Test

SUBTASK 21-27-35-860-017

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

Left Power Management Panel, P110

Row	Col	Number	Name
Z	2	C21339	IFE CLG FAN

SUBTASK 21-27-35-860-018

(2) Supply electrical power, do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 21-27-35-860-019

(3) Do these steps for installation test:

(a) Make sure that fan [1] is operating.

(b) Make sure that the STATUS LED is blinking GREEN after 2 minutes.

(4) Do these steps for aircraft logic test:

(a) Press and hold monitor test button for 15 seconds.

NOTE: Fan should turn off and aircraft latch will engage after time delay.

(b) Release TEST button.

(c) Make sure that the fan [1] is OFF.

(d) Disconnect the electrical connector [58] from the fan vibration monitor [68] to remove power from the fan [1].

(e) Re-connect the electrical connector [58].

1) Make sure the fan [1] restarts and operates as normal.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-35-410-017

(1) Reinstall the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-27-35-410-018

(2) Close the forward cargo compartment door, do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

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ARO 001-016 POST SB 777-21-0189 (Continued)

SUBTASK 21-27-35-010-016

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-35-860-023

(4) Remove electrical power if no longer required (AC GENERATION AND BUS CONTROL - MAINTENANCE PRACTICES, PAGEBLOCK 24-22-00/201).

——— END OF TASK ———

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IFE COOLING AIR FILTER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the air filter for the cooling system of the in-flight entertainment

(2) An installation of the air filter for the cooling system of the in-flight entertainment.

B. The IFE cooling air filter removes unwanted material from the air that cools the electrical/electronic equipment in the purser station.

TASK 21-27-36-000-802

2. Purser Work Station/Video Control Center IFE Cooling Air Filter Removal

(Figure 401)

A. Location Zones

Zone	Area
221	Passenger Compartment, Left - Section 41
222	Passenger Compartment, Right - Section 41
231	Passenger Compartment, Left - Section 43
232	Passenger Compartment, Right - Section 43
241	Passenger Compartment, Left - Section 44
242	Passenger Compartment, Right - Section 44
251	Passenger Compartment, Left - Section 46
252	Passenger Compartment, Right - Section 46
261	Passenger Compartment, Left - Section 47
262	Passenger Compartment, Right - Section 47

B. Prepare for the Removal

SUBTASK 21-27-36-010-002

(1) Get access to the purser work station or video control center located in the passenger cabin.

C. IFE Cooling Air Filter Removal

SUBTASK 21-27-36-020-006

(1) Do the steps that follow to remove the air filter [1]:

(a) Open the door on the purser work station or video control center.

(b) Pull the four fasteners at the corners to remove the air filter [1] from the door.

——— END OF TASK ———

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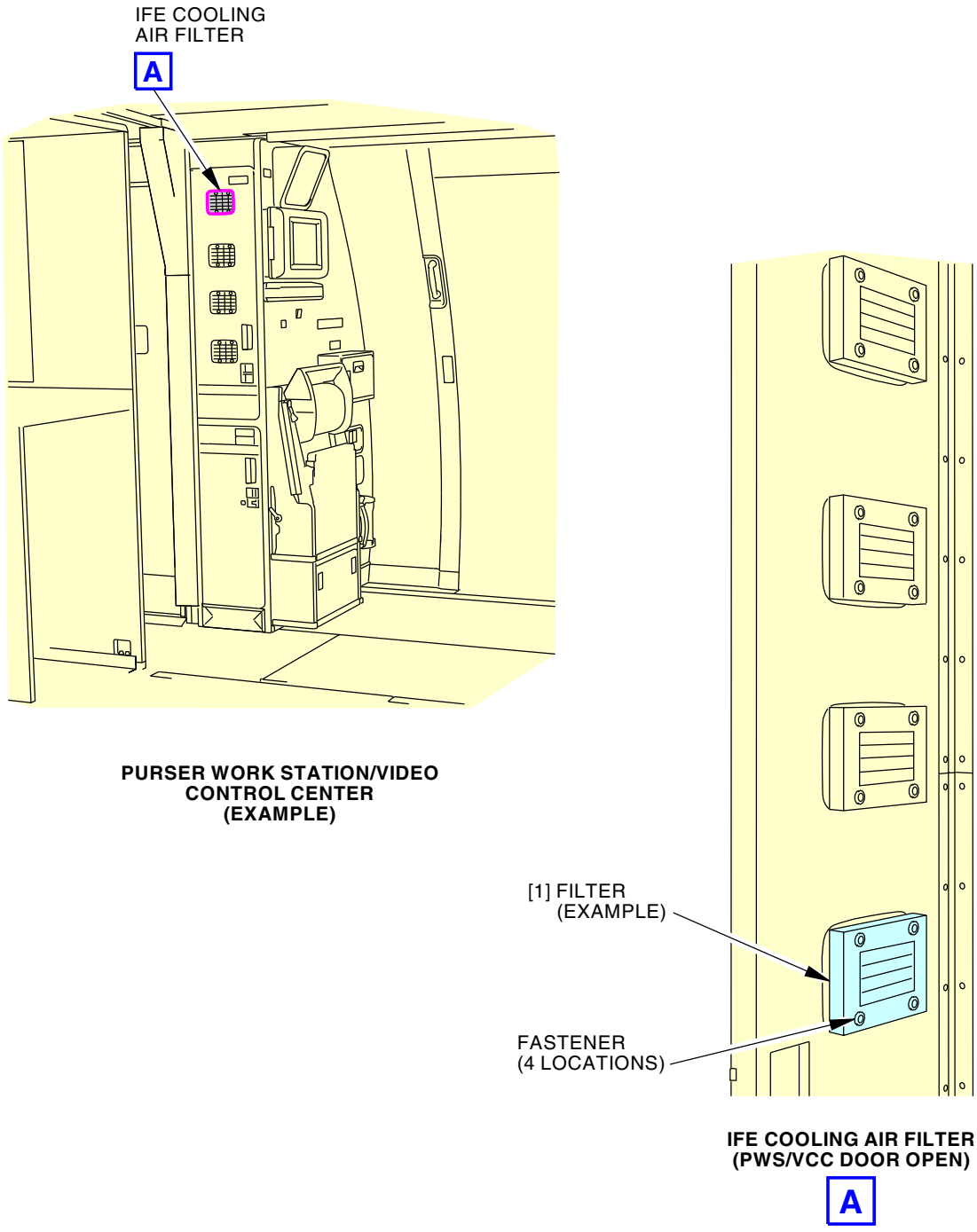

PURSER WORK STATION/VIDEO CONTROL CENTER (EXAMPLE)

IFE COOLING AIR FILTER (PWS/VCC DOOR OPEN)

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Purser Work Station/Video Control Center IFE Cooling Air Filter Installation
Figure 401/21-27-36-990-802

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TASK 21-27-36-400-802

3. Purser Work Station/Video Control Center IFE Cooling Air Filter Installation

(Figure 401)

A. Location Zones

Zone	Area
221	Passenger Compartment, Left - Section 41
222	Passenger Compartment, Right - Section 41
231	Passenger Compartment, Left - Section 43
232	Passenger Compartment, Right - Section 43
241	Passenger Compartment, Left - Section 44
242	Passenger Compartment, Right - Section 44
251	Passenger Compartment, Left - Section 46
252	Passenger Compartment, Right - Section 46
261	Passenger Compartment, Left - Section 47
262	Passenger Compartment, Right - Section 47

B. IFE Cooling Air Filter Installation

SUBTASK 21-27-36-420-001

(1) Do the steps that follow to install the filter [1]:

(a) Open the door on the purser station or video control center.

(b) Put the filter [1] in its location on the door.

(c) Push firmly on the four fasteners to install the filter [1] in the door.

(d) Close the door on the purser station or video control center.

——— END OF TASK ———

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IFE COOLING SMOKE DETECTOR - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) IFE cooling smoke detector - deactivation

(2) IFE cooling smoke detector - activation.

TASK 21-27-53-040-801

2. IFE Cooling Smoke Detector - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the IFE cooling smoke detector.

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)
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
121	Forward Cargo Compartment, Left
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-27-53-860-004

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-27-53-010-007

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-53-020-007

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	17	C21659	IFE CLG SMK DET
Z	2	C21339	IFE CLG FAN

NOTE: This will ensure that there is no airflow in the duct when you remove the smoke detector.

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F. IFE Cooling Smoke Detector - Tryout

NOTE: This tryout is to make sure that the IFE cooling smoke detector is in a zero energy state.

SUBTASK 21-27-53-860-006

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

SUBTASK 21-27-53-860-007

(2) Use a maintenance access terminal (MAT) to do the installation test of the IFE cooling smoke detector, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) IFE Equipment Cooling
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.

SUBTASK 21-27-53-860-008

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

——— END OF TASK ———

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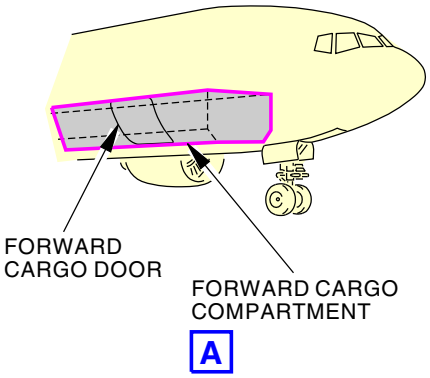

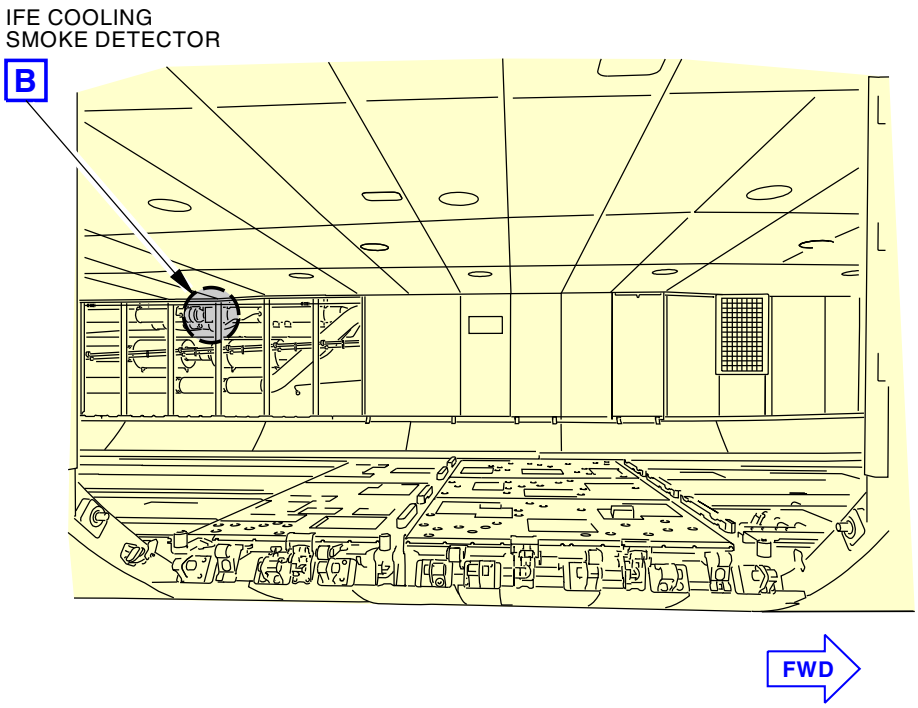

FORWARD CARGO COMPARTMENT

A

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IFE Cooling Smoke Detector
Figure 201/21-27-53-990-803

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TASK 21-27-53-440-801

3. IFE Cooling Smoke Detector - Activation

(Figure 201)

A. General

(1) This task will activate the IFE cooling smoke detector.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Procedure

SUBTASK 21-27-53-420-007

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	17	C21659	IFE CLG SMK DET
Z	2	C21339	IFE CLG FAN

SUBTASK 21-27-53-410-019

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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IFE COOLING SMOKE DETECTOR - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A removal of the In-Flight Entertainment (IFE) cooling smoke detector.

(2) An installation of the IFE cooling smoke detector.

C. The IFE cooling system removes warm air from the IFE equipment enclosures. The warm air is sent to either the forward outflow valve through the IFE cooling overboard valve, or to the mix manifold through the IFE mix manifold valve.

D. The IFE cooling smoke detector is installed near the fan to detect smoke from any of the IFE enclosures.

TASK 21-27-53-000-801

2. In-Flight Entertainment (IFE) Cooling Smoke Detector Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-27-53-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-27-53-860-001

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	17	C21659	IFE CLG SMK DET
Z	2	C21339	IFE CLG FAN

NOTE: This will ensure that there is no airflow in the duct when you remove the valve.

SUBTASK 21-27-53-010-002

(3) Open the forward cargo door (TASK 52-34-00-860-801).

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SUBTASK 21-27-53-010-003

(4) Remove the left sidewall liner in the forward cargo compartment to get access to the smoke detector (TASK 25-52-06-000-801).

E. IFE Cooling Smoke Detector Removal

SUBTASK 21-27-53-020-001

(1) Disconnect the electrical connector [6] from the IFE cooling smoke detector [1].

SUBTASK 21-27-53-020-002

(2) Remove the straps [3] which hold the smoke tubes [2] to the IFE cooling smoke detector [1].

SUBTASK 21-27-53-020-003

(3) Carefully pull the smoke tubes [2] away from the IFE cooling smoke detector [1].

SUBTASK 21-27-53-020-004

CAUTION

HOLD THE SMOKE DETECTOR WHEN YOU REMOVE THE SCREWS. THE SMOKE DETECTOR CAN FALL WHEN YOU REMOVE THE SCREWS. YOU CAN CAUSE DAMAGE TO THE SMOKE DETECTOR IF IT FALLS.

(4) Remove the four screws [5] and washers [4] that hold the IFE cooling smoke detector [1] to the mounting plate.

SUBTASK 21-27-53-020-005

(5) Remove the IFE cooling smoke detector [1].

——— END OF TASK ———

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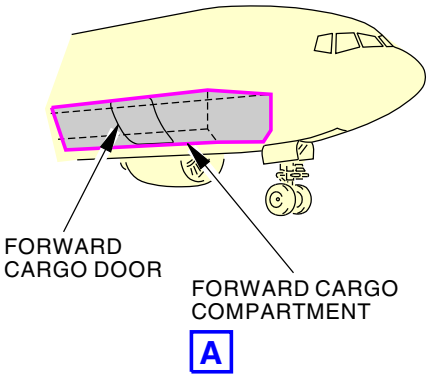

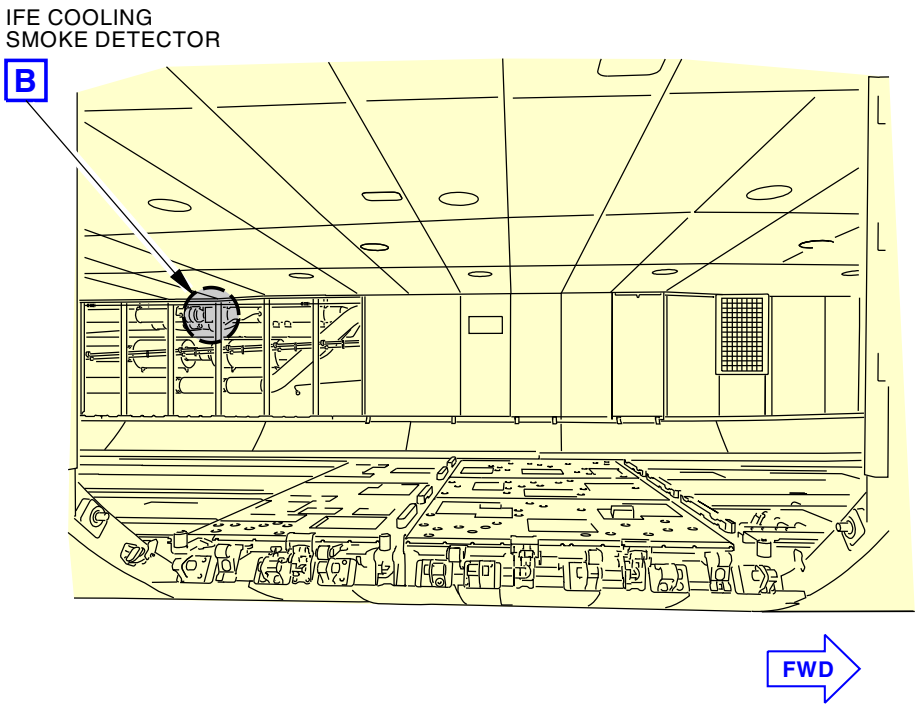

FORWARD CARGO COMPARTMENT

A

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IFE Cooling Smoke Detector Installation
Figure 401/21-27-53-990-801 (Sheet 1 of 2)

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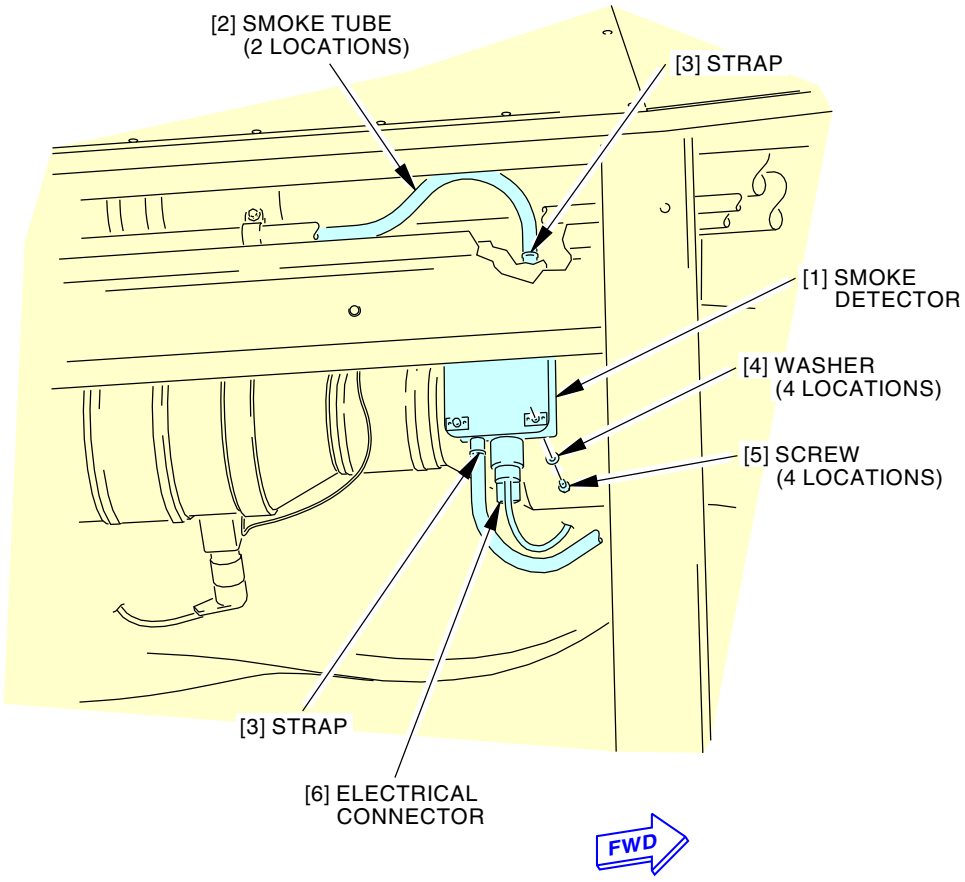

IFE COOLING SMOKE DETECTOR

B

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IFE Cooling Smoke Detector Installation
Figure 401/21-27-53-990-801 (Sheet 2 of 2)

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TASK 21-27-53-400-801

3. In-Flight Entertainment (IFE) Cooling Smoke Detector Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-27-53-100-801	In-Flight Entertainment (IFE) Cooling Smoke Detector Cleaning (P/B 701)
21-27-53-100-803	In-Flight Entertainment (IFE) Cooling Smoke Detection Tubes Cleaning (P/B 701)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Smoke detector	21-27-53-04-015	ARO 011-999

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. IFE Cooling Smoke Detector Installation

SUBTASK 21-27-53-420-001

(1) If the In-Flight Entertainment (IFE) cooling smoke detector [1] was removed for scheduled maintenance, then perform the In-Flight Entertainment (IFE) Cooling Smoke Detector Cleaning, TASK 21-27-53-100-801, In-Flight Entertainment (IFE) Cooling Smoke Detection Tubes Cleaning, TASK 21-27-53-100-803 before continuing with this procedure.

SUBTASK 21-27-53-420-045

(2) Put the IFE cooling smoke detector [1] in its position on the mounting plate.

SUBTASK 21-27-53-420-002

(3) Install the screws [5] and washers [4] that hold the IFE cooling smoke detector [1] to the mounting plate.

SUBTASK 21-27-53-420-003

(4) Carefully push the smoke tubes [2] onto the IFE cooling smoke detector [1].

SUBTASK 21-27-53-420-004

(5) Install new straps [3] onto the smoke tubes [2].

SUBTASK 21-27-53-420-005

(6) Reconnect the electrical connector [6] to the IFE cooling smoke detector [1].

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F. IFE Cooling Smoke Detector Installation Test

SUBTASK 21-27-53-860-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	17	C21659	IFE CLG SMK DET
Z	2	C21339	IFE CLG FAN

SUBTASK 21-27-53-860-003

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

SUBTASK 21-27-53-740-001

(3) Use a Maintenance Access Terminal (MAT) to do the installation test of the IFE cooling smoke detector (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) IFE Equipment Cooling
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, then do the procedures in the Fault Isolation Manual to correct the fault.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-53-410-001

(1) Reinstall the left sidewall liner (TASK 25-52-06-400-801).

SUBTASK 21-27-53-410-002

(2) Close the forward cargo door (TASK 52-34-00-860-803).

SUBTASK 21-27-53-010-004

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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IFE COOLING SMOKE DETECTOR/ TUBES - CLEANING

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A cleaning of the In-Flight Entertainment (IFE) cooling smoke detector.

(2) A cleaning of the In-Flight Entertainment (IFE) cooling smoke detection tubes.

TASK 21-27-53-100-801

2. In-Flight Entertainment (IFE) Cooling Smoke Detector Cleaning

Figure 701

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-41-01 P/B 201	ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES - MAINTENANCE PRACTICES
21-27-53-000-801	In-Flight Entertainment (IFE) Cooling Smoke Detector Removal (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
G00215	Brush - Soft Bristle Fiber	

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

D. Prepare for the Cleaning

SUBTASK 21-27-53-000-001

(1) To remove the IFE cooling smoke detector, do this task: (In-Flight Entertainment (IFE) Cooling Smoke Detector Removal, TASK 21-27-53-000-801).

E. IFE Cooling Smoke Detector Cleaning

SUBTASK 21-27-53-910-001

CAUTION

DO NOT TOUCH THE PINS ON THE SMOKE DETECTOR CONNECTOR. IF YOU TOUCH THESE PINS, STATIC ELECTRICITY CAN CAUSE DAMAGE TO THE SMOKE DETECTOR.

(1) Before you touch the smoke detector, do this task: (ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES - MAINTENANCE PRACTICES, PAGEBLOCK 20-41-01/201).

SUBTASK 21-27-53-010-005

(2) Remove the screws [2] and washers [3] at six locations from the smoke detector cover [1].

SUBTASK 21-27-53-010-006

(3) Remove the smoke detector cover [1] and gasket [4].

SUBTASK 21-27-53-100-001

(4) To clean the inside of the IFE cooling smoke detector case, do these steps:

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WARNING USE EYE PROTECTION WHEN YOU USE COMPRESSED AIR TO CLEAN, COOL, OR DRY PARTS OR TOOLS. PARTICLES CAN CAUSE AN INJURY TO YOUR EYES. DO NOT POINT COMPRESSED AIR AT YOURSELF OR OTHER PERSONS.

(a) Blow out dust and residue with dry compressed air at maximum gauge pressure not to exceed 15 pounds per square inch (PSIG).

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

(b) Remove contaminants and residue adhering to walls with a brush, G00215 and alcohol, B00130.

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

(c) Remove any contaminants on the printed wiring assemblies using alcohol, B00130.

F. Smoke Detector Inspection

SUBTASK 21-27-53-210-002

(1) Examine the inside of the smoke detector for scratches or shiny surfaces.

SUBTASK 21-27-53-960-001

(2) Replace the smoke detector if the inside has scratches or shiny surfaces.

NOTE: The smoke detector chamber should be clean and coated with a non-reflective paint with no shiny surfaces.

SUBTASK 21-27-53-410-004

(3) Install the smoke detector cover [1] and gasket [4] using screws [2] and washers [3] at six locations. Torque the screws to 7.5 in-lb (0.8 N·m) to 8.5 in-lb (1.0 N·m).

——— END OF TASK ———

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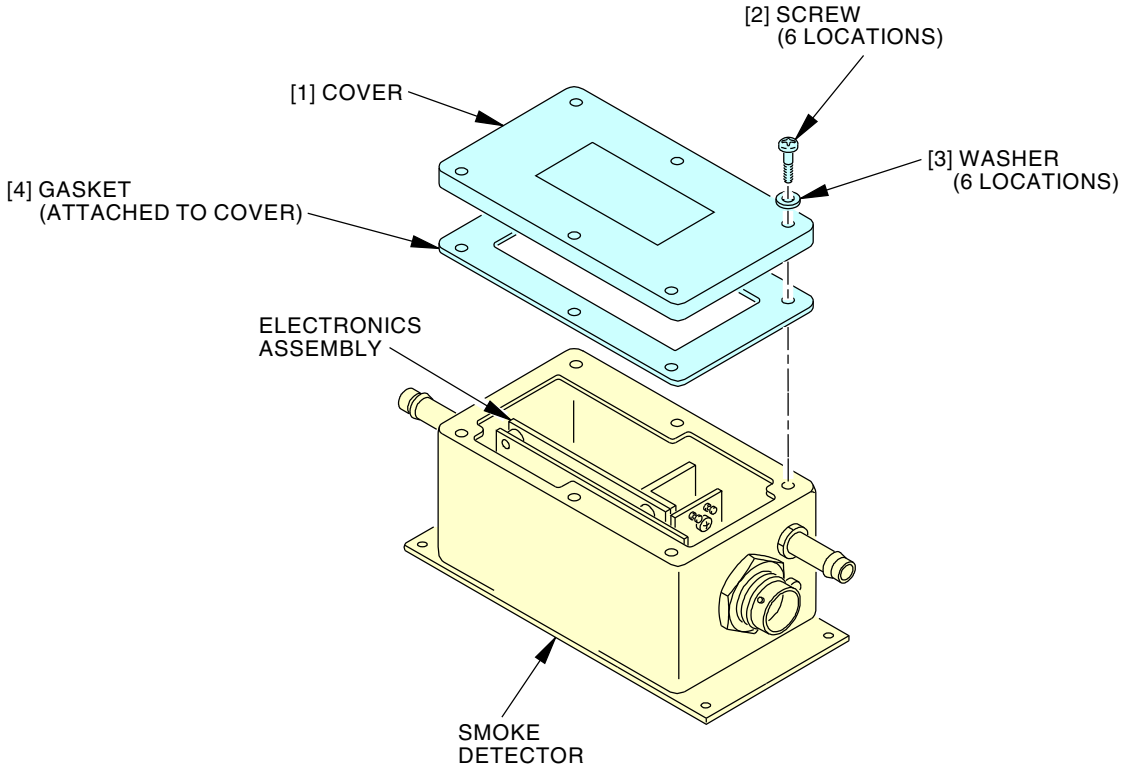

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In-Flight Entertainment (IFE) Cooling Smoke Detector Cleaning
Figure 701/21-27-53-990-802

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TASK 21-27-53-100-803

3. In-Flight Entertainment (IFE) Cooling Smoke Detection Tubes Cleaning

(Figure 702)

A. References

Reference	Title
21-27-53-400-801	In-Flight Entertainment (IFE) Cooling Smoke Detector Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

D. Blowing Out Procedure for IFE Cooling Smoke Detection Tubes

NOTE: This procedure is an optional procedure to clean the cooling smoke detection tubes.

SUBTASK 21-27-53-020-039

(1) Remove the straps [6] which hold the smoke tubes [5] to the IFE cooling smoke detector [7].

SUBTASK 21-27-53-020-040

(2) Carefully pull the smoke tubes [5] away from the IFE cooling smoke detector [7].

SUBTASK 21-27-53-020-042

(3) Remove the straps [6] which hold the smoke tube to the duct.

SUBTASK 21-27-53-020-043

(4) Carefully pull the smoke tubes [5] away from the duct.

SUBTASK 21-27-53-800-001

(5) Cover all of the sampling ports in cargo compartment by cotton wiper, G00034.

SUBTASK 21-27-53-100-002

(6) To clean the inside of the IFE cooling smoke tubes [5], do these steps:

WARNING USE EYE PROTECTION WHEN YOU USE COMPRESSED AIR TO CLEAN, COOL, OR DRY PARTS OR TOOLS. PARTICLES CAN CAUSE AN INJURY TO YOUR EYES. DO NOT POINT COMPRESSED AIR AT YOURSELF OR OTHER PERSONS.

(a) Blow out using air nozzle for 1 minute from the disconnecting point to the sampling ports.

(b) Blow out in opposite direction of the flow from normal.

(c) Gradually increase pressure to approximately 50 psi (344.7 kPa).

SUBTASK 21-27-53-020-041

(7) Remove all of the cotton wiper, G00034 and discard them.

SUBTASK 21-27-53-210-004

(8) Do a visual inspection for all of the ports area, and clean them up if necessary.

SUBTASK 21-27-53-420-041

(9) Connect the smoke tubes [5] to the IFE cooling smoke detector [7].

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SUBTASK 21-27-53-420-042

(10) Install the new straps [6] onto the smoke tubes [5].

SUBTASK 21-27-53-420-043

(11) Connect the smoke tubes [5] to the duct.

SUBTASK 21-27-53-420-044

(12) Install new straps [6] onto the smoke tubes [5].

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-53-400-004

(1) To install the IFE cooling smoke detector [7], do this task: In-Flight Entertainment (IFE) Cooling Smoke Detector Installation, TASK 21-27-53-400-801.

——— END OF TASK ———

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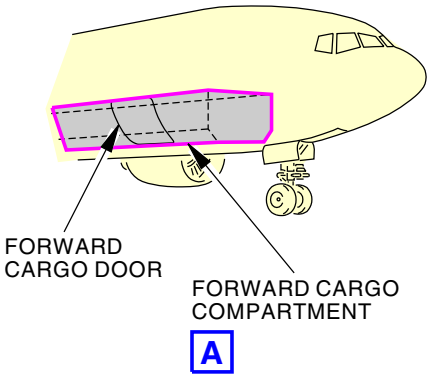

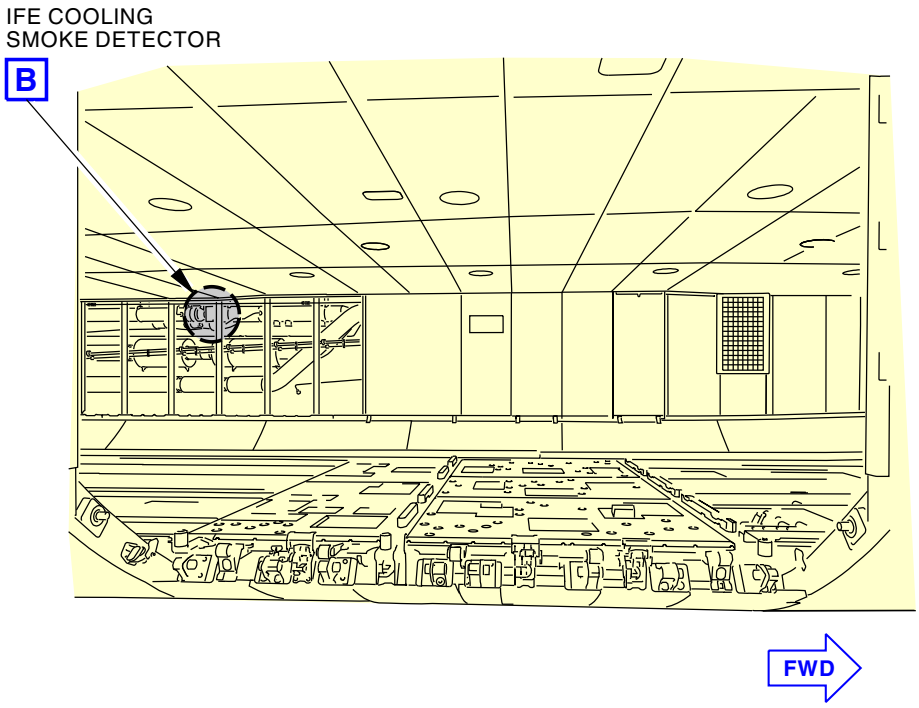

FORWARD CARGO COMPARTMENT

A

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IFE Cooling Smoke Detection Tube Cleaning
Figure 702/21-27-53-990-819 (Sheet 1 of 2)

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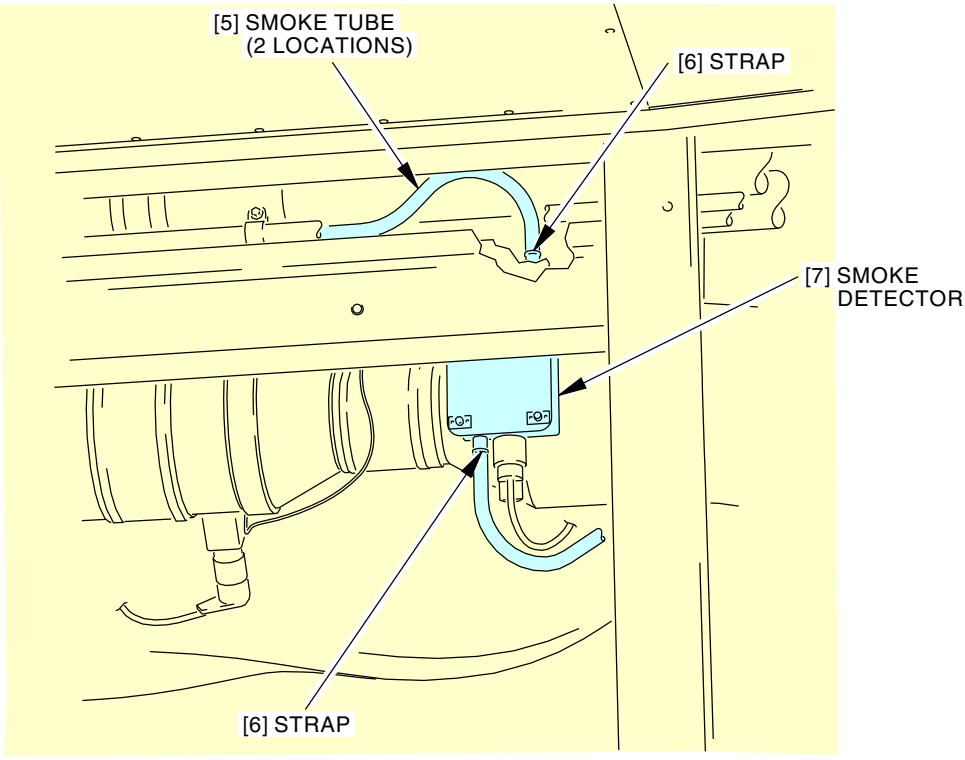

IFE COOLING SMOKE DETECTOR

B

2586508 S0000624419_V1

IFE Cooling Smoke Detection Tube Cleaning
Figure 702/21-27-53-990-819 (Sheet 2 of 2)

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CARGO COMPARTMENT CONDITIONED AIR DISTRIBUTION SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) System Test - Forward Cargo Air Conditioning Shutoff Valve.

TASK 21-28-00-740-801

2. Forward Cargo Air Conditioning Shutoff Valve - System Test

A. General

(1) This test makes sure that the forward cargo air conditioning (FCAC) shutoff valve 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
21-00-00-800-801	Supply Conditioned Air to the Airplane (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)

C. Location Zones

Zone	Area
126	Area Aft of Forward Cargo Compartment, Right
212	Flight Compartment, Right

D. FCAC Shutoff Valve System Test

SUBTASK 21-28-00-840-001

(1) Make sure these circuit breakers are closed:

Replace

Right Power Management Panel, P210

Row	Col	Number	Name
C	8	C21457	FWD CGO A/C SOV
H	12	C21682	FWD CGO A/C SOV CTRL

SUBTASK 21-28-00-860-001

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

SUBTASK 21-28-00-860-002

(3) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-28-00-740-001

(4) Use a maintenance access terminal (MAT) to do the system test of the FCAC shutoff valve:

(a) To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(b) Make sure that the GND TEST switch on the P61 Overhead Maintenance Panel is in the ENABLE position.

(c) Make these selections on the MAT:

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1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Forward Cargo Air Conditioning
7) 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.

(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) Put the GND TEST switch on the P61 Overhead Maintenance Panel in the NORM position.

——— END OF TASK ———

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FORWARD CARGO AIR CONDITIONING (FCAC) SHUTOFF VALVE - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Forward cargo air conditioning (FCAC) shutoff valve - deactivation

(2) Forward cargo air conditioning (FCAC) shutoff valve - activation.

TASK 21-28-01-040-801

2. Forward Cargo Air Conditioning (FCAC) Shutoff Valve - Deactivation

Figure 201

A. General

(1) This task will deactivate the forward cargo air conditioning (FCAC) shutoff valve.

B. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (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)
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
126	Area Aft of Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-28-01-860-004

(1) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-28-01-010-007

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-28-01-020-005

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

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(WARNING PRECEDES)

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Right Power Management Panel, P210

Row	Col	Number	Name
C	8	C21457	FWD CGO A/C SOV
H	12	C21682	FWD CGO A/C SOV CTRL

SUBTASK 21-28-01-860-011

(4) Open the forward cargo door (TASK 52-34-00-860-801).

SUBTASK 21-28-01-860-005

(5) Remove the aft end wall of the forward cargo compartment, (TASK 25-52-17-000-801).

F. Forward Cargo Air Conditioning (FCAC) Shutoff Valve - Tryout

NOTE: This tryout is to make sure that the Forward Cargo Air Conditioning (FCAC) Shutoff Valve is in a zero energy state.

SUBTASK 21-28-01-860-006

(1) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-28-01-860-007

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

SUBTASK 21-28-01-860-008

(3) Use a maintenance access terminal (MAT) to do the installation test of the FCAC shutoff valve (TASK 45-10-00-740-808):

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Forward Cargo Air Conditioning
7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE
2) START TEST

(c) Make sure that the FCAC shutoff valve does not move.

NOTE: Look at the valve position indicator to see the position of the shutoff valve.

NOTE: An observer must be in voice contact with an operator in the flight deck at all times to complete this step.

(d) When the test is completed, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

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SUBTASK 21-28-01-860-009

(4) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-28-01-860-010

(5) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

——— END OF TASK ———

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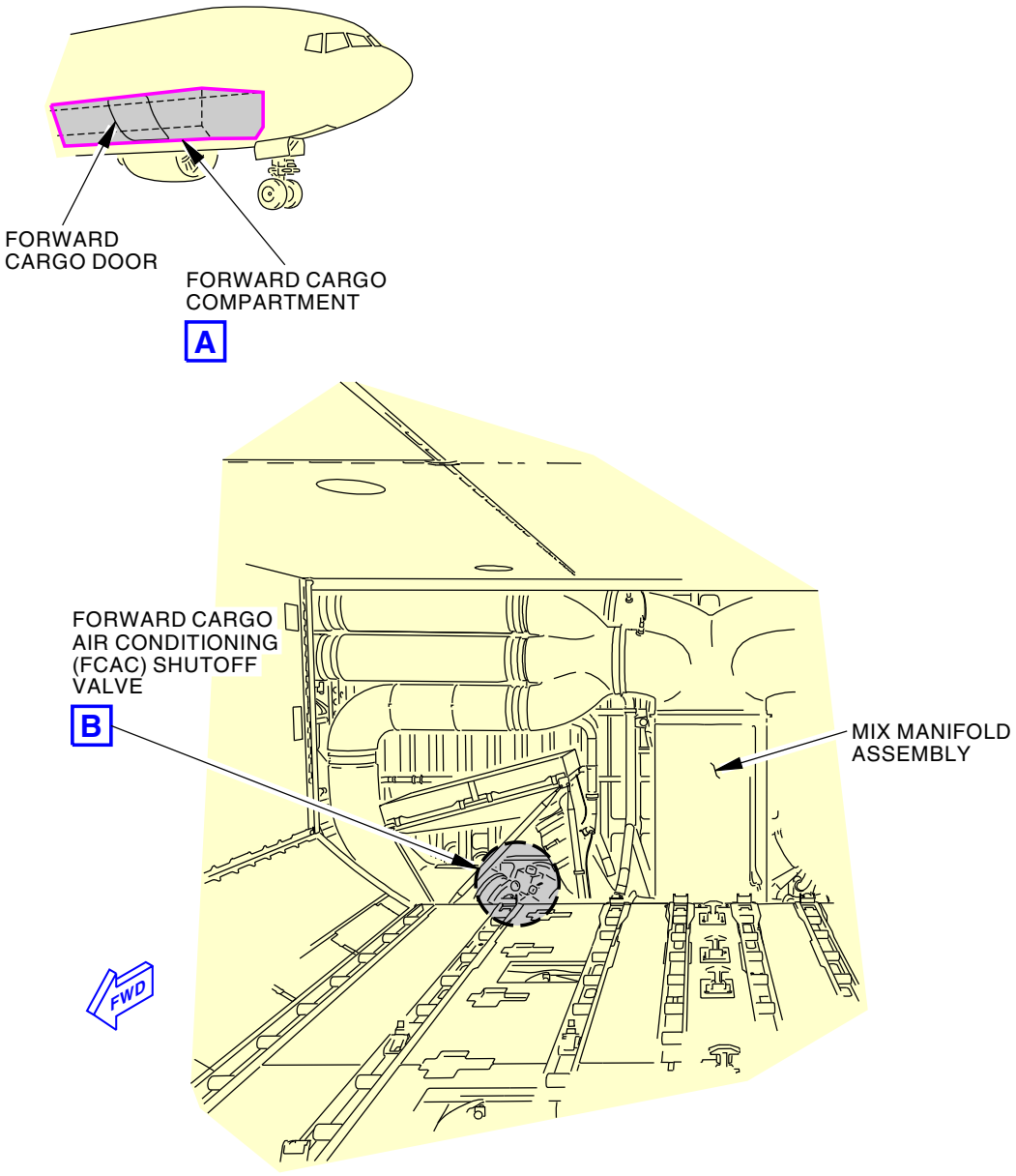

FORWARD CARGO COMPARTMENT
(STA 998 END WALL)

A

NOTE:

THE STATION 998 END WALL LINER IS NOT SHOWN IN THIS VIEW.

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Forward Cargo Air Conditioning (FCAC) Shutoff Valve
Figure 201/21-28-01-990-802 (Sheet 1 of 2)

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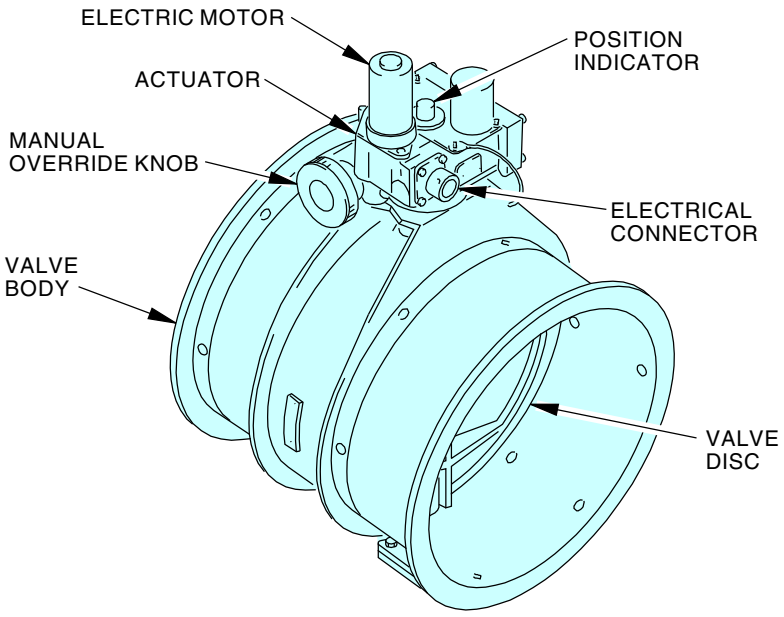

FCAC SHUTOFF VALVE

B

2422762 S0000560475_V2

Forward Cargo Air Conditioning (FCAC) Shutoff Valve
Figure 201/21-28-01-990-802 (Sheet 2 of 2)

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TASK 21-28-01-440-801

3. Forward Cargo Air Conditioning (FCAC) Shutoff Valve - Activation

Figure 201

A. General

(1) This task will activate the forward cargo air conditioning (FCAC) shutoff valve.

B. Location Zones

Zone	Area
126	Area Aft of Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure

SUBTASK 21-28-01-420-007

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Right Power Management Panel, P210

Row	Col	Number	Name
C	8	C21457	FWD CGO A/C SOV
H	12	C21682	FWD CGO A/C SOV CTRL

END OF TASK

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FORWARD CARGO AIR CONDITIONING (FCAC) SHUTOFF VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the FCAC shutoff valve

(2) An installation of the FCAC shutoff valve.

B. The FCAC shutoff valve opens when the FCAC temperature selector is in the AUTO position. When the FCAC shutoff valve is open, conditioned air from the mix manifold is supplied to the forward cargo compartment.

C. The FCAC shutoff valve closes for these conditions:

(1) The FCAC temperature selector is in the OFF position

(2) Smoke is detected in the forward cargo compartment

(3) The forward cargo fire switch is in the ARMED position.

TASK 21-28-01-000-801

2. Forward Cargo Air Conditioning (FCAC) Shutoff Valve Removal

(Figure 401)

A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
126	Area Aft of Forward Cargo Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-28-01-860-001

(1) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-28-01-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-28-01-840-001

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

Right Power Management Panel, P210

Row	Col	Number	Name
C	8	C21457	FWD CGO A/C SOV

SUBTASK 21-28-01-010-002

(4) Open the forward cargo door (TASK 52-34-00-860-801).

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SUBTASK 21-28-01-010-003

(5) Remove the aft end wall of the forward cargo compartment, (TASK 25-52-17-000-801).

E. FCAC Shutoff Valve Removal

SUBTASK 21-28-01-020-001

(1) Disconnect the electrical connector [2] from the FCAC shutoff valve [1].

SUBTASK 21-28-01-020-002

(2) Loosen the two couplings [3] and move them away from the FCAC shutoff valve [1].

SUBTASK 21-28-01-020-003

(3) Move the two sleeves [4] away from the FCAC shutoff valve [1].

SUBTASK 21-28-01-020-004

(4) Remove the FCAC shutoff valve [1].

——— END OF TASK ———

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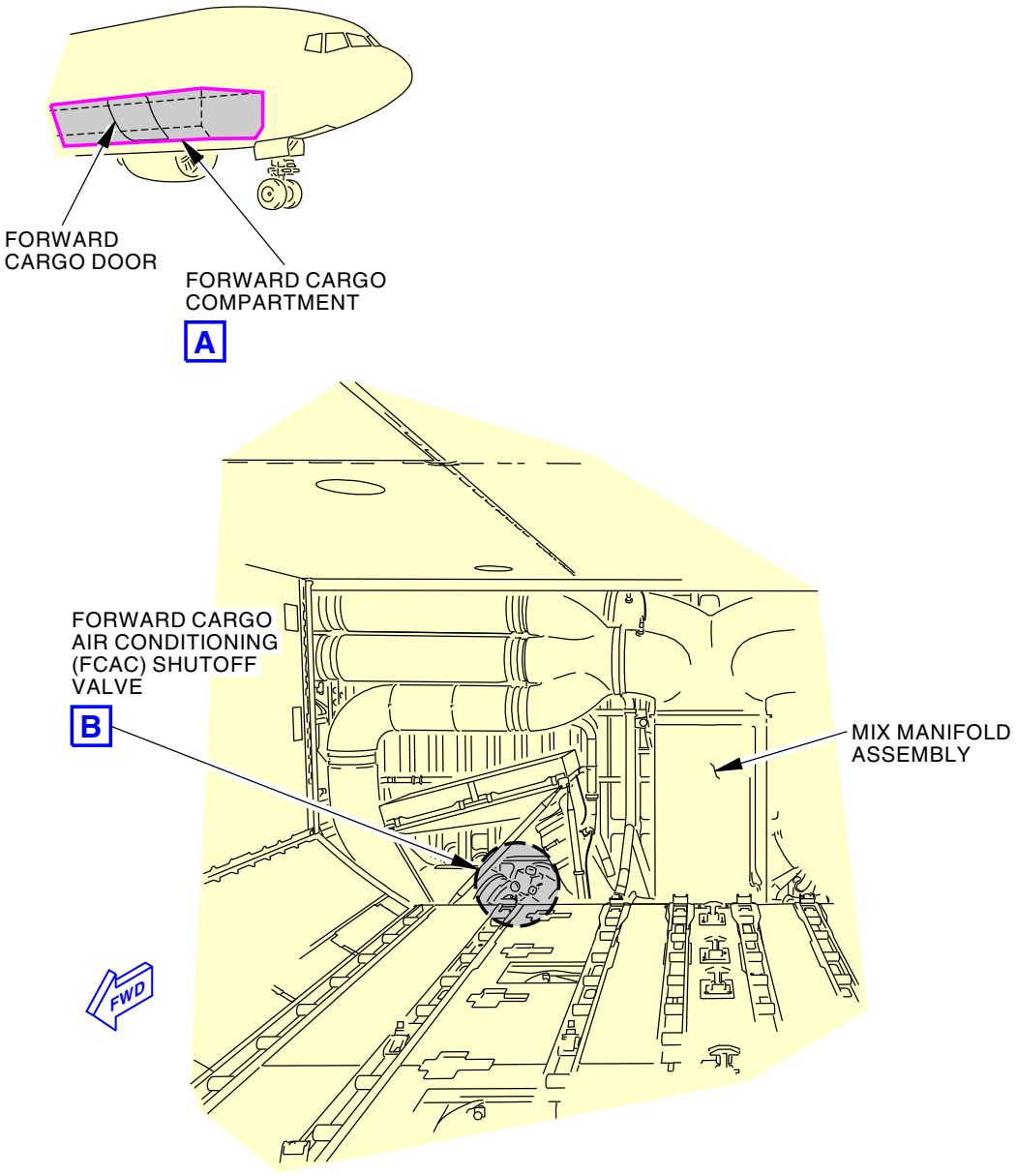

FORWARD CARGO COMPARTMENT
(STA 998 END WALL)

A

NOTE:

THE STATION 998 END WALL LINER IS NOT SHOWN IN THIS VIEW.

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Forward Cargo Air Conditioning Shutoff Valve Installation
Figure 401/21-28-01-990-801 (Sheet 1 of 2)

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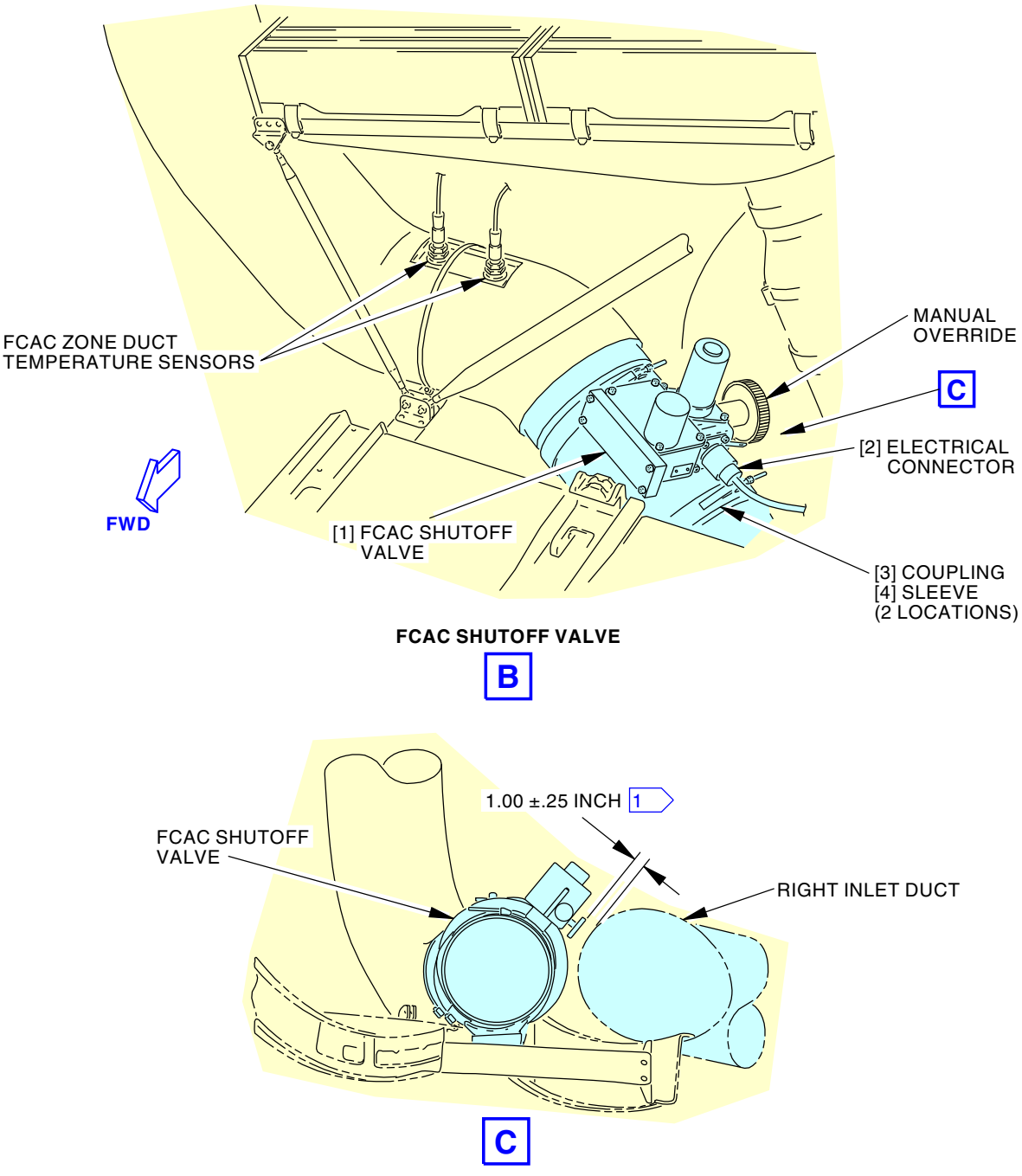

1 MAKE SURE THERE IS A 1.00 INCH GAP
BETWEEN THE SHUTOFF VALVE AND THE RIGHT INLET DUCT.

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Forward Cargo Air Conditioning Shutoff Valve Installation
Figure 401/21-28-01-990-801 (Sheet 2 of 2)

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TASK 21-28-01-400-801

3. Forward Cargo Air Conditioning (FCAC) Shutoff Valve Installation

(Figure 401)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-28-01-02-015	ARO ALL

C. Location Zones

Zone	Area
126	Area Aft of Forward Cargo Compartment, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. FCAC Shutoff Valve Installation

SUBTASK 21-28-01-420-001

(1) Hold the FCAC shutoff valve [1] between the two ducts.

SUBTASK 21-28-01-420-005

(2) Put the two sleeves [4] onto the FCAC shutoff valve [1] duct connections.

SUBTASK 21-28-01-420-006

(3) Loosely install the couplings [3] on the FCAC shutoff valve [1] duct connections.

SUBTASK 21-28-01-420-002

(4) Make sure there is 1 in. (25.4 mm) clearance between the manual override of the FCAC shutoff valve [1] and the right inlet duct.

SUBTASK 21-28-01-420-003

(5) Tighten the couplings [3] to 50 ±5 in-lb (5.65 ±0.57 N·m).

SUBTASK 21-28-01-420-004

(6) Reconnect the electrical connector [2] to the FCAC shutoff valve [1].

F. FCAC Shutoff Valve Installation Test

SUBTASK 21-28-01-840-002

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

Right Power Management Panel, P210

Row	Col	Number	Name
C	8	C21457	FWD CGO A/C SOV

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SUBTASK 21-28-01-010-004

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-28-01-860-002

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

SUBTASK 21-28-01-860-003

(4) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-28-01-740-001

(5) Use a maintenance access terminal (MAT) to do the installation test of the FCAC shutoff valve (TASK 45-10-00-740-808):

NOTE: While the MAT test is in operation, the FCAC shutoff valve will open. A second person should put their hand approximately six inches away from the couplings on the FCAC shutoff valve to feel for air leakage while the test is in operation. If air leakage is felt, the FCAC shutoff valve and couplings must be adjusted until air leakage is not felt.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Forward Cargo Air Conditioning
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.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-28-01-010-005

(1) Reinstall the aft end wall in the forward cargo compartment, (TASK 25-52-17-400-801).

SUBTASK 21-28-01-010-006

(2) Close the forward cargo door (TASK 52-34-00-860-803).

END OF TASK

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CREW REST AREA AIR DISTRIBUTION SYSTEM GASPER AIR OUTLETS (MAIN DECK FLIGHT CREW REST) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the crew rest area gasper air outlet.

(2) An installation of the crew rest area gasper air outlet.

TASK 21-29-00-000-802

2. Crew Rest Area Gasper Air Outlet - Removal

Figure 401

A. Location Zones

Zone	Area
223	Area Above Passenger Compartment Ceiling, Left - Section 41
831	Left No. 1 Passenger Entry Door - Section 41

B. General

SUBTASK 21-29-00-010-002

(1) Access for the lower bunk gasper air outlet [2] is from inside the crew rest. Access for the upper bunk gasper air outlet [2] is from above the crew rest.

C. Prepare for Removal

SUBTASK 21-29-00-010-003

(1) Do this step to get access to the upper bunk gasper air outlet [2]:

(a) Lower the ceiling panel next to door 1 to gain access to the top of the crew rest.

SUBTASK 21-29-00-010-004

(2) Do these steps to get access to the lower bunk gasper air outlet [2]:

(a) Remove the screws [1] that attach the panel to the crew rest.

(b) Lower the panel until it hangs by the lanyards.

D. Removal

SUBTASK 21-29-00-030-002

(1) Remove the strap [4] that holds the hose [3] to the cap [5].

SUBTASK 21-29-00-030-003

(2) Remove the clamp [6] from the cap [5].

SUBTASK 21-29-00-030-004

(3) Remove the retaining ring [7] from the gasper air outlet [2].

SUBTASK 21-29-00-020-004

(4) Remove the gasper air outlet [2] through the bottom of the panel.

——— END OF TASK ———

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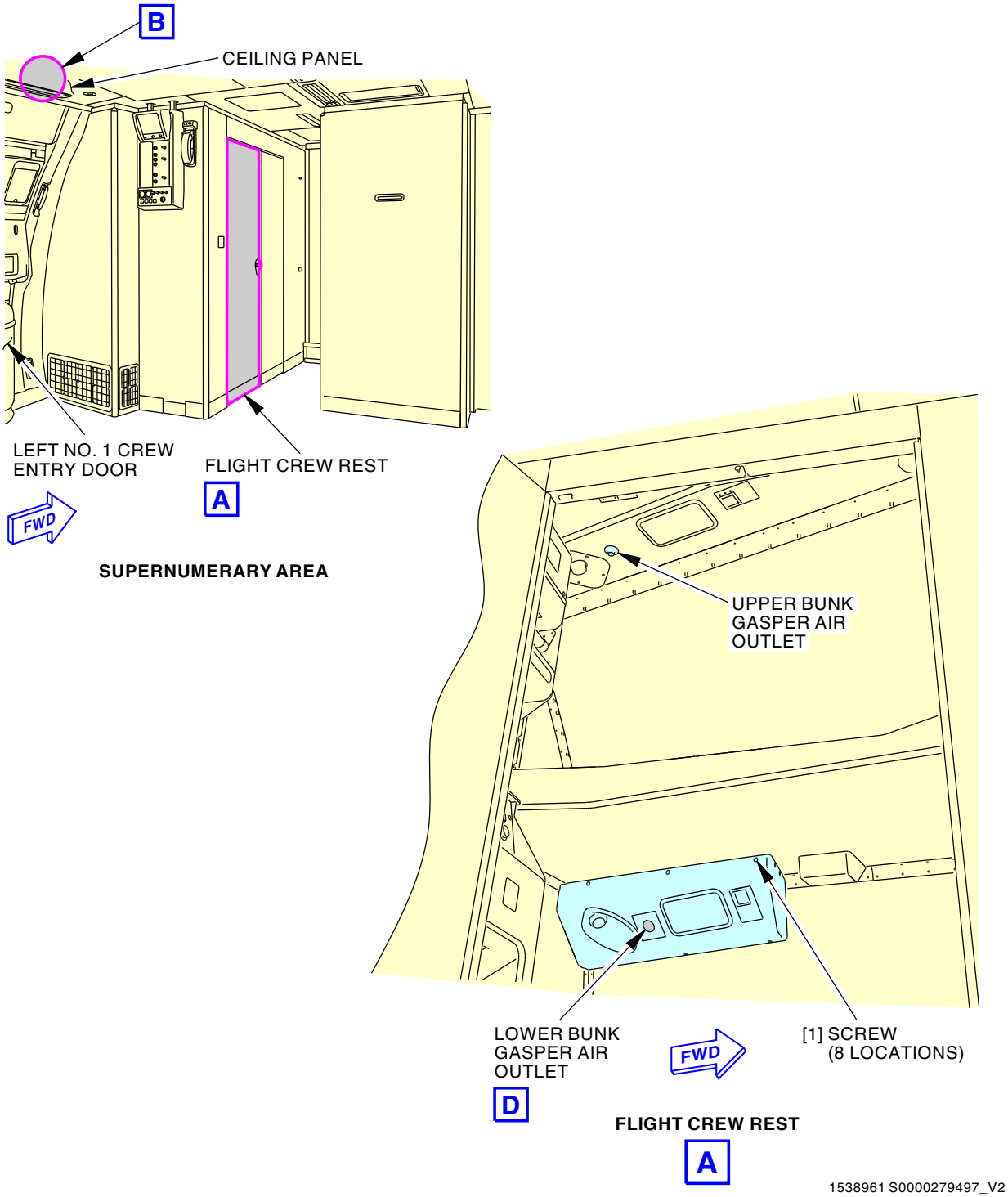

Crew Rest Area Gasper Air Outlet Installation
Figure 401/21-29-00-990-802 (Sheet 1 of 3)

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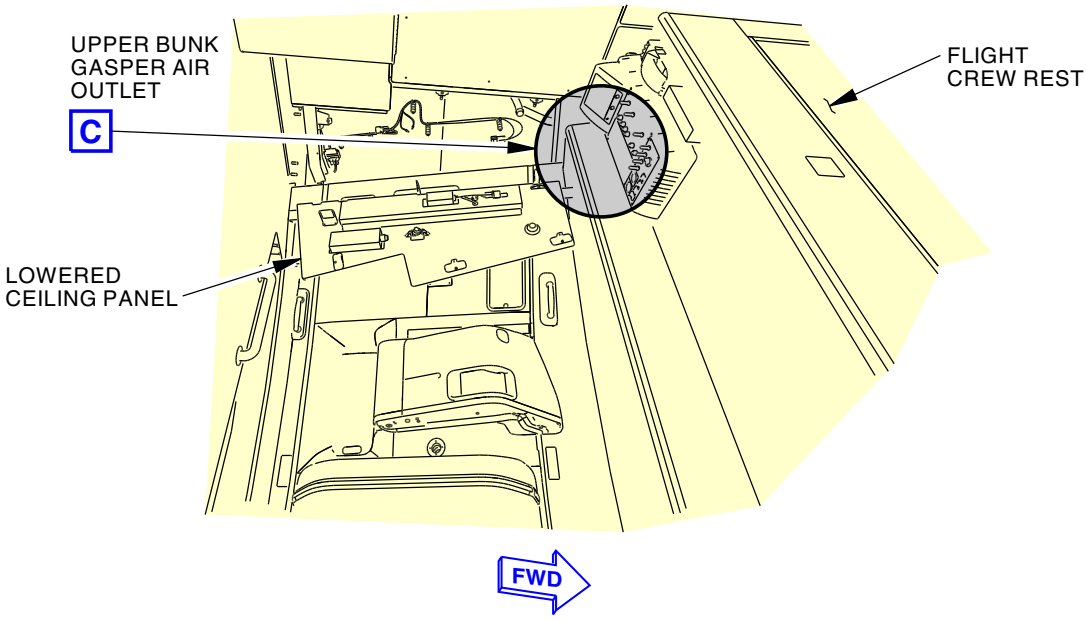
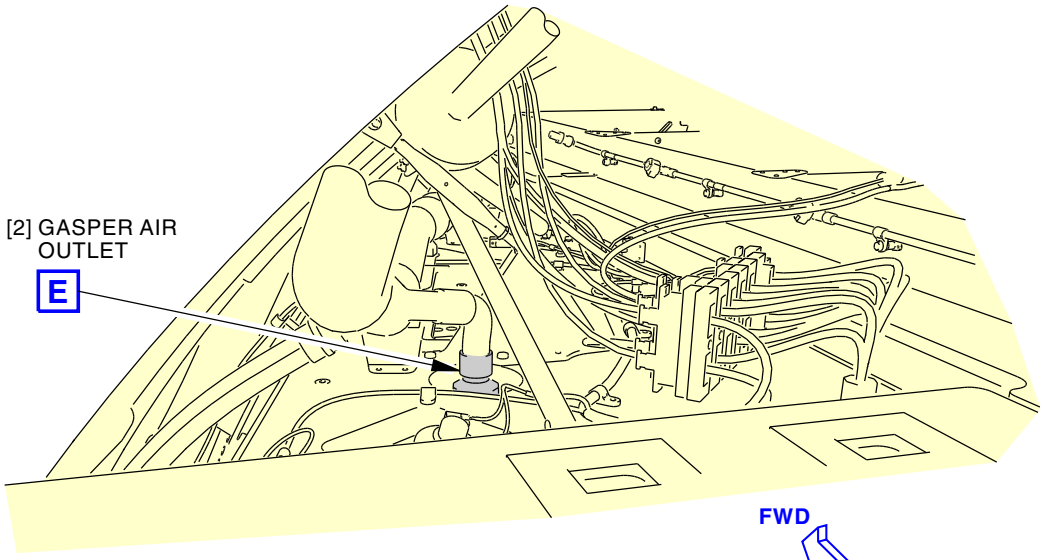


(CEILING PANEL LOWERED FOR ACCESS)

B



UPPER BUNK GASPER AIR OUTLET

C

1547080 S0000279499_V2

Crew Rest Area Gasper Air Outlet Installation
Figure 401/21-29-00-990-802 (Sheet 2 of 3)

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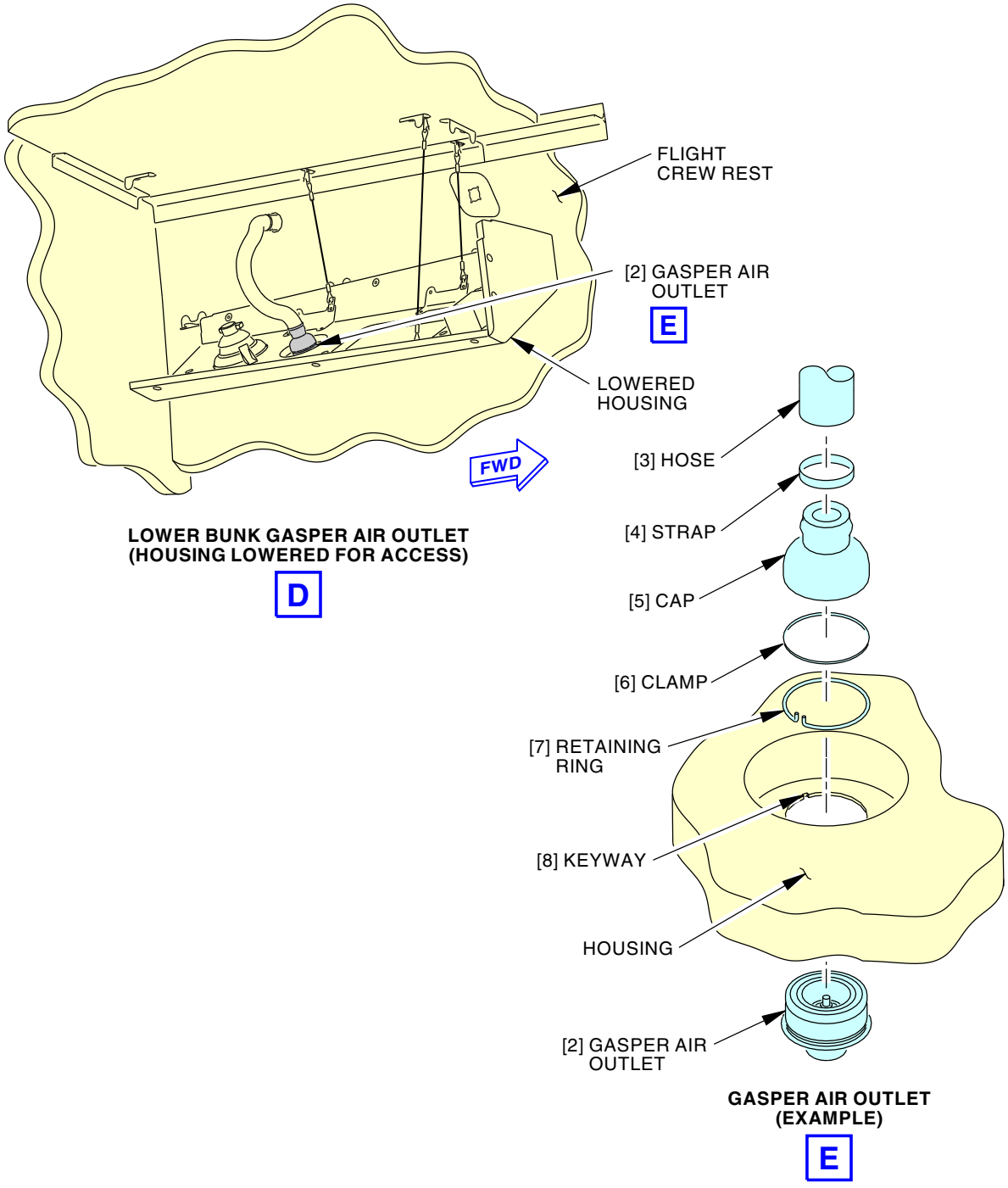

Crew Rest Area Gasper Air Outlet Installation
Figure 401/21-29-00-990-802 (Sheet 3 of 3)

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TASK 21-29-00-400-802

3. Crew Rest Area Gasper Air Outlet - Installation

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-3923	Tool - Installation, Tie Strap Part #: GS2BL Supplier: 06383 Part #: GS4H Supplier: 06383 Part #: GTS Supplier: 06383 Part #: PPTS Supplier: 06383

B. Location Zones

Zone	Area
223	Area Above Passenger Compartment Ceiling, Left - Section 41
831	Left No. 1 Passenger Entry Door - Section 41

C. Installation

SUBTASK 21-29-00-420-003

(1) Install the gasper air outlet [2] from the bottom of the panel.

NOTE: Make sure you line up the gasper air outlet [2] with the keyway [8] in the panel.

SUBTASK 21-29-00-420-004

(2) Install the retaining ring [7] on to the gasper air outlet [2].

SUBTASK 21-29-00-420-005

(3) Install the cap [5] on to the gasper air outlet [2].

SUBTASK 21-29-00-420-006

(4) Install the clamp [6] on to the gasper air outlet [2].

SUBTASK 21-29-00-420-007

(5) Install the hose [3] on to the cap [5].

SUBTASK 21-29-00-420-008

(6) Install a new strap [4] on to the hose [3].

(a) Use tie strap installation tool, COM-3923 to tighten the strap [4].

1) Set the selector knob on the tie strap installation tool, COM-3923, to standard and the indicator on 5.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-29-00-410-002

(1) If the upper bunk gasper air outlet [2] was removed, then close the ceiling panel next to door 1.

SUBTASK 21-29-00-410-003

(2) If the lower bunk gasper air outlet [2] was removed, then do these steps:

(a) Lift the panel into position.

(b) Install the screws [1] that hold the panel in its position.

END OF TASK

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CABIN PRESSURE CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Cabin pressure outflow valve - deactivation.

(2) Cabin pressure outflow valve - activation.

(3) Preparation for unpressurized flight

(4) Restoration for pressurized flight

TASK 21-31-00-040-804-001

2. Cabin Pressure Outflow Valve - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the cabin pressure outflow valve.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (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)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-31-00-860-030-001

(1) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-31-00-010-002-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-00-020-002-001

WARNING

KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(3) Do this step to deactivate the FWD cabin pressure outflow valve:

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Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-00-020-001-001

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(4) Do this step to deactivate the AFT cabin pressure outflow valve:

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

F. Cabin Pressure Outflow Valve - Tryout

NOTE: This tryout is to make sure that the cabin pressure outflow valve is in a zero energy state.

SUBTASK 21-31-00-860-036-001

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

SUBTASK 21-31-00-860-037-001

(2) Do these steps to do a test of the FWD outflow valve:

(a) On the EICAS maintenance page, make sure that these messages show:

1) OUTFLOW VALVE FWD

2) CABIN ALTITUDE AUTO

(b) Push the FWD OUTFLOW VALVE-AUTO/MAN switch-light on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure that the MAN switch-light comes on.

(c) Move the FWD OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to CLOSE on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure that the FWD OUTFLOW VALVE position indication does not change on the EICAS ECS maintenance page.

2) Make sure that the outflow valve assembly does not move.

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(d) Move the FWD OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to OPEN.

1) Make sure that the FWD OUTFLOW VALVE position indication does not change on the EICAS ECS maintenance page.

2) Make sure that the outflow valve assembly does not move.

(e) Push the FWD OUTFLOW VALVE-AUTO/MAN switch-light.

1) Make sure that the MAN switch-light goes off.

SUBTASK 21-31-00-860-038-001

(3) Do these steps to do a test of the AFT outflow valve:

(a) On the EICAS maintenance page, make sure that these messages show:

1) OUTFLOW VALVE AFT

2) CABIN ALTITUDE AUTO

(b) Push the AFT OUTFLOW VALVE-AUTO/MAN switch-light on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure that the MAN switch-light comes on.

(c) Move the AFT OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to CLOSE on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure that the AFT OUTFLOW VALVE position indication does not change on the EICAS ECS maintenance page.

2) Make sure that the outflow valve assembly does not move.

(d) Move the AFT OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to OPEN.

1) Make sure that the AFT OUTFLOW VALVE position indication does not change on the EICAS ECS maintenance page.

2) Make sure that the outflow valve assembly does not move.

(e) Push the AFT OUTFLOW VALVE-AUTO/MAN switch-light.

1) Make sure that the MAN switch-light goes off.

SUBTASK 21-31-00-860-039-001

(4) If not necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

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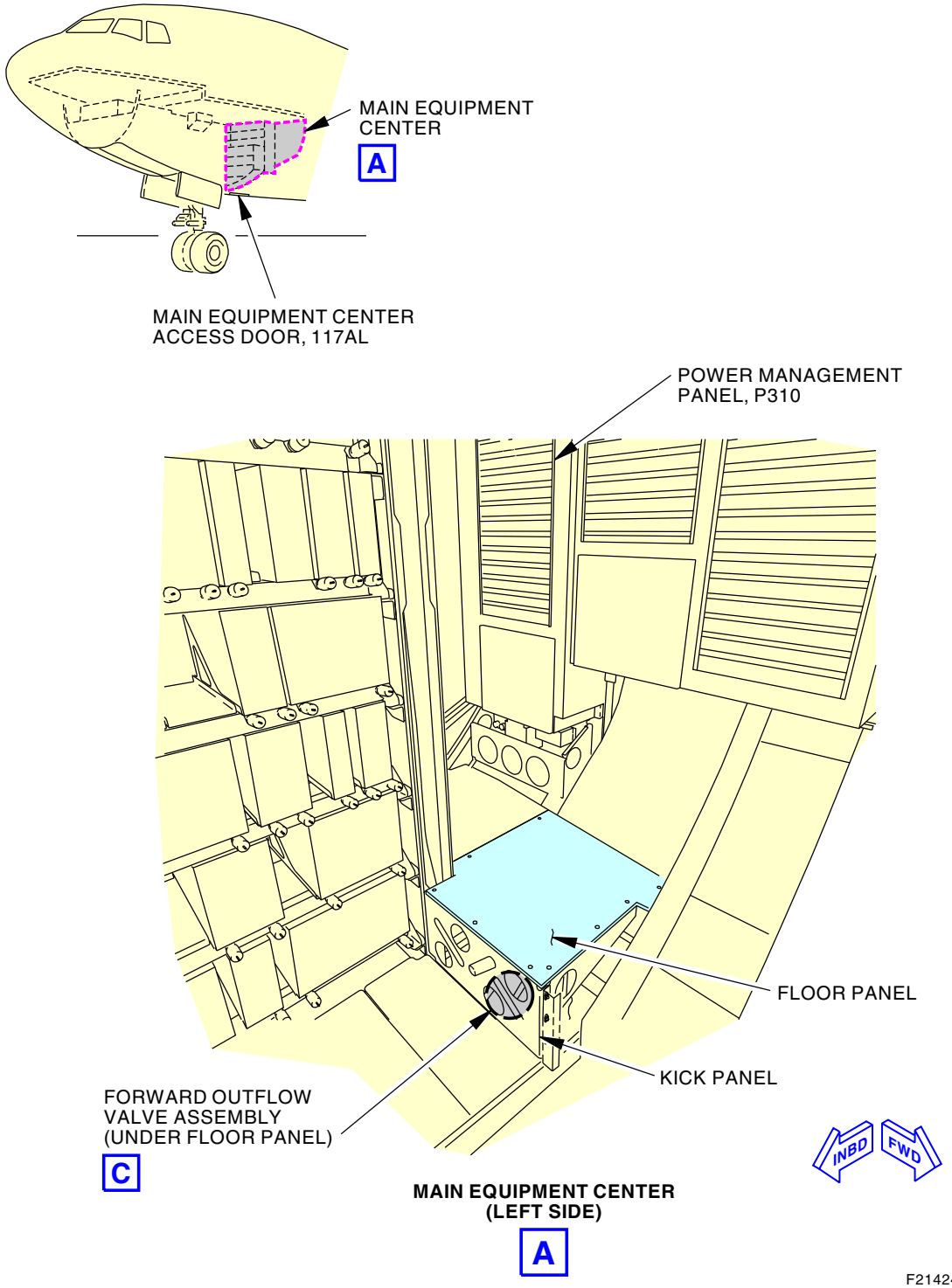

Cabin Pressure Outflow Valve
Figure 201/21-31-00-990-816-001 (Sheet 1 of 3)

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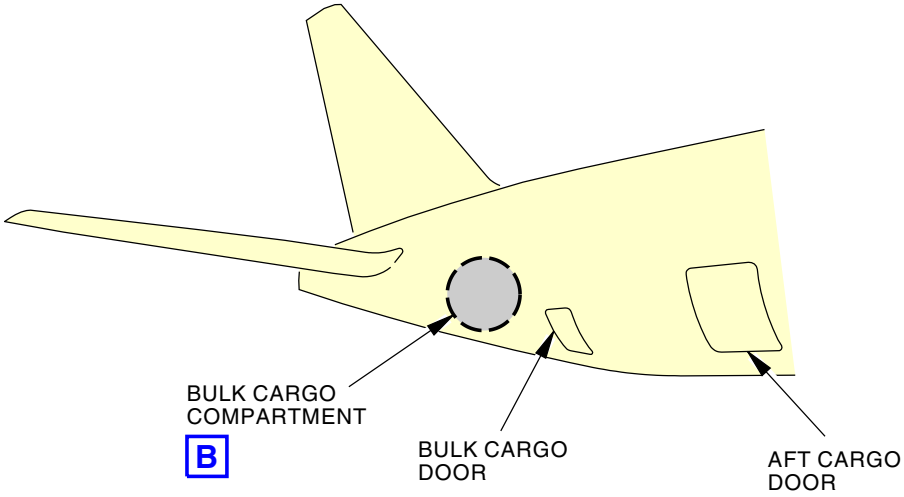

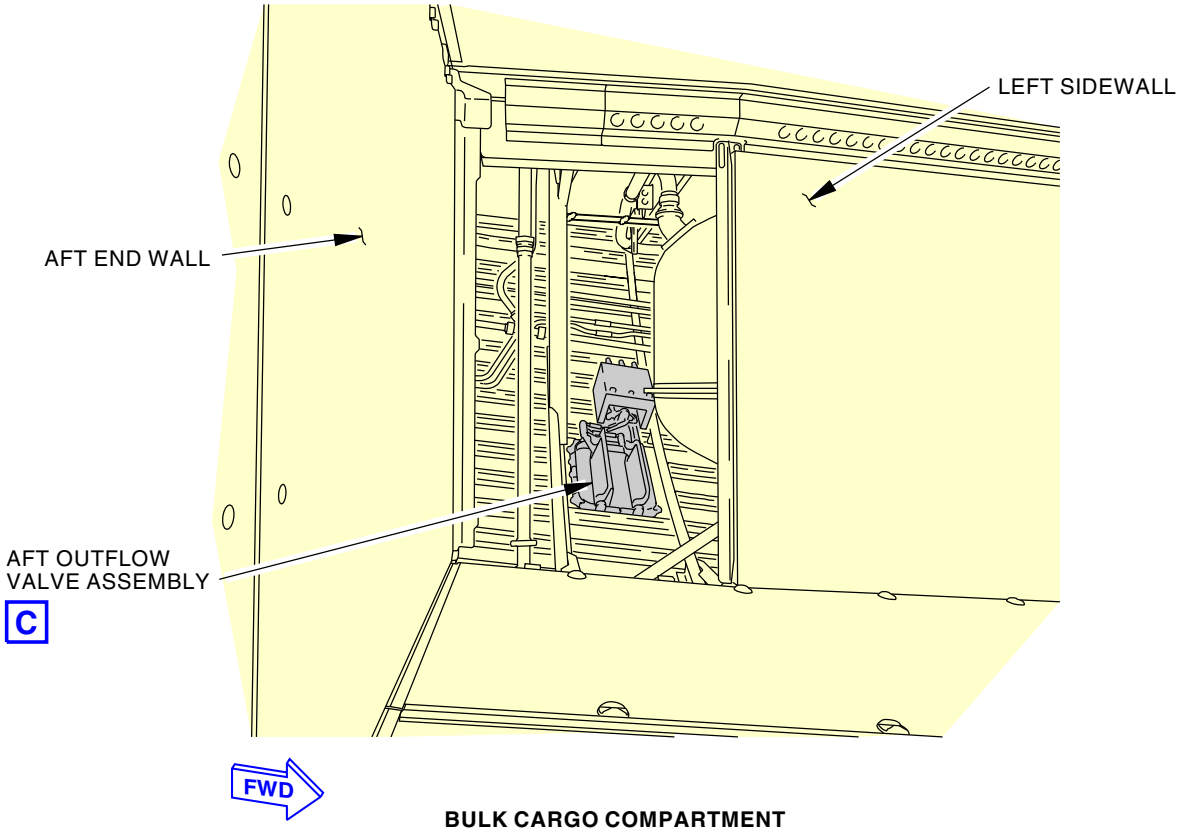

**BULK CARGO COMPARTMENT
(LEFT SIDEWALL)**

B

F21425 S0006403590_V2

**Cabin Pressure Outflow Valve
Figure 201/21-31-00-990-816-001 (Sheet 2 of 3)**

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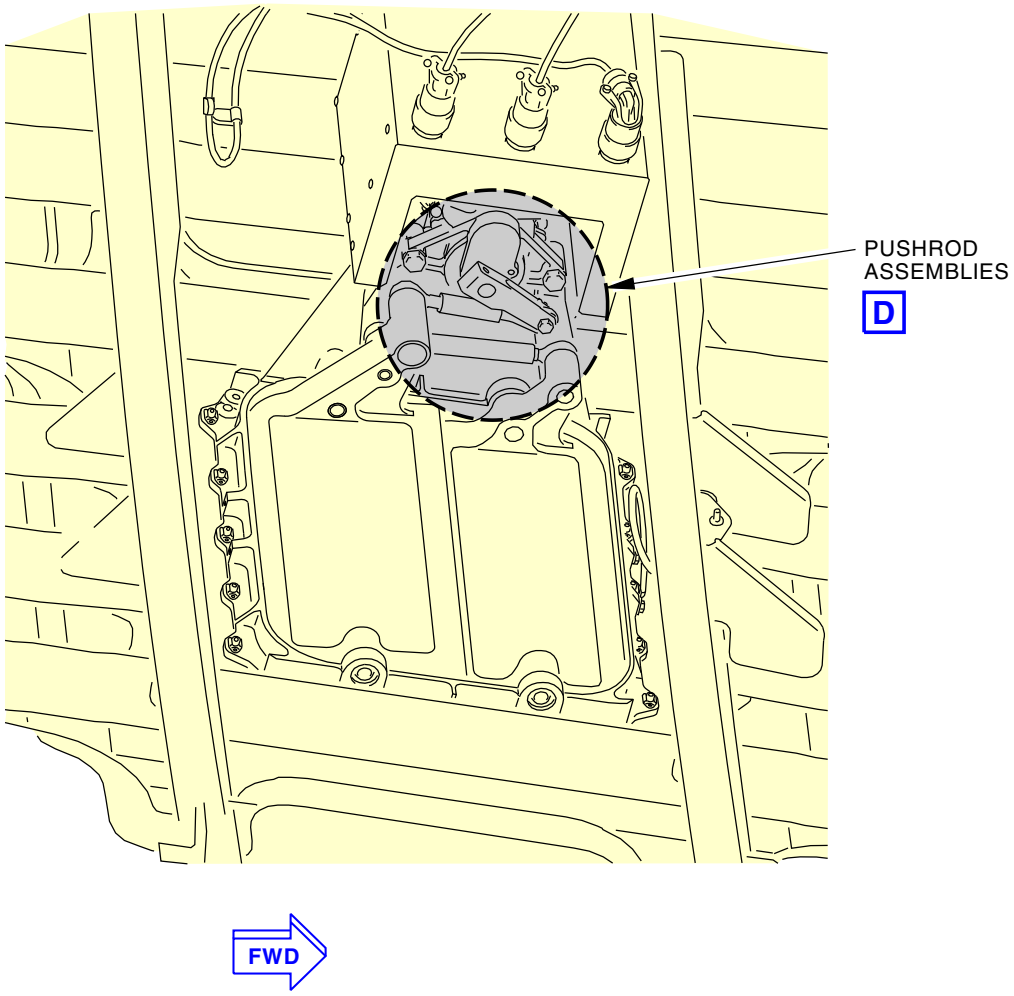

**OUTFLOW VALVE ASSEMBLY
(CLOSED POSITION)
(EXAMPLE)**

C

F21426 S0006403591_V2

**Cabin Pressure Outflow Valve
Figure 201/21-31-00-990-816-001 (Sheet 3 of 3)**

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TASK 21-31-00-440-804-001

3. Cabin Pressure Outflow Valve - Activation

(Figure 201)

A. General

(1) This task will activate the cabin pressure outflow valve.

B. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-31-00-420-003-001

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(1) Do this step to activate the FWD cabin pressure outflow valve:

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-00-420-001-001

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

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(WARNING PRECEDES)

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(2) Do this step to activate the AFT cabin pressure outflow valve:

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-00-410-001-001

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-00-860-040-001

(4) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

——— END OF TASK ———

TASK 21-31-00-040-802-001

4. Preparation For Unpressurized Flight

(Figure 202)

A. General

(1) This task gives the maintenance steps which prepare the airplane for unpressurized flight.

(2) To prepare the airplane for unpressurized flight you can use one of these two procedures to deactivate the forward and aft outflow valves (OFV) in the open position:

(a) If manual mode control is operational, then open the outflow valves (OFV) with the manual mode control.

(b) If manual mode control is not operational, then secure the outflow valves (OFV) in the open position with the hold-open lock.

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)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

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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-1606	Lock - Hold Open, Outflow Valve (***DISPATCH***) Part #: J21006-1 Supplier: 81205

D. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Forward and Aft Outflow Valves (OFV) Deactivation - UNPRESSURIZED FLIGHT PREPARATION

SUBTASK 21-31-00-860-008

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

SUBTASK 21-31-00-040-001

(2) If the forward and aft outflow valves (OFV) are in the fully open position, then do these steps to deactivate the outflow valves (OFV):

(a) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-00-860-009

(3) If the forward and the aft outflow valves (OFV) are not in the fully open position, then fully open the forward and the aft outflow valves (OFV) by one of the procedures that follow:

(a) If manual mode control is operational, then do these steps to fully open the forward and the aft outflow valves (OFV):

1) Push the FWD and the AFT OUTFLOW VALVE - AUTO/MAN switch-lights, on the pilot's overhead panel, P5, to the MAN position.

2) Push and hold the FWD and AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switches, on the pilot's overhead panel, P5, to the fully OPEN position for 30 seconds.

3) Release the FWD and AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switches.

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4) Look at the forward and the aft outflow valves (OFV) to make sure they are in the fully open position.

5) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV
G	14	C21611	L AFT OFL VLV

6) Push the FWD and the AFT OUTFLOW VALVE - AUTO/MAN switch-lights, on the pilot's overhead panel, P5, to the AUTO position.

(b) If manual mode control is not operational, then do these steps to secure the forward and the aft outflow valves (OFV) in the fully open position:

1) To gain access to the aft outflow valve (OFV), do these steps:

a) Do this task: Open the Door, TASK 52-36-00-860-801.

b) Remove the applicable left sidewall liner at the aft end of the bulk cargo compartment to gain access to the aft outflow valve (OFV) (TASK 25-52-06-000-801).

2) To gain access to the forward outflow valve (OFV), do these steps:

a) Get access to the forward outflow valve (OFV) assembly through the main equipment center.

NOTE: The forward outflow valve (OFV) assembly is installed below the left power management panel, P110 and under the floor panel on the left side of the main equipment center.

b) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

c) Remove the floor panel.

d) Remove the kick panel.

3) Open these circuit breakers and install safety locks:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV
G	14	C21611	L AFT OFL VLV

4) To remove the primary pushrod [1], do these steps:

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a) Remove the bolt [11], washer [12], washer [13], nut [14] and the cotter pin [15] to disconnect the primary pushrod [1] from the aft door assembly.

b) Remove the bolt [2], nut [3] and the cotter pin [4] to disconnect the primary pushrod [1] from the actuator output crank.

c) Remove and keep the primary pushrod [1].

NOTE: Identify the primary pushrod with a label.

5) To remove the secondary pushrod [10], do these steps:

a) Remove the bolt [5], washer [6], washer [7], nut [8] and the cotter pin [9] to disconnect the secondary pushrod [10] from the forward door assembly.

b) Remove the bolt [5], washer [6], washer [7], nut [8] and the cotter pin [9] to disconnect the secondary pushrod [10] from the aft door assembly.

c) Remove and keep the secondary pushrod [10].

NOTE: Identify the secondary pushrod with a label.

6) To install the outflow valve lock, SPL-1606, do these steps:

a) Put the forward and the aft outflow valve (OFV) doors in the full open position.

b) Put the outflow valve lock, SPL-1606 in its position.

c) Re-install the bolt [5], washer [6], washer [7], nut [8] and the cotter pin [9] to connect the outflow valve lock, SPL-1606 to the forward door assembly.

d) Re-install the bolt [5], washer [6], washer [7], nut [8] and the cotter pin [9] to connect the outflow valve lock, SPL-1606 to the aft door assembly.

e) Re-install the bolt [11], washer [12], washer [13], nut [14] and the cotter pin [15] to connect the outflow valve lock, SPL-1606 to the aft door assembly.

7) For the aft outflow valve (OFV) assembly, do the steps that follow:

a) Install the applicable left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-400-801).

b) Do this task: Close the Door, TASK 52-36-00-860-802.

8) For the forward outflow valve (OFV) assembly, do the steps that follow:

a) Install the kick panel.

b) Install the floor panel.

9) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-00-860-041-001

(4) If not necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

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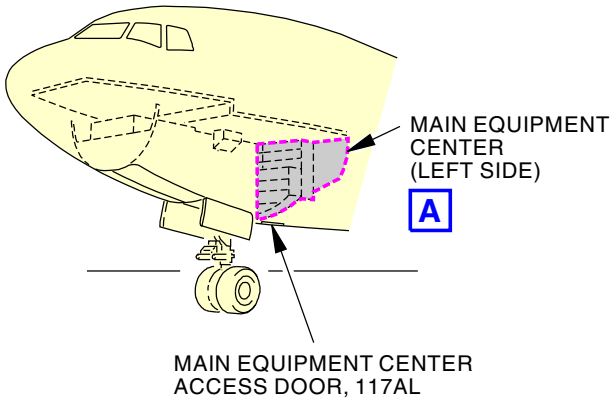

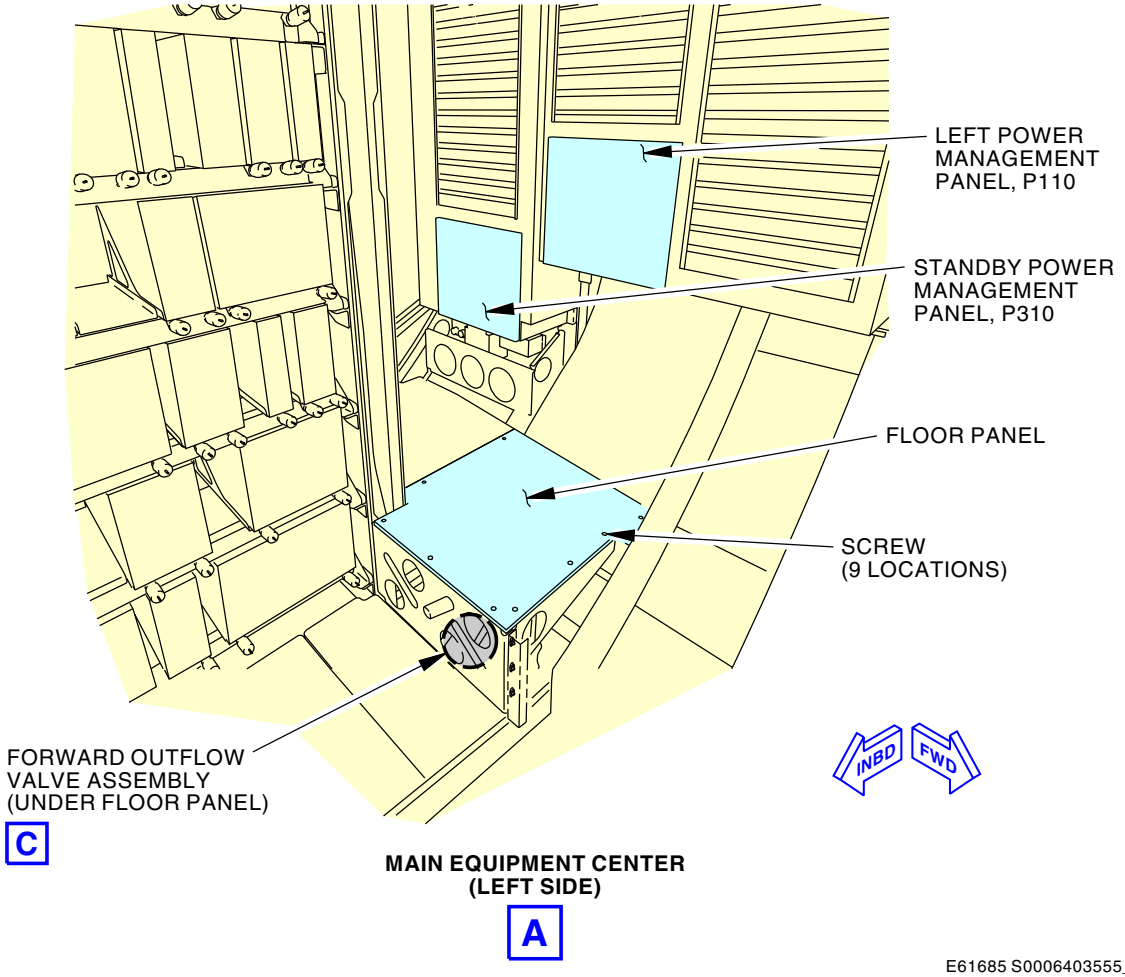

E61685 S0006403555_V2

Outflow Valve (OFV) Assembly Deactivation
Figure 202/21-31-00-990-801 (Sheet 1 of 4)

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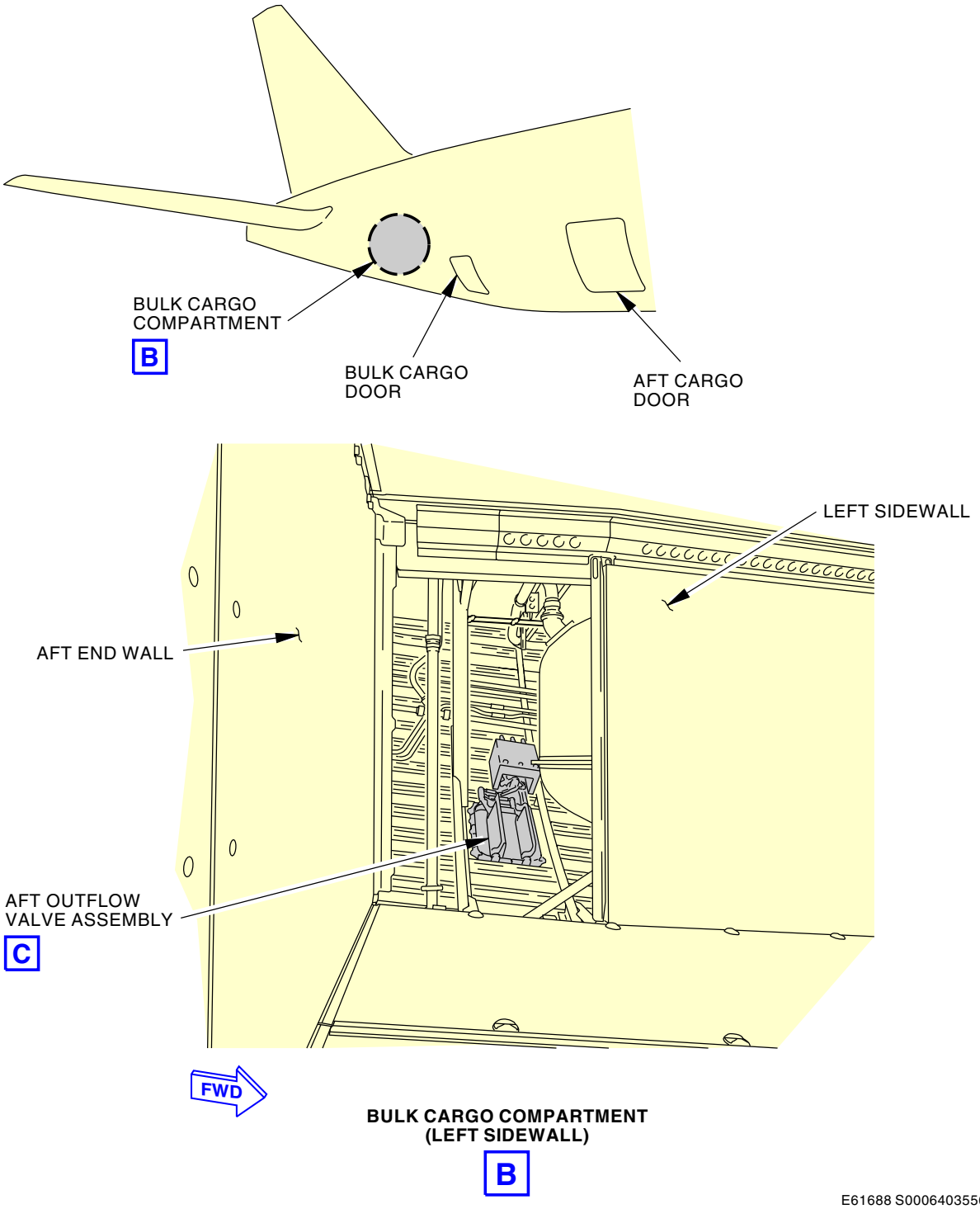

Outflow Valve (OFV) Assembly Deactivation
Figure 202/21-31-00-990-801 (Sheet 2 of 4)

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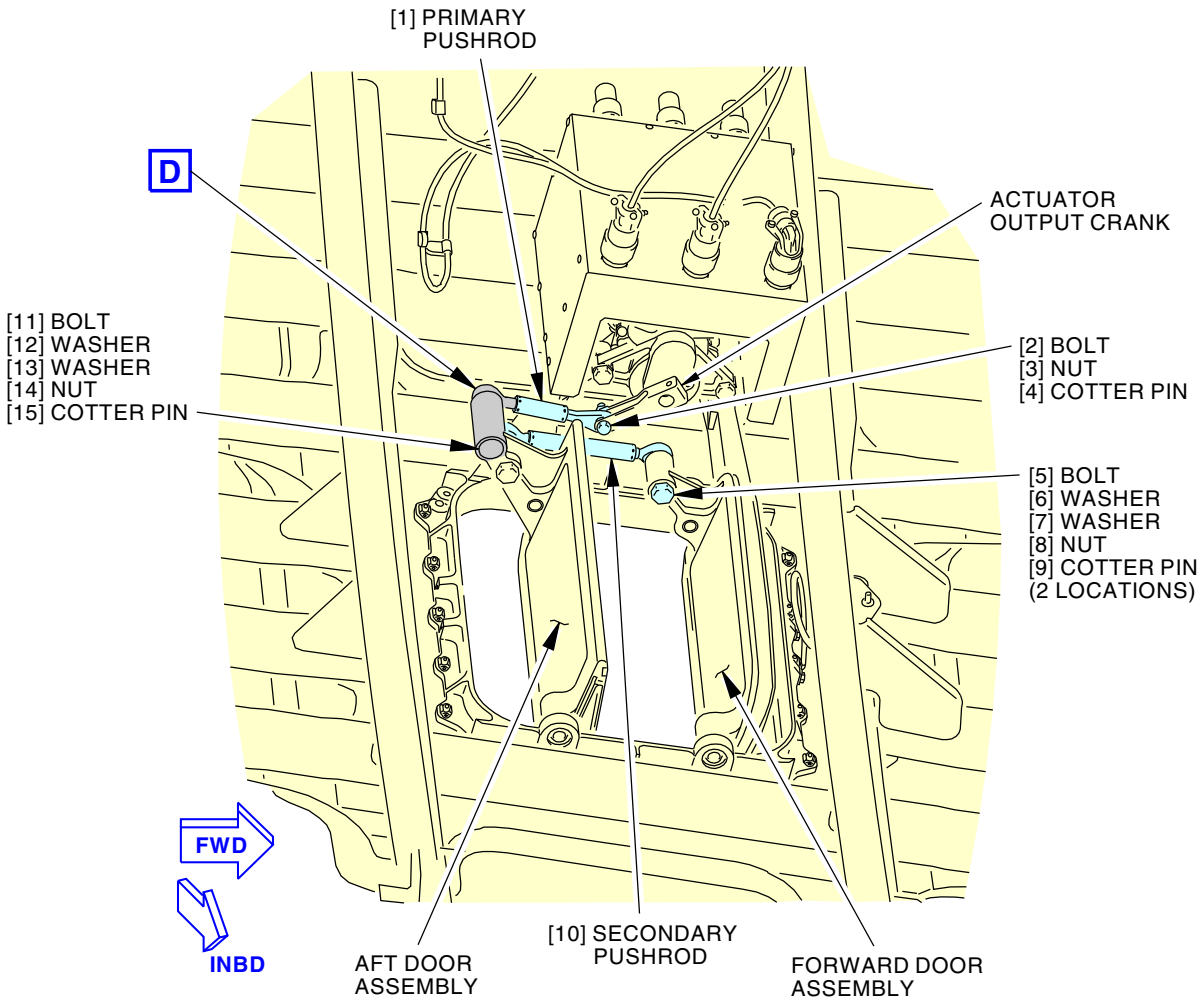

OUTFLOW VALVE ASSEMBLY (EXAMPLE)

C

E61741 S0006403557_V2

Outflow Valve (OFV) Assembly Deactivation
Figure 202/21-31-00-990-801 (Sheet 3 of 4)

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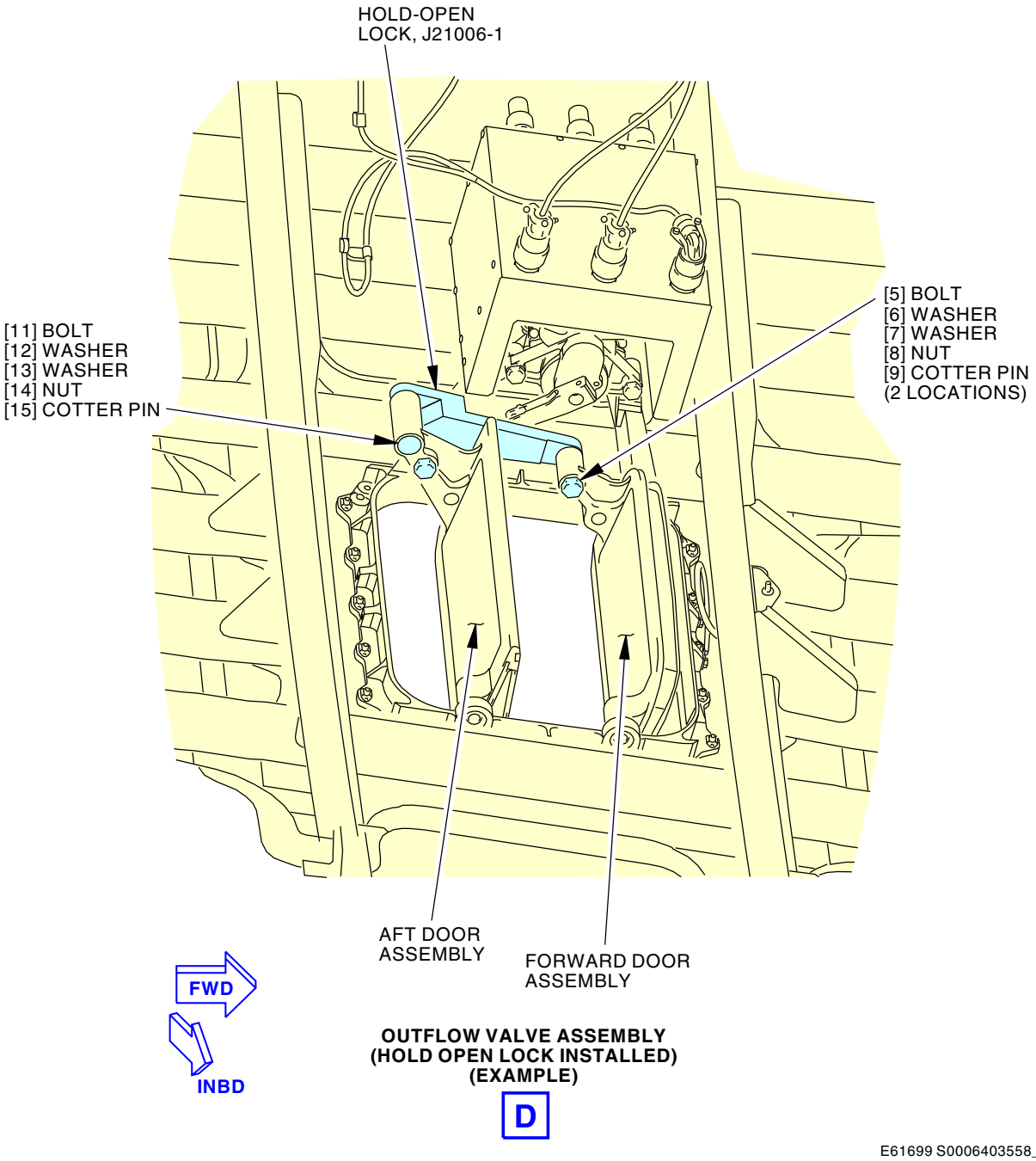

Outflow Valve (OFV) Assembly Deactivation
Figure 202/21-31-00-990-801 (Sheet 4 of 4)

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TASK 21-31-00-440-802-001

5. Restoration For Pressurized Flight

(Figure 202)

A. General

(1) This task puts the airplane back to its usual condition after operation with the airplane configured for unpressurized flight.

(2) This task has these procedures:

(a) Forward and Aft Outflow Valves (OFV) Reactivation

(b) Cabin Pressure Control System Operational Check

(3) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
21-31-00-700-806-001	Cabin Pressure Control System - System Test (P/B 501)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (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-1606	Lock - Hold Open, Outflow Valve (***DISPATCH***) Part #: J21006-1 Supplier: 81205

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Forward and Aft Outflow Valves (OFV) Reactivation

SUBTASK 21-31-00-440-003-001

(1) If the forward and the aft outflow valves (OFV) are secured open with the hold open tool, then do these steps:

(a) To gain access to the aft outflow valve (OFV), do these steps:

1) Do this task: Open the Door, TASK 52-36-00-860-801.

2) Remove the applicable left sidewall liner at the aft end of the bulk cargo compartment to gain access to the aft outflow valve (OFV) (TASK 25-52-06-000-801).

(b) To gain access to the forward outflow valve (OFV), do these steps:

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1) Get access to the forward outflow valve (OFV) assembly through the main equipment center.

NOTE: The forward outflow valve (OFV) assembly is installed below the left power management panel, P110 and under the floor panel on the left side of the main equipment center.

2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

3) Remove the floor panel.

4) Remove the kick panel.

(c) To remove the outflow valve lock, SPL-1606, do these steps:

1) Remove the bolt [5], washer [6], washer [7], nut [8] and the cotter pin [9] that connects the outflow valve lock, SPL-1606 to the forward door assembly.

2) Remove the bolt [5], washer [6], washer [7], nut [8] and the cotter pin [9] that connects the outflow valve lock, SPL-1606 to the aft door assembly.

3) Remove the bolt [11], washer [12], washer [13], nut [14] and the cotter pin [15] that connects the outflow valve lock, SPL-1606 to the aft door assembly.

4) Remove the outflow valve lock, SPL-1606.

(d) To install the secondary pushrod [10], do these steps:

1) Put the secondary pushrod [10] in position.

2) Re-install the bolt [5], washer [6], washer [7], nut [8] and the cotter pin [9] to connect the secondary pushrod [10] to the forward door assembly.

3) Re-install the bolt [5], washer [6], washer [7], nut [8] and the cotter pin [9] to connect the secondary pushrod [10] to the aft door assembly.

(e) To install the [1] primary pushrod, do these steps:

1) Put the primary pushrod [1] in position.

2) Re-install the bolt [2], nut [3] and the cotter pin [4] to connect the primary pushrod [1] to the actuator output crank.

3) Re-install the bolt [11], washer [12], washer [13], nut [14] and the cotter pin [15] to connect the primary pushrod [1] to the aft door assembly.

(f) For the aft outflow valve (OFV) assembly, do the steps that follow:

1) Install the applicable left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-400-801).

2) Do this task: Close the Door, TASK 52-36-00-860-802.

(g) For the forward outflow valve (OFV) assembly, do the steps that follow:

1) Install the kick panel.

2) Install the floor panel.

(h) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-31-00-440-004-001

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV
G	14	C21611	L AFT OFL VLV

G. Cabin Pressure Control System Operational Check

SUBTASK 21-31-00-710-008-001

(1) Do this task: Cabin Pressure Control System - System Test, TASK 21-31-00-700-806-001.

——— END OF TASK ———

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CABIN PRESSURE CONTROL SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Operational check of the Manual Mode control

(2) Operational check of the Landing Altitude Manual Select Switch

(3) System test of the Cabin Pressure Control System

TASK 21-31-00-700-807-001

2. Operational Check of the Manual Mode Control

NOTE: This procedure is a scheduled maintenance task.

A. 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)

B. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

C. Setup

SUBTASK 21-31-00-860-016-001

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

SUBTASK 21-31-00-860-017-001

(2) Make sure the ADIRU switch on the overhead panel, P5, is in the ON position.

D. Procedure

SUBTASK 21-31-00-860-018-001

(1) Make sure the FWD OUTFLOW VALVE and the AFT OUTFLOW VALVE - AUTO/MAN switch-lights, on the PRESSURIZATION Module, in the pilot's overhead panel, P5, are in the AUTO position.

SUBTASK 21-31-00-710-009-001

(2) Make sure the FWD and the AFT outflow valve (OFV) position indications on the EICAS primary display show fully OP (open).

SUBTASK 21-31-00-710-010-001

(3) Do these steps to make sure the forward outflow valve (OFV) operates in the manual mode:

(a) Push the FWD OUTFLOW VALVE - AUTO/MAN switch-light, on the PRESSURIZATION Module, in the pilot's overhead panel, P5, to the MAN position.

1) Make sure that the MAN switch-light comes on.

(b) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the CLOSE position.

1) Make sure the FWD OUTFLOW VALVE position indication on the EICAS primary display moves toward the fully CL (close) position.

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2) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

(c) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the OPEN position.

1) Make sure the FWD OUTFLOW VALVE position indication on the EICAS primary display moves toward the fully OP (open) position.

2) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

(d) Push and hold the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the CLOSE position.

1) Make sure the FWD OUTFLOW VALVE position indication on the EICAS primary display moves toward the fully CL (close) position.

2) Release the FWD OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the forward outflow valve (OFV) to make sure it is in the fully closed position.

(e) Push the FWD OUTFLOW VALVE - AUTO/MAN switch-light to the AUTO position.

1) Make sure that the MAN switch-light goes off.

2) Make sure the FWD OUTFLOW VALVE position indication on the EICAS display moves toward the fully OP (open) position.

3) Look at the forward outflow valve (OFV) to make sure it is in the fully open position.

SUBTASK 21-31-00-710-011-001

(4) Do the steps that follow, to make sure the aft outflow valve (OFV) operates in the manual mode:

(a) Push the AFT OUTFLOW VALVE - AUTO/MAN switch-light, on the pilot's overhead panel, P5, to the MAN position.

1) Make sure that the MAN switch-light comes on.

(b) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the CLOSE position.

1) Make sure the AFT OUTFLOW VALVE position indication on the EICAS primary display moves toward the fully CL (close) position.

2) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

(c) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the OPEN position.

1) Make sure the AFT OUTFLOW VALVE position indication on the EICAS primary display moves toward the fully OP (open) position.

2) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

(d) Push and hold the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the CLOSE position.

1) Make sure the AFT OUTFLOW VALVE position indication on the EICAS primary display moves toward the fully CL (close) position.

2) Release the AFT OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

3) Look at the aft outflow valve (OFV) to make sure it is in the fully closed position.

(e) Push the AFT OUTFLOW VALVE - AUTO/MAN switch-light to the AUTO position.

1) Make sure that the MAN switch-light goes off.

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2) Make sure the AFT OUTFLOW VALVE position indication on the EICAS primary display moves toward the fully OP (open) position.

3) Look at the aft outflow valve (OFV) to make sure it is in the fully open position.

SUBTASK 21-31-00-860-019-001

(5) Put the ADIRU switch on the overhead panel, P5, to the OFF position.

SUBTASK 21-31-00-860-042-001

(6) If it is not necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

TASK 21-31-00-700-805-001

3. Operational Check of the Landing Altitude Manual Select Switch

NOTE: This procedure is a scheduled maintenance task.

A. 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)

B. Location Zones

Zone	Area
212	Flight Compartment, Right

C. Procedure

SUBTASK 21-31-00-860-020-001

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

SUBTASK 21-31-00-710-012-001

(2) Monitor the lower elevation limit of the manual landing altitude selection:

(a) Pull out the LDG ALT knob on the pressurization control module, on the pilot's overhead panel, P5.

1) Make sure that MAN shows next to the LDG ALT indication on the Air Supply Maintenance Page.

(b) Turn the LDG ALT knob on the PRESSURIZATION Module, in the pilot's overhead panel, P5, counterclockwise until the LDG ALT indication decreases on the EICAS primary display.

1) Make sure that the LDG ALT indication decreases.

NOTE: The LDG ALT value is found on the lower left corner of the EICAS primary display.

SUBTASK 21-31-00-710-013-001

(3) Monitor the upper elevation limit of the manual landing altitude selection:

(a) Turn the LDG ALT knob on the pressurization control module, in the pilot's overhead panel, P5, clockwise until the LDG ALT indication increases on the EICAS primary display.

1) Make sure that the LDG ALT indication increases.

NOTE: The LDG ALT value is found on the lower left corner of the EICAS primary display.

(b) Push the LDG ALT knob on the pressurization control panel to the in position.

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1) Make sure that MAN does not show next to the LDG ALT indication on the Air Supply Maintenance Page.

SUBTASK 21-31-00-860-043-001

(4) If it is not necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

TASK 21-31-00-700-806-001

4. Cabin Pressure Control System - System Test

Figure 501 or Figure 502 or Figure 503

A. General

(1) This procedure has the instructions to do these tests for the cabin pressure control system:

(a) Operational Check of the Manual Mode Control

(b) Left Cabin Pressure Control System Test

(c) Right Cabin Pressure Control System Test

(2) It is necessary to use a maintenance access terminal (MAT) for these tests.

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)
45-10-00-740-818	How to Find Active or Latched Maintenance Messages in One ATA System (P/B 201)
45-10-00-740-819	How to Do a Ground Test (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Prepare for the Test

SUBTASK 21-31-00-860-021-001

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

E. Cabin Pressure Control System Test

SUBTASK 21-31-00-710-014-001

(1) Do this task: Operational Check of the Manual Mode Control, TASK 21-31-00-700-807-001.

SUBTASK 21-31-00-740-002-001

(2) Use a maintenance access terminal (MAT) to do the system test of the Left Cabin Pressure Control System (TASK 45-10-00-740-819).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) GROUND TESTS

4) 21 Cabin Pressure Control System

5) SYSTEM TEST

6) Left Cabin Pressure Control System

7) CONTINUE

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(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 21-31-00-740-004-001

(3) Use a maintenance access terminal (MAT) to do the system test of the Right Cabin Pressure Control System (TASK 45-10-00-740-819).

(a) Make these selections on the MAT:

1) NEW TEST

2) 21 Cabin Pressure Control System

3) SYSTEM TEST

4) Right Cabin Pressure Control System

5) 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 21-31-00-740-005-001

(4) Use a maintenance access terminal (MAT) to do a check for existing faults for the Cabin Pressure Control System (TASK 45-10-00-740-818):

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

(b) Make sure this system does not show: 21 Cabin Pressure Control System.

NOTE: If 21 Cabin Pressure Control System does not show, then there are no maintenance messages in existing faults for that system.

(c) If 21 Cabin Pressure Control System shows, select it.

1) For each maintenance message that shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 21-31-00-740-006-001

(5) Use a maintenance access terminal (MAT) to do a check for existing faults for the Air Supply and Cabin Pressure Controller (TASK 45-10-00-740-818):

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

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2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

(b) Make sure this system does not show: 36 Air Supply and Cabin Pressure Controller.

NOTE: If 36 Air Supply and Cabin Pressure Controller does not show, then there are no maintenance messages in existing faults for that system.

(c) If 36 Air Supply and Cabin Pressure Controller shows, select it.

1) For each maintenance message that shows for the Air Supply Cabin Pressure Controller, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 21-31-00-740-007-001

(6) To put the MAT back to its initial condition, make these selections:

(a) LINE MAINTENANCE

(b) EXIT MAINTENANCE

SUBTASK 21-31-00-860-044-001

(7) If it is not necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

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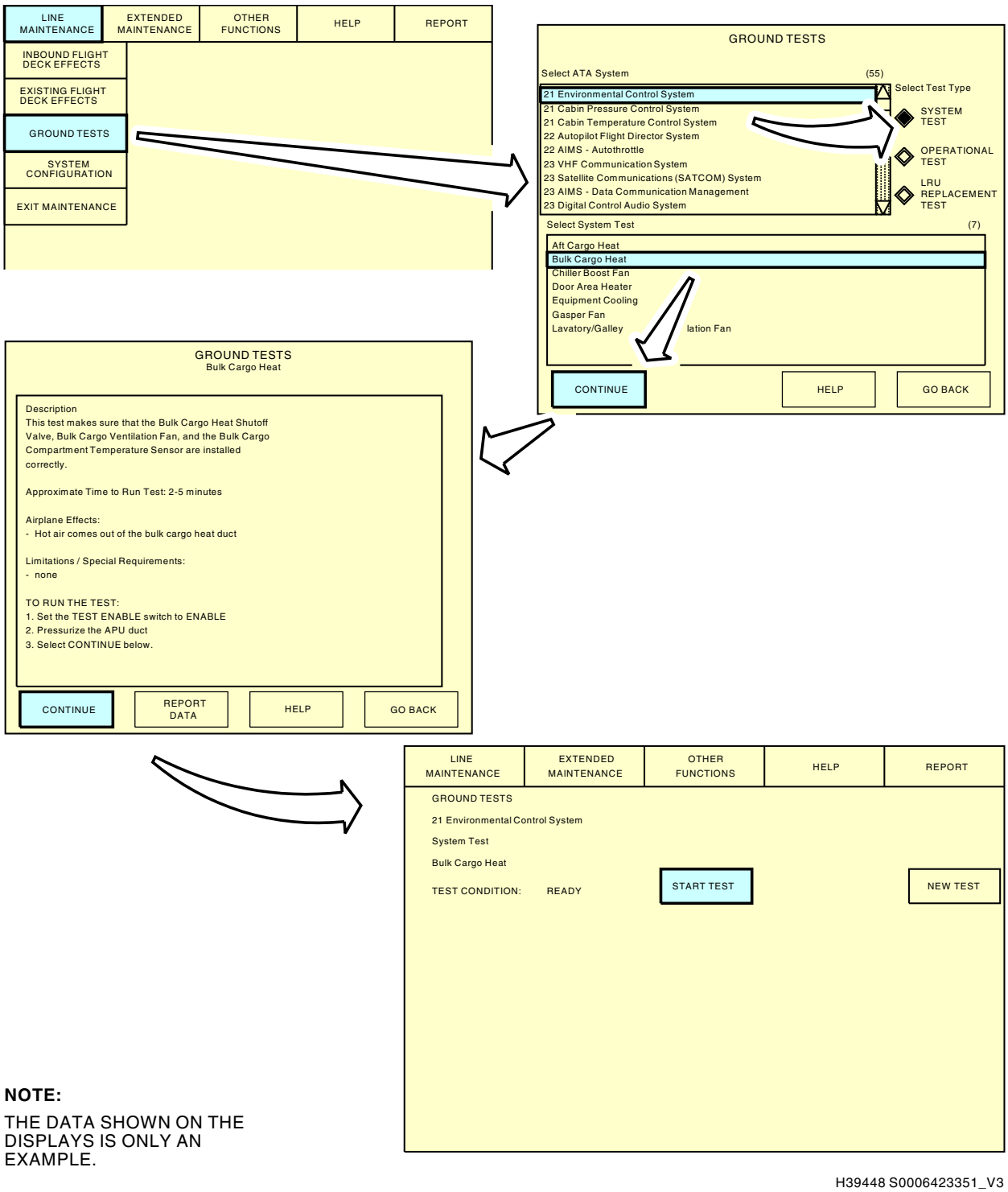

NOTE:

THE DATA SHOWN ON THE DISPLAYS IS ONLY AN EXAMPLE.

H39448 S0006423351_V3

How to Select and Start a Ground Test
Figure 501/21-31-00-990-810-001

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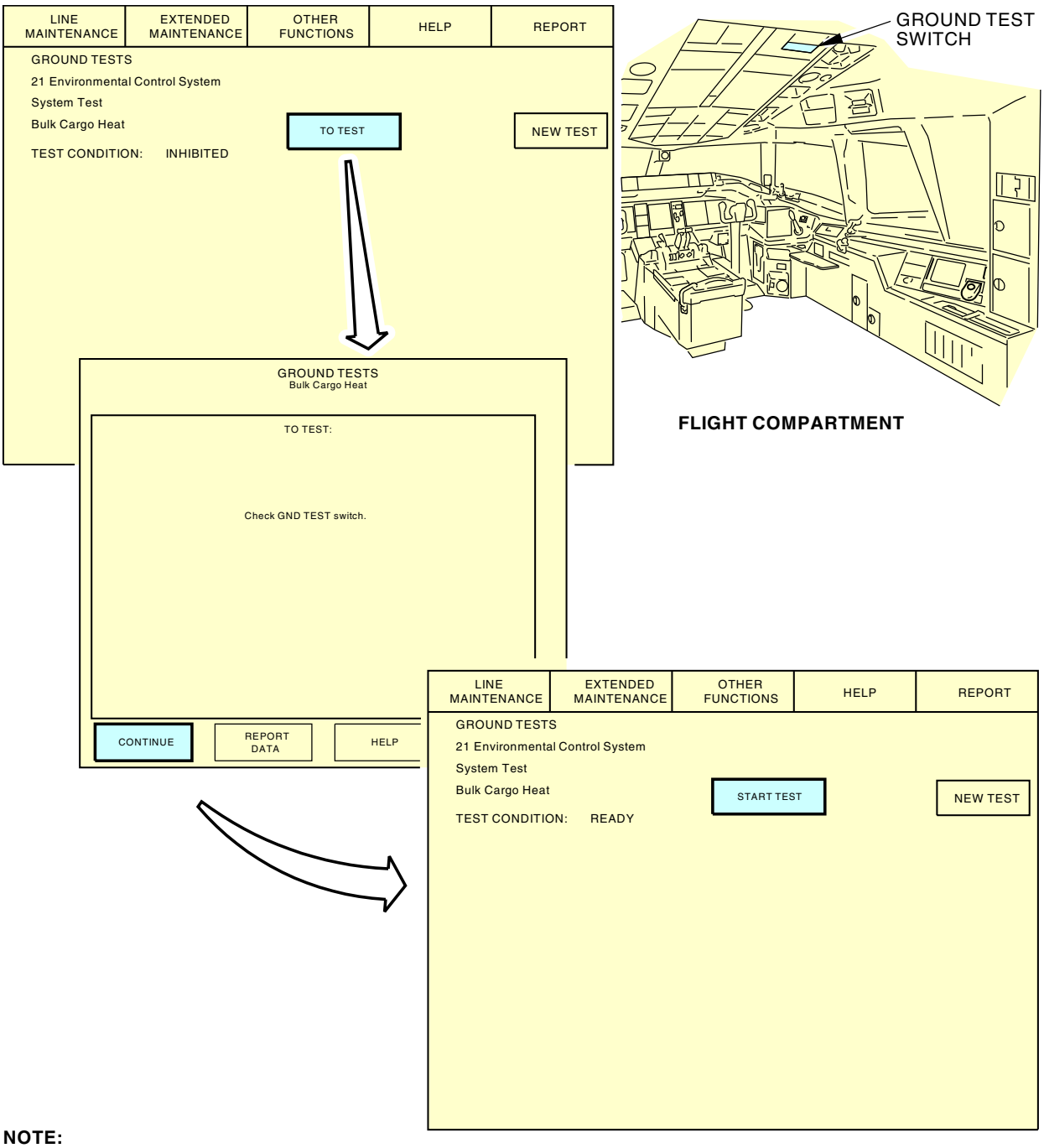

NOTE:

THE DATA SHOWN ON THE DISPLAYS IS ONLY AN EXAMPLE.

TEST INHIBITED OR CANNOT OPERATE

H39449 S0006423354_V2

When a Ground Test is Inhibited or Cannot Operate
Figure 502/21-31-00-990-811-001

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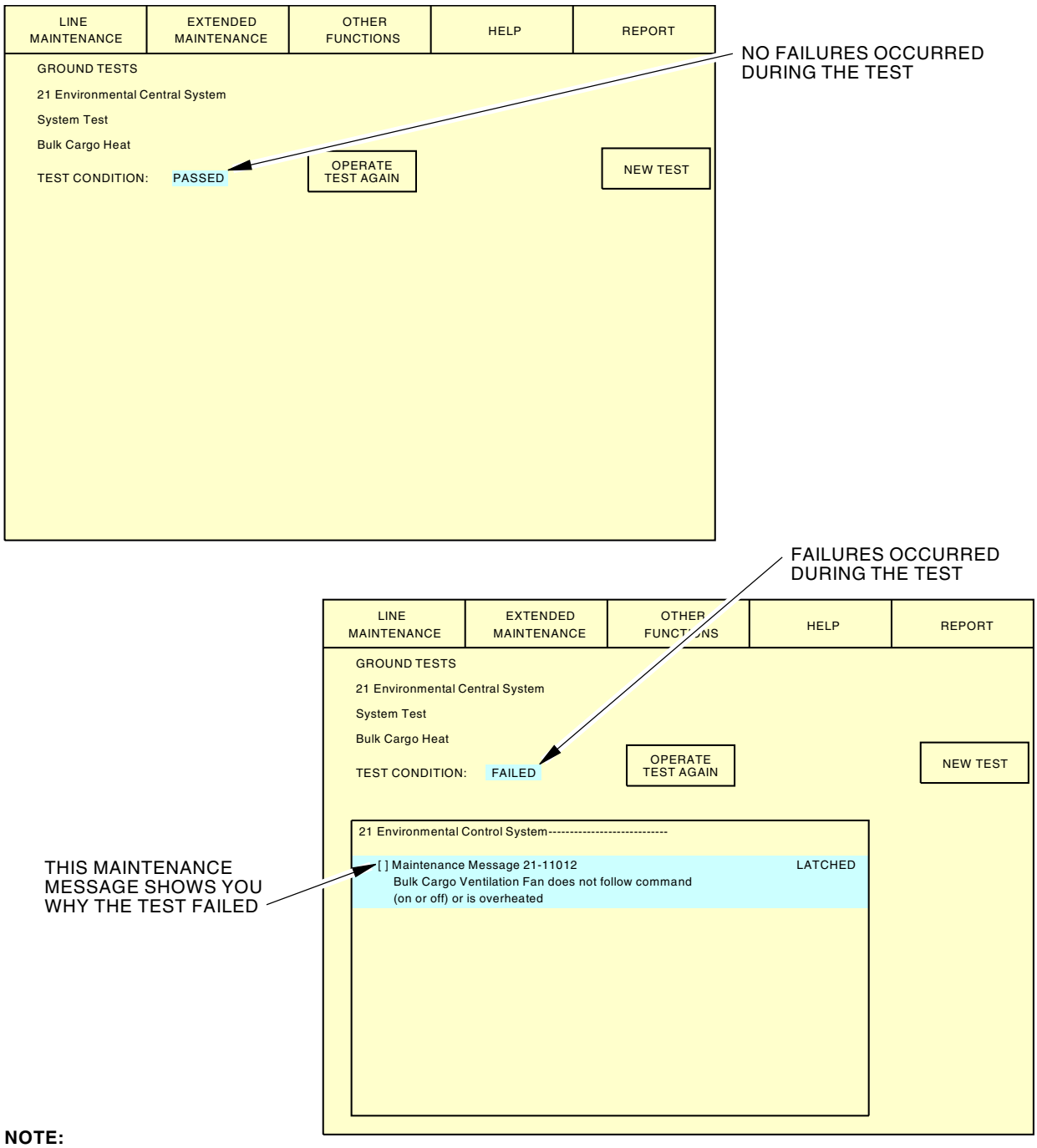

NOTE:

THE DATA SHOWN ON THE DISPLAYS IS ONLY AN EXAMPLE.

H39450 S0006423357_V2

Ground Test Results
Figure 503/21-31-00-990-812-001

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OUTFLOW VALVE ASSEMBLY - MAINTENANCE PRACTICES

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has one task which contains the instructions to clean and inspect the forward and aft outflow valve assemblies which are found in the main equipment center and the bulk cargo compartment.

C. You can get access to the forward outflow valve assembly through the main equipment center on the left side. You can get access to the aft outflow valve assembly through the left sidewall liner at the aft end of the bulk cargo compartment.

D. Each Outflow Valve Assembly consists of these components:

(1) Outflow valve
   (a) Valve doors
   (b) Valve frame
   (c) Valve linkages

(2) Actuator assembly
   (a) Gearbox assembly
      1) Gearbox
      2) Rotary Variable Differential Transformers (RVDTs)
   (b) Valve Control Unit (VCU)
   (c) Two DC motors

TASK 21-31-03-100-803-001

2. Outflow Valve Assembly Cleaning and Inspection

(Figure 201)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-31-03-000-806-001	Outflow Valve Assembly Removal (P/B 401)
21-31-03-400-806-001	Outflow Valve Assembly Installation (P/B 401)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Consumable Materials

Reference	Description	Specification
B00074	Solvent - Degreasing	MIL-PRF-680 (Supersedes P-D-680)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
117	Main Equipment Center, Left

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(Continued)

Zone	Area
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare to Clean and Inspect the Outflow Valve Assembly

SUBTASK 21-31-03-010-046-001

(1) Remove conditioned air from the airplane (TASK 21-00-00-800-802).

SUBTASK 21-31-03-010-047-001

(2) For the forward outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(c) Get access to the forward outflow valve assembly as follows:

NOTE: The forward outflow valve assembly is under the floor panel which is below the Left Power Management Panel, P110 in the main equipment center.

1) Remove the screws [2] that attach the floor panel [1] to the structure.

2) Remove the floor panel [1].

SUBTASK 21-31-03-010-048-001

(3) For the aft outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(c) Do this task: Open the Door, TASK 52-36-00-860-801.

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(d) Remove the left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-000-801).

SUBTASK 21-31-03-210-007-001

(4) Before you clean the outflow valve assembly, examine the outflow valve assembly as follows:

(a) Look at the electrical connectors on the VCU for signs of any damage or contamination.

(b) Look at the gearbox assembly for signs of any grease leakage.

(c) Clean the gearbox assembly with a lint-free cloth if you find that it has grease leakage.

F. Outflow Valve Assembly Cleaning

SUBTASK 21-31-03-160-007-001

(1) Use a soft bristle brush and the solvent, B00074 to clean the outflow valve frame, the outflow valve doors, and the outflow valve linkages.

SUBTASK 21-31-03-160-008-001

(2) Clean the external surfaces of the VCU with a clean lint-free cloth.

SUBTASK 21-31-03-160-009-001

(3) Dry the outflow valve assembly with a clean lint-free cloth.

G. Outflow Valve Assembly Inspection

SUBTASK 21-31-03-210-006-001

(1) Examine the outflow valve assembly as follows:

(a) Make sure the electrical connectors and all wiring on the outflow valve assembly are not damaged and do not have contamination.

(b) Make sure there is no grease leakage from the gearbox assembly.

1) Clean the gearbox assembly with a lint-free cloth if you find that it has grease leakage.

(c) Make sure the outflow valve doors and hinges are not loose, damaged or worn.

(d) Make sure the outflow valve door seal is not damaged or worn.

(e) Make sure there are no cracks in the outflow valve frame.

(f) Make sure the outflow valve linkages are not damaged or worn, and do not have corrosion on them.

(g) Make sure the captive fasteners for the DC motors and the actuator assembly are not loose.

1) Tighten the loose captive fasteners that you find.

(h) Make sure the VCU mount screws are not loose.

1) Tighten the loose VCU mount screws that you find.

SUBTASK 21-31-03-420-026-001

(2) Replace the outflow valve assembly if you find that it has damage, wear, contamination, or corrosion.

These are the tasks:

Outflow Valve Assembly Removal, TASK 21-31-03-000-806-001,

Outflow Valve Assembly Installation, TASK 21-31-03-400-806-001.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-410-050-001

(1) For the forward outflow valve assembly, do the steps that follow:

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(a) Put the floor panel [1] in its position.

(b) Install the screws [2].

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-410-051-001

(2) For the aft outflow valve assembly, do the steps that follow:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-860-110-001

(3) Supply conditioned air to the airplane (TASK 21-00-00-800-801).

——— END OF TASK ———

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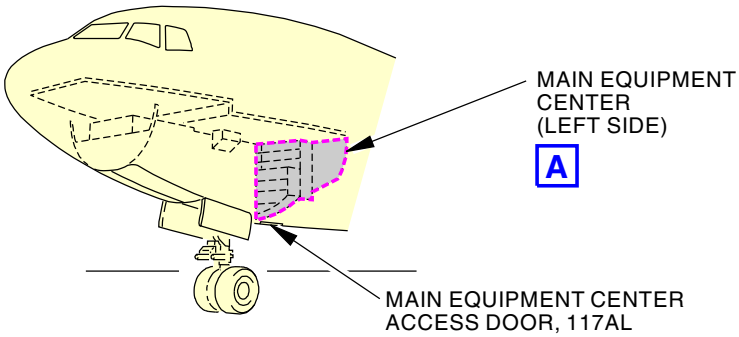

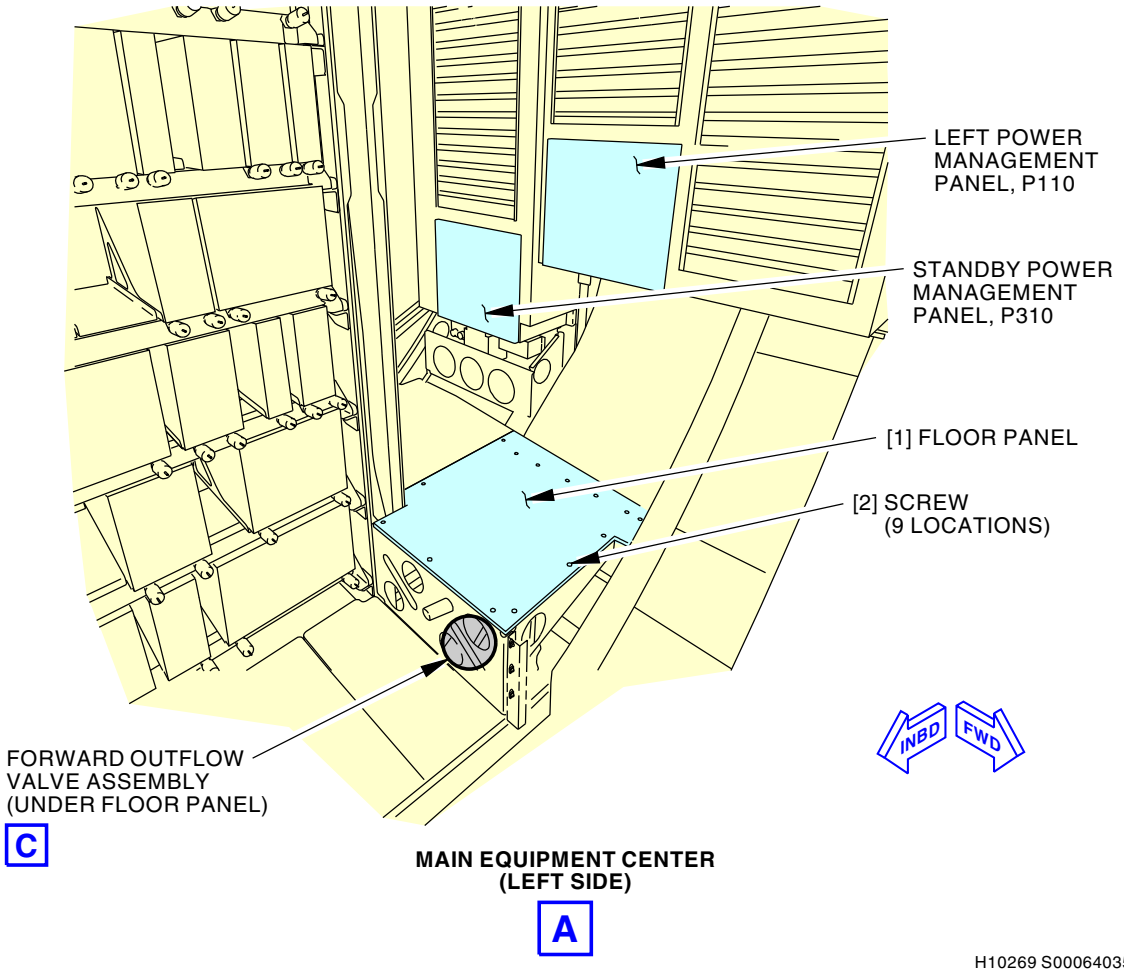

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Outflow Valve Assembly Cleaning and Inspection
Figure 201/21-31-03-990-809-001 (Sheet 1 of 3)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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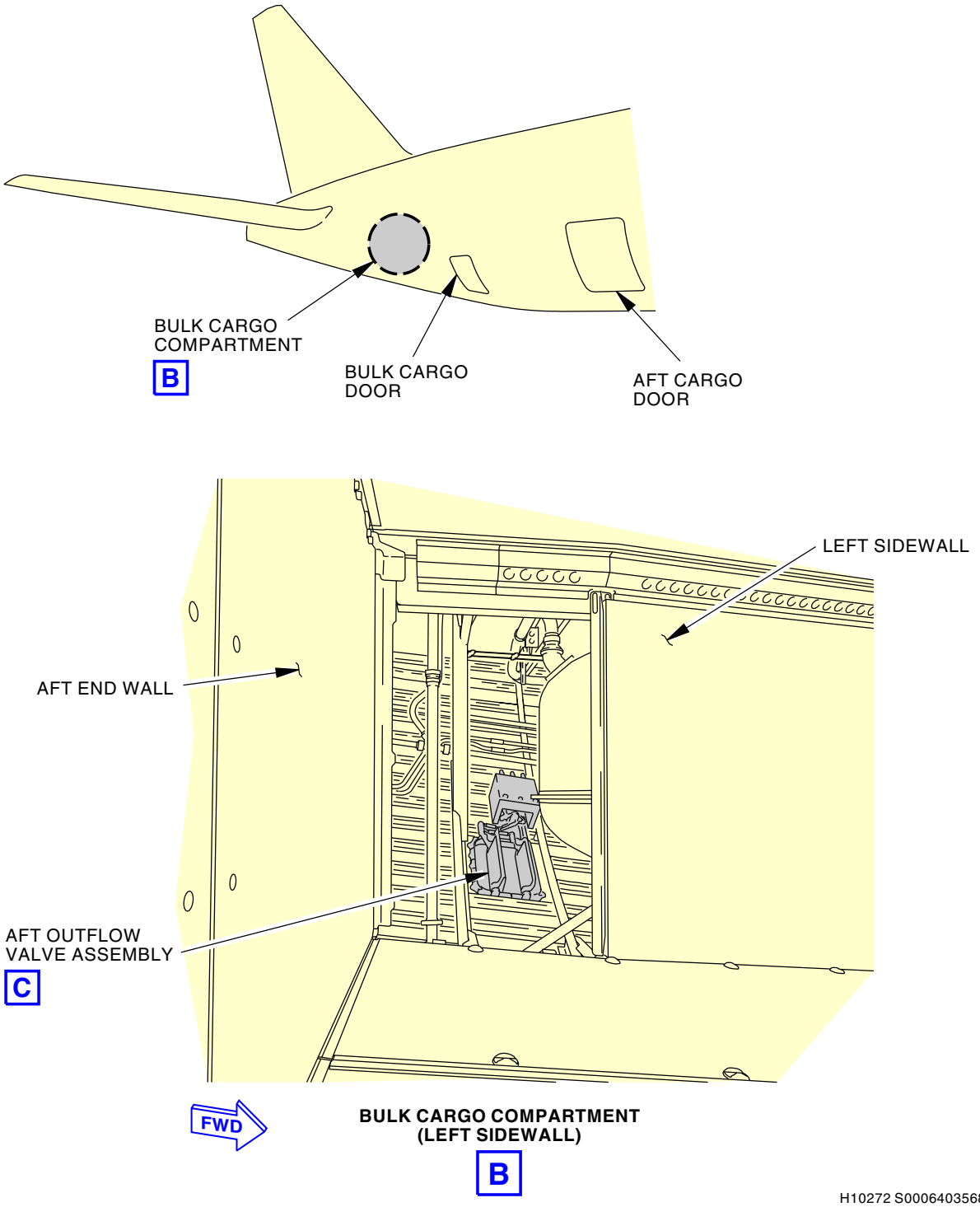

Outflow Valve Assembly Cleaning and Inspection
Figure 201/21-31-03-990-809-001 (Sheet 2 of 3)

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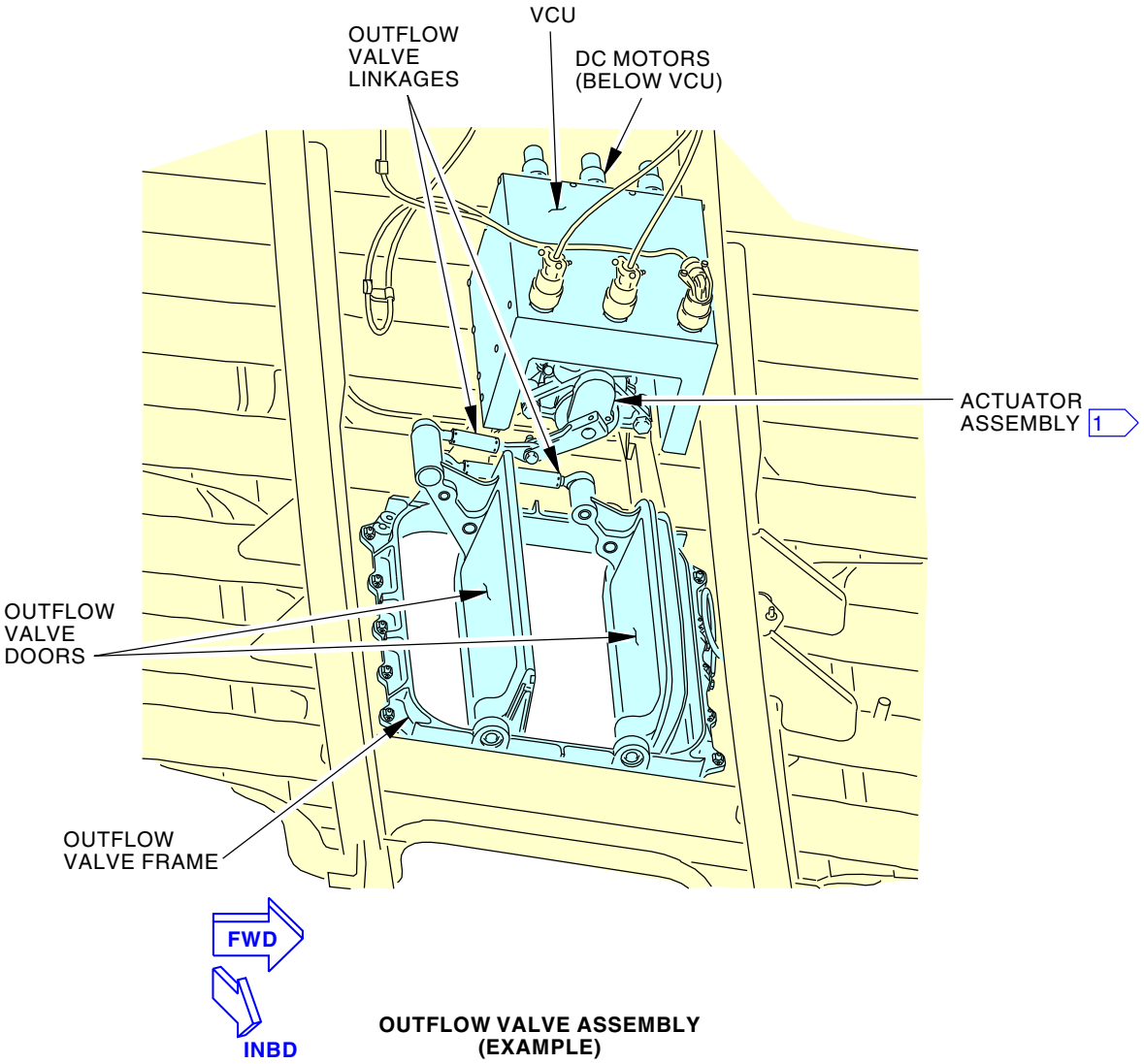

1 ACTUATOR ASSEMBLY INCLUDES THESE COMPONENTS:
- GEARBOX
- RVDT
- DC MOTORS
- VCU

H10274 S0006403569_V2

Outflow Valve Assembly Cleaning and Inspection
Figure 201/21-31-03-990-809-001 (Sheet 3 of 3)

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CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY - MAINTENANCE PRACTICES

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has one task which contains the instructions to clean and inspect the forward and aft cabin pressure outflow valve (CPOV) assemblies which are found in the main equipment center and the bulk cargo compartment.

C. You can get access to the forward outflow valve assembly through the main equipment center on the left side. You can get access to the aft outflow valve assembly through the left sidewall liner at the aft end of the bulk cargo compartment.

D. Each cabin pressure outflow valve (CPOV) assembly consists of these components:

(1) Outflow valve

(a) Valve doors

(b) Valve frame

(c) Valve linkages

(2) Valve Controller Assembly (VCA)

(a) Left Electronic Control Unit (ECU)

(b) Right Electronic Control Unit (ECU)

(c) Rotary Actuator Assembly

1) Left DC Auto Motor (brushless)

2) Right DC Auto Motor (brushless)

3) Manual Control Module with DC motor (not an LRU)

4) Gearbox (not an LRU)

5) Wire harness

TASK 21-31-03-100-808-002

2. Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning and Inspection

(Figure 201)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-31-03-000-812-002	Cabin Pressure Outflow Valve (CPOV) Assembly Removal (P/B 401)
21-31-03-400-811-002	Cabin Pressure Outflow Valve (CPOV) Assembly Installation (P/B 401)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

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B. Consumable Materials

Reference	Description	Specification
B00074	Solvent - Degreasing	MIL-PRF-680 (Supersedes P-D-680)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare to Clean and Inspect the Outflow Valve Assembly

SUBTASK 21-31-03-010-049-002

(1) Remove conditioned air from the airplane (TASK 21-00-00-800-802).

SUBTASK 21-31-03-010-050-002

(2) For the forward outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(c) Get access to the forward outflow valve assembly as follows:

NOTE: The forward outflow valve assembly is under the floor panel which is below the Left Power Management Panel, P110 in the main equipment center.

1) Remove the screws [2] that attach the floor panel [1] to the structure.

2) Remove the floor panel [1].

SUBTASK 21-31-03-010-051-002

(3) For the aft outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

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Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(c) Do this task: Open the Door, TASK 52-36-00-860-801.

(d) Remove the left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-000-801).

SUBTASK 21-31-03-210-008-002

(4) Before you clean the outflow valve assembly, examine the outflow valve assembly as follows:

(a) Look at the electrical connectors on the VCA for signs of any damage or contamination.

(b) Look at the rotary actuator assembly for signs of any grease leakage.

(c) Clean the rotary actuator assembly with a lint-free cloth if you find that it has grease leakage.

F. Outflow Valve Assembly Cleaning

SUBTASK 21-31-03-160-013-002

(1) Use a soft bristle brush and the solvent, B00074 to clean the outflow valve frame, the outflow valve doors, and the outflow valve pushrods.

SUBTASK 21-31-03-160-014-002

(2) Clean the external surfaces of the VCA with a clean, lint-free cloth.

SUBTASK 21-31-03-160-015-002

(3) Dry the outflow valve assembly with a clean, lint-free cloth.

G. Outflow Valve Assembly Inspection

SUBTASK 21-31-03-210-009-002

(1) Examine the outflow valve assembly as follows:

(a) Make sure the electrical connectors and all wiring on the outflow valve assembly are not damaged and do not have contamination.

(b) Make sure there is no grease leakage from the rotary actuator assembly.

1) Clean the rotary actuator assembly with a lint-free cloth if you find that it has grease leakage.

(c) Make sure the outflow valve doors and hinges are not loose, damaged or worn:

1) CPOV door seal groove deformation is acceptable if these conditions are met:

a) Door seals are in the installed position in the door grooves

b) All spring pins are in the installed position

c) No outflow valve EICAS or maintenance messages are active

(d) Do this step to make sure that the valve door seals are satisfactory for service:

1) A damaged valve door seal is acceptable if these conditions are met:

a) Less than 2.75 in. (69.9 mm) of the seal length is damaged

b) Door seals are in the installed position in the door groove

c) All spring pins are in the installed position

d) No outflow valve EICAS or maintenance messages are active

(e) Make sure there are no cracks in the valve frame.

(f) Make sure the shims, spacers, and screws are installed on the valve frame.

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1) If the shims, spacers, and screws are removed or missing, install the shims, spacers, and screws on the valve frame.
   a) Use a feeler gauge to make sure that there is 0.01 in. (0.3 mm) to 0.02 in. (0.5 mm) clearance between the outflow valve doors and the spacers.
   b) If necessary, add or remove the shims below the spacers to get the correct clearance.
   c) Install and torque the screws to 20 in-lb (2.3 N·m)-23 in-lb (2.6 N·m).

(g) Make sure the outflow valve pushrods are not damaged or worn, and do not have corrosion on them.

(h) Make sure the captive screws for the DC auto motors are not loose.
   1) Tighten the loose captive screws that you find.

(i) Make sure the ECU captive screws are not loose.
   1) Tighten the loose ECU captive screws that you find.

(j) Make sure the connector bracket captive screws are not loose.
   1) Tighten the loose connector bracket captive screws that you find.

(k) Make sure the VCA mount bolts are not loose.
   1) Tighten the loose VCA mount bolts that you find.

SUBTASK 21-31-03-420-027-002

(2) Replace the outflow valve assembly if you find that it has damage, wear, contamination, or corrosion.

These are the tasks:

Cabin Pressure Outflow Valve (CPOV) Assembly Removal, TASK 21-31-03-000-812-002,

Cabin Pressure Outflow Valve (CPOV) Assembly Installation, TASK 21-31-03-400-811-002.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-410-054-002

(1) For the forward outflow valve assembly, do the steps that follow:

(a) Put the floor panel [1] in its position.

(b) Install the screws [2].

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-410-055-002

(2) For the aft outflow valve assembly, do the steps that follow:

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(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-860-111-002

(3) Supply conditioned air to the airplane (TASK 21-00-00-800-801).

——— END OF TASK ———

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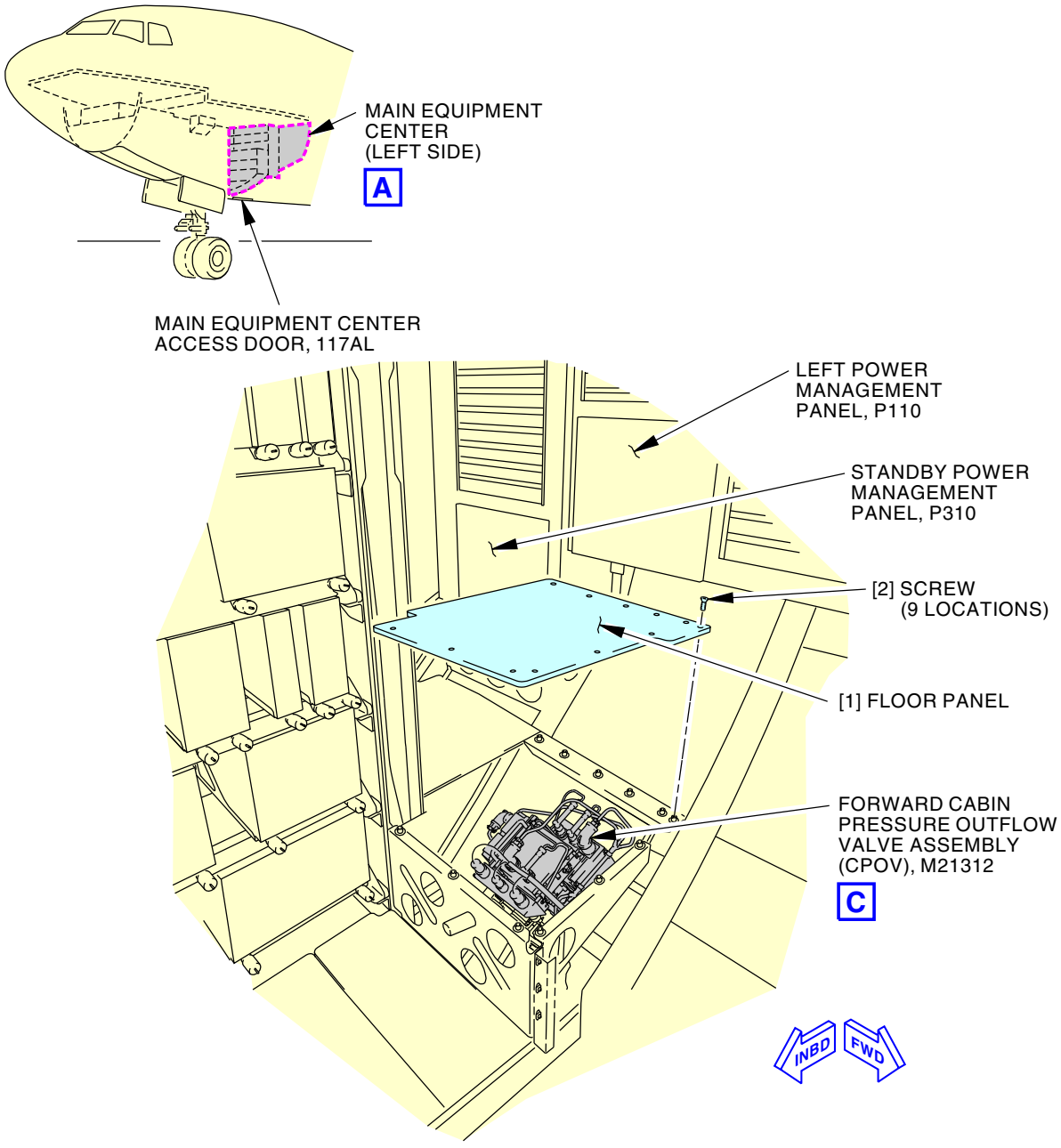

MAIN EQUIPMENT CENTER (LEFT SIDE)

A

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Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning and Inspection
Figure 201/21-31-03-990-815-002 (Sheet 1 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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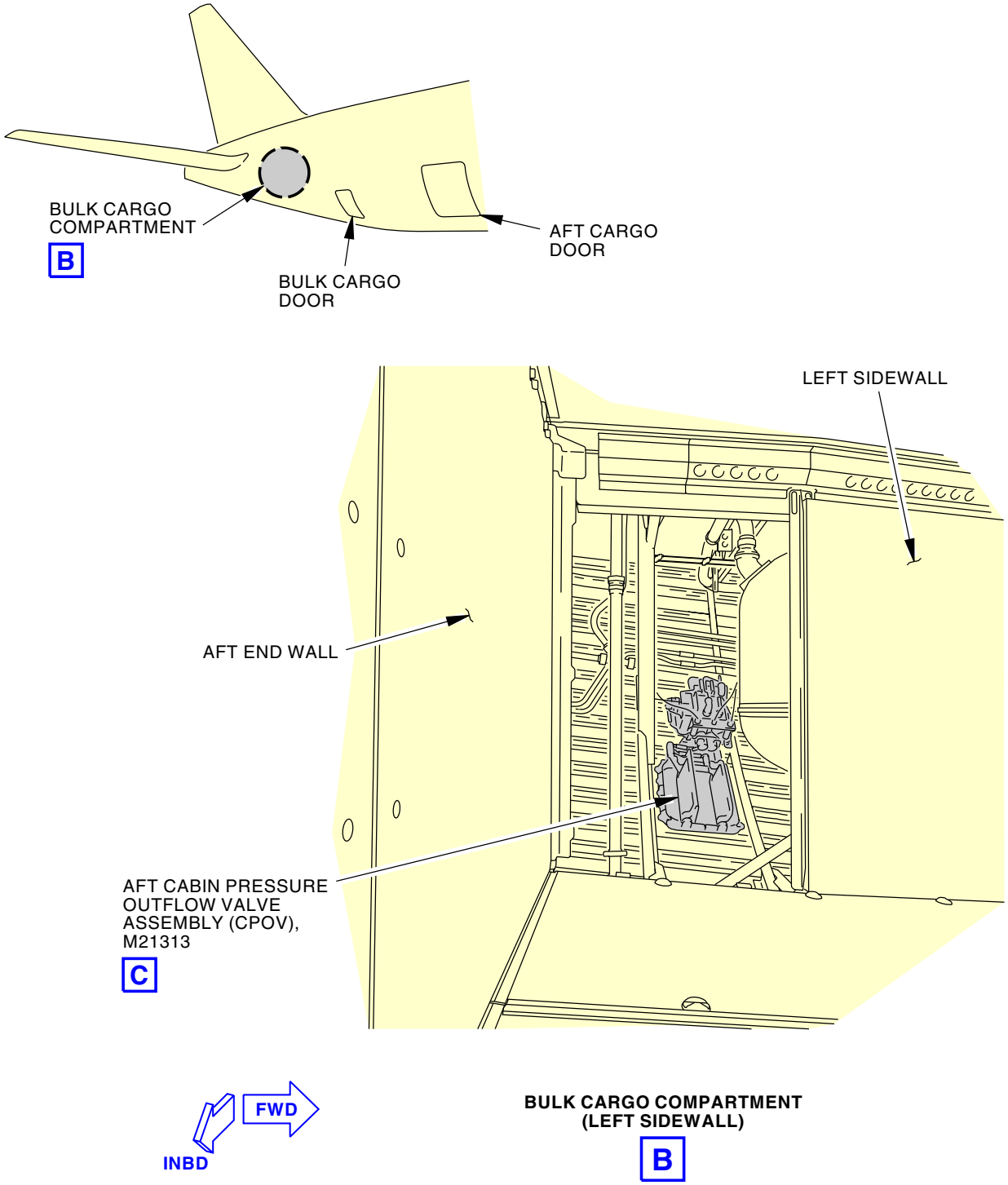

Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning and Inspection
Figure 201/21-31-03-990-815-002 (Sheet 2 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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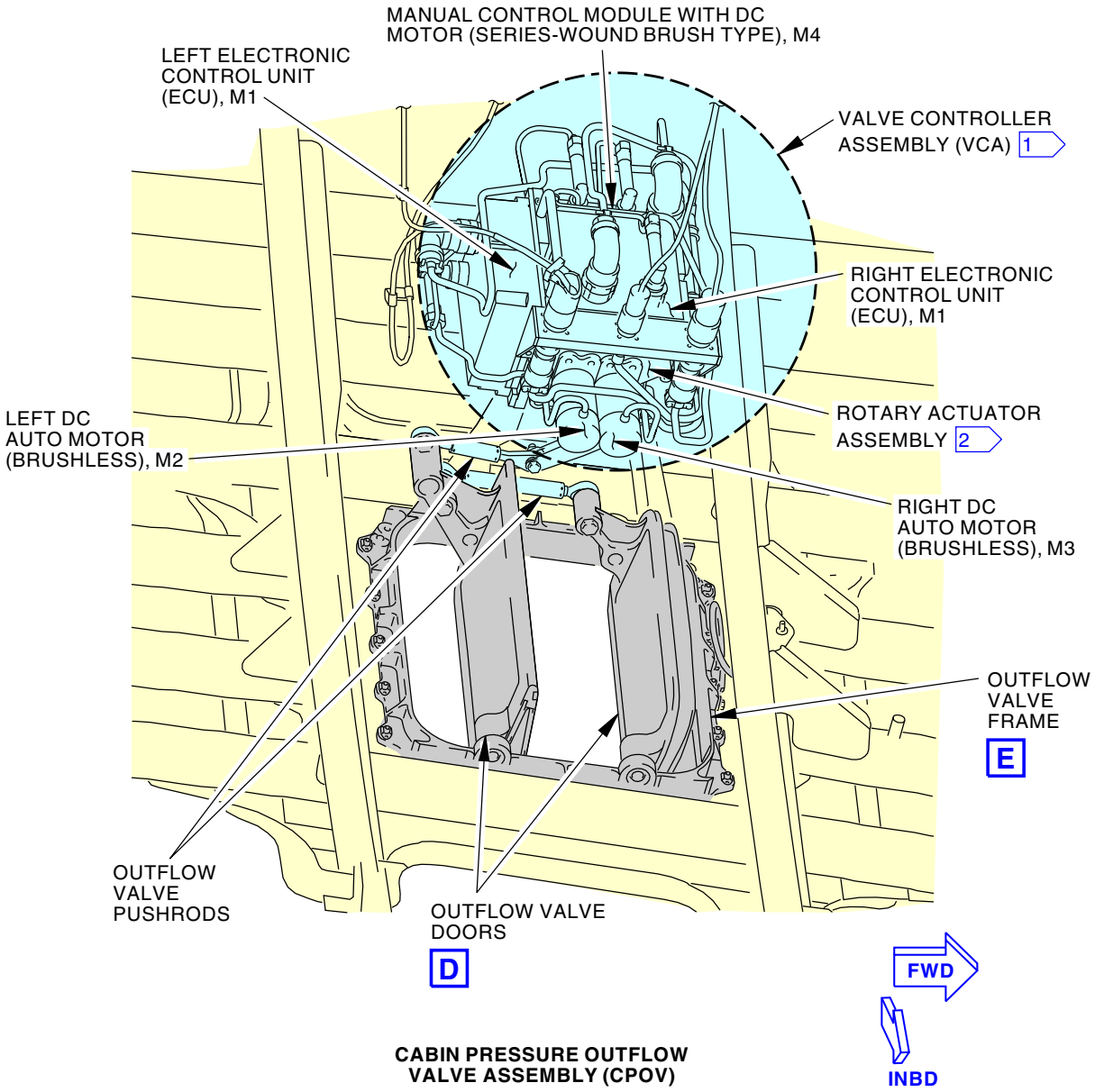

CABIN PRESSURE OUTFLOW VALVE ASSEMBLY (CPOV)

C

NOTE:

AFT CPOV SHOWN. FORWARD CPOV SAME.

1 THE VCA CONSISTS OF TWO ECU'S AND ROTARY ACTUATOR ASSEMBLY.

2 THE ROTARY ACTUATOR ASSEMBLY CONSISTS OF TWO BRUSHLESS DC AUTO MOTORS, GEARBOX, MANUAL CONTROL MODULE WITH DC MOTOR, AND WIRE HARNESS.

2121276 S0000456998_V2

Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning and Inspection
Figure 201/21-31-03-990-815-002 (Sheet 3 of 4)

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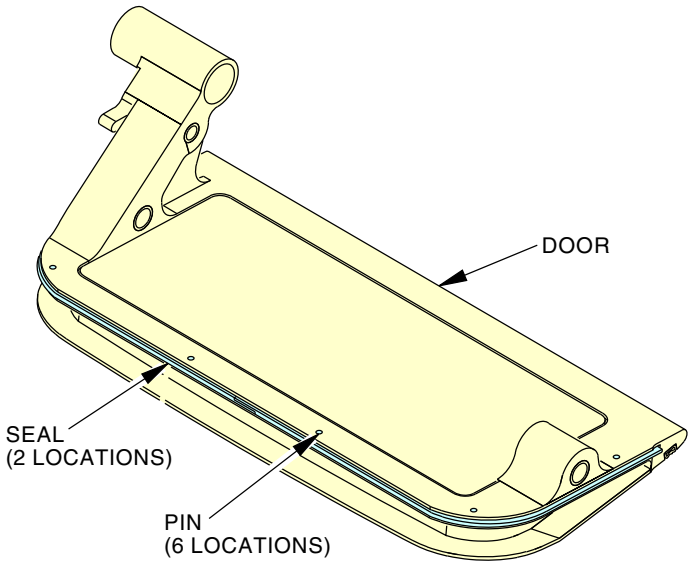
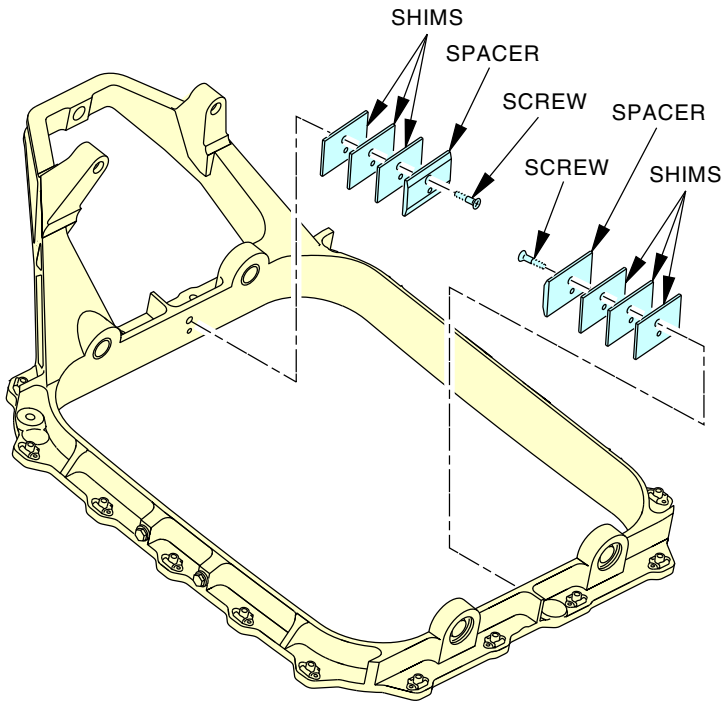


OUTFLOW VALVE DOOR (EXAMPLE)

D



OUTFLOW VALVE FRAME

E

2121281 S0000457000_V2

Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning and Inspection
Figure 201/21-31-03-990-815-002 (Sheet 4 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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OUTFLOW VALVE ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has tasks which give instructions for the removal and installation of the forward and aft outflow valve assemblies and the individual components on the outflow valve assemblies.

B. Each outflow valve assembly consists of two major assemblies; (1) the outflow valve frame assembly and (2) the actuator assembly. The outflow valve frame assembly consists of two outflow valve doors, an outflow valve frame, and two outflow valve linkages. The actuator assembly consists of a valve control unit (VCU), two DC motors, and a gearbox assembly. The gearbox assembly consists of a gearbox and rotary variable differential transformers (RVDT).

C. These are the ten tasks that you will find in this procedure:

(1) Outflow Valve Assembly Removal

(a) This task also gives instructions to disassemble the actuator assembly from the outflow valve frame assembly.

(2) Outflow Valve Assembly Installation

(a) This task also gives instructions to assemble the actuator assembly to the outflow valve frame assembly.

(3) Valve Control Unit (VCU) Removal

(4) Valve Control Unit (VCU) Installation

(5) DC Motor Removal

(6) DC Motor Installation

(7) Gearbox Assembly Removal

(8) Gearbox Assembly Installation

(9) Actuator Assembly Removal

(10) Actuator Assembly Installation

(11) Outflow Valve Frame Assembly Removal

(12) Outflow Valve Frame Assembly Installation

D. The Outflow Valve Assembly Removal task gives instructions to remove the outflow valve and the actuator assembly as a single unit. Instructions are also provided to disassemble the actuator assembly from the outflow valve frame assembly.

E. The Valve Control Unit (VCU) Removal task requires the removal of the actuator assembly from the outflow valve frame assembly before the removal of the VCU.

F. The DC Motor Removal task gives instructions to remove each DC motor from the outflow valve assembly.

G. The Gearbox Assembly Removal task requires the removal of the actuator assembly from the outflow valve frame, the removal of the VCU, and the removal of the two DC motors.

H. The Actuator Assembly Removal task gives instructions to remove the actuator assembly from the outflow valve assembly.

I. The forward outflow valve assembly is found under the floor panel below the Left Power Management Panel, P110 in the Main Equipment Center.

J. The aft outflow valve assembly is found behind the left sidewall liner at the aft end of the bulk cargo compartment.

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TASK 21-31-03-000-806-001

2. Outflow Valve Assembly Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) The forward outflow valve assembly can only be removed from within the airplane. The aft outflow valve assembly can be removed either from within the airplane or from outside of the airplane. You must be careful when you try to remove the aft outflow valve assembly from outside of the airplane, because it is difficult to get access to the electrical connectors and damage could occur to the electrical connectors and to the outflow valve assembly.

B. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-31-03-010-022-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-010-023-001

(2) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(b) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center (Figure 401)).

SUBTASK 21-31-03-010-024-001

(3) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(b) Do the steps which follow when you want to remove the aft outflow valve assembly [3] from within the airplane:

1) Do this task: Open the Door, TASK 52-36-00-860-801.

2) Remove the left sidewall liner at the aft end of the bulk cargo compartment. To remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-31-03-910-011-001

CAUTION

DO NOT TOUCH THE VCU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCU.

(4) Before you touch the Valve Control Unit (VCU) on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

F. Outflow Valve Assembly Removal)

(Figure 401)

SUBTASK 21-31-03-020-020-001

(1) For the forward outflow valve assembly [3], disconnect these three electrical connectors on the top of the VCU [13]; DM21312D, DM21312E, and DM21312F.

SUBTASK 21-31-03-860-025-001

(2) For the aft outflow valve assembly [3], disconnect these three electrical connectors on the top of the VCU [13]; DM21313D, DM21313E, and DM21313F.

SUBTASK 21-31-03-020-021-001

(3) Remove the bolt [4] and the washers [5] to disconnect the bonding jumper from the outflow valve frame.

SUBTASK 21-31-03-020-022-001

(4) Remove the sealant between the outflow valve frame and the airplane skin.

SUBTASK 21-31-03-020-023-001

(5) Remove the four bolts [6] along the upper edge of the opening in the airplane skin.

SUBTASK 21-31-03-020-024-001

(6) Remove the fourteen bolts [7] along the forward, aft, and lower edges of the opening in the airplane skin.

SUBTASK 21-31-03-020-025-001

(7) Remove the outflow valve assembly [3] from the opening in the airplane skin.

SUBTASK 21-31-03-020-026-001

(8) Remove and discard the gasket [8] from the outflow valve frame.

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SUBTASK 21-31-03-020-027-001

(9) Remove the sealant from the nutplates on the outflow valve frame, and any remaining sealant around the opening in the airplane skin.

SUBTASK 21-31-03-020-028-001

(10) If it is necessary, you can disassemble the actuator assembly [12] from the outflow valve frame assembly [12A] as follows (Figure 401):

(a) Remove the cotter pin [10], nut [11], and the bolt [9] that connect the actuator output crank to the primary rod end.

(b) Loosen the captive mount bolts.

(c) Move the actuator assembly [12] toward the outflow valve doors to disengage the actuator assembly mount pin from the bushing in the outflow valve frame.

(d) Remove the actuator assembly [12].

(e) Remove the outflow valve frame assembly [12A].

——— END OF TASK ———

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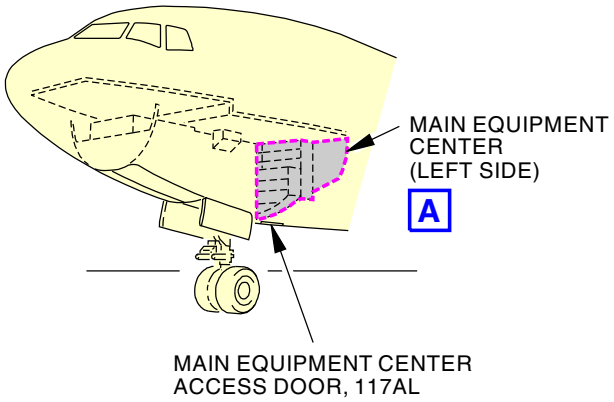

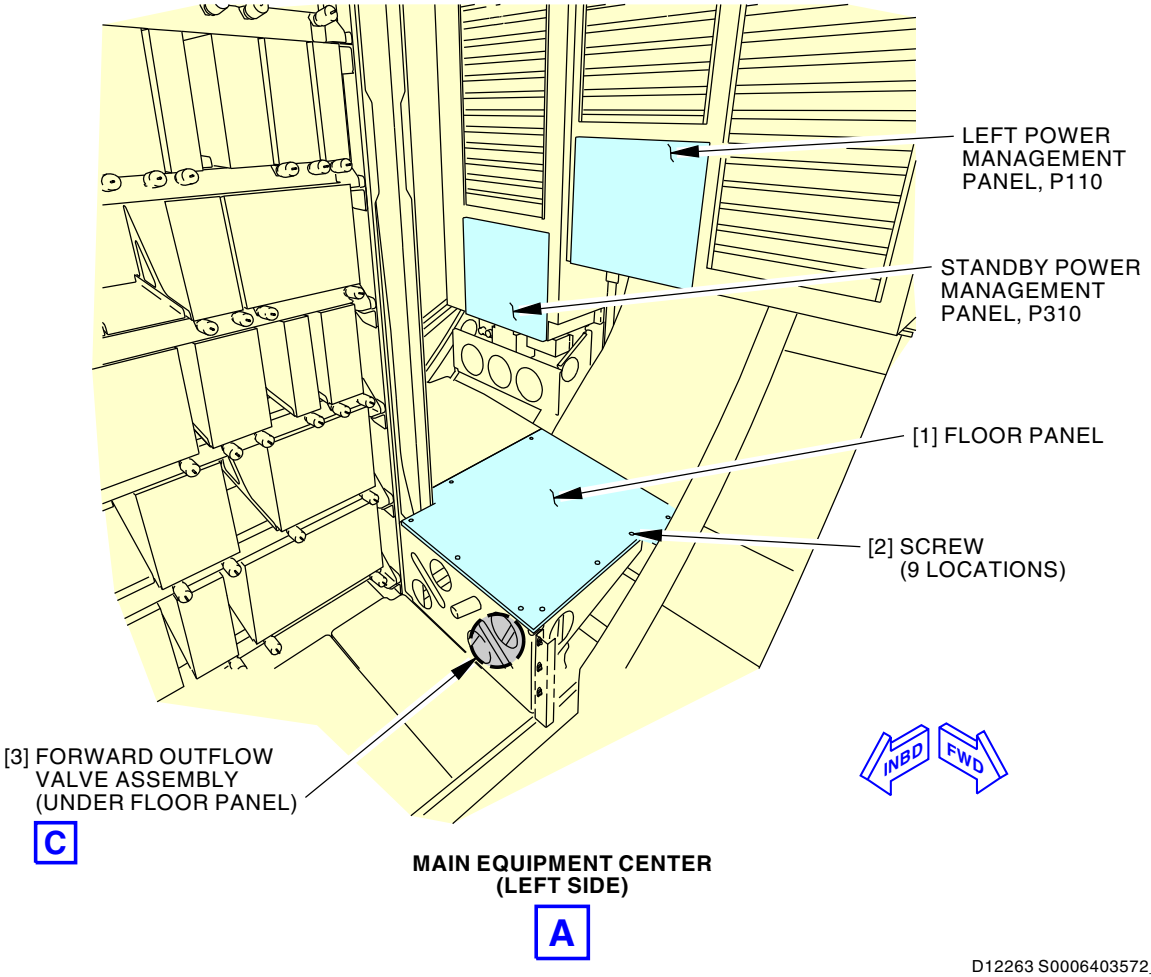

D12263 S0006403572_V2

Outflow Valve Assembly Installation
Figure 401/21-31-03-990-806-001 (Sheet 1 of 6)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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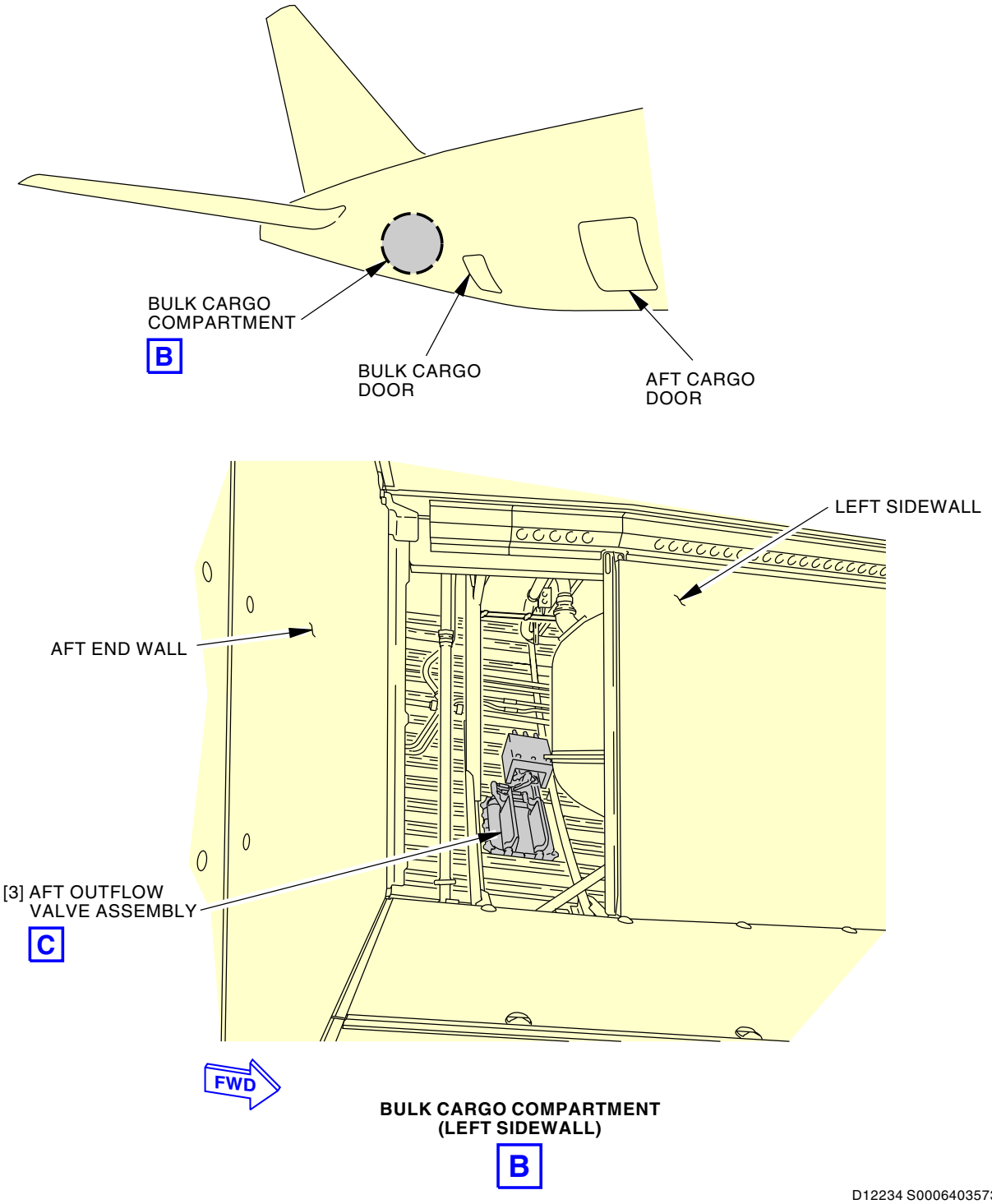

Outflow Valve Assembly Installation
Figure 401/21-31-03-990-806-001 (Sheet 2 of 6)

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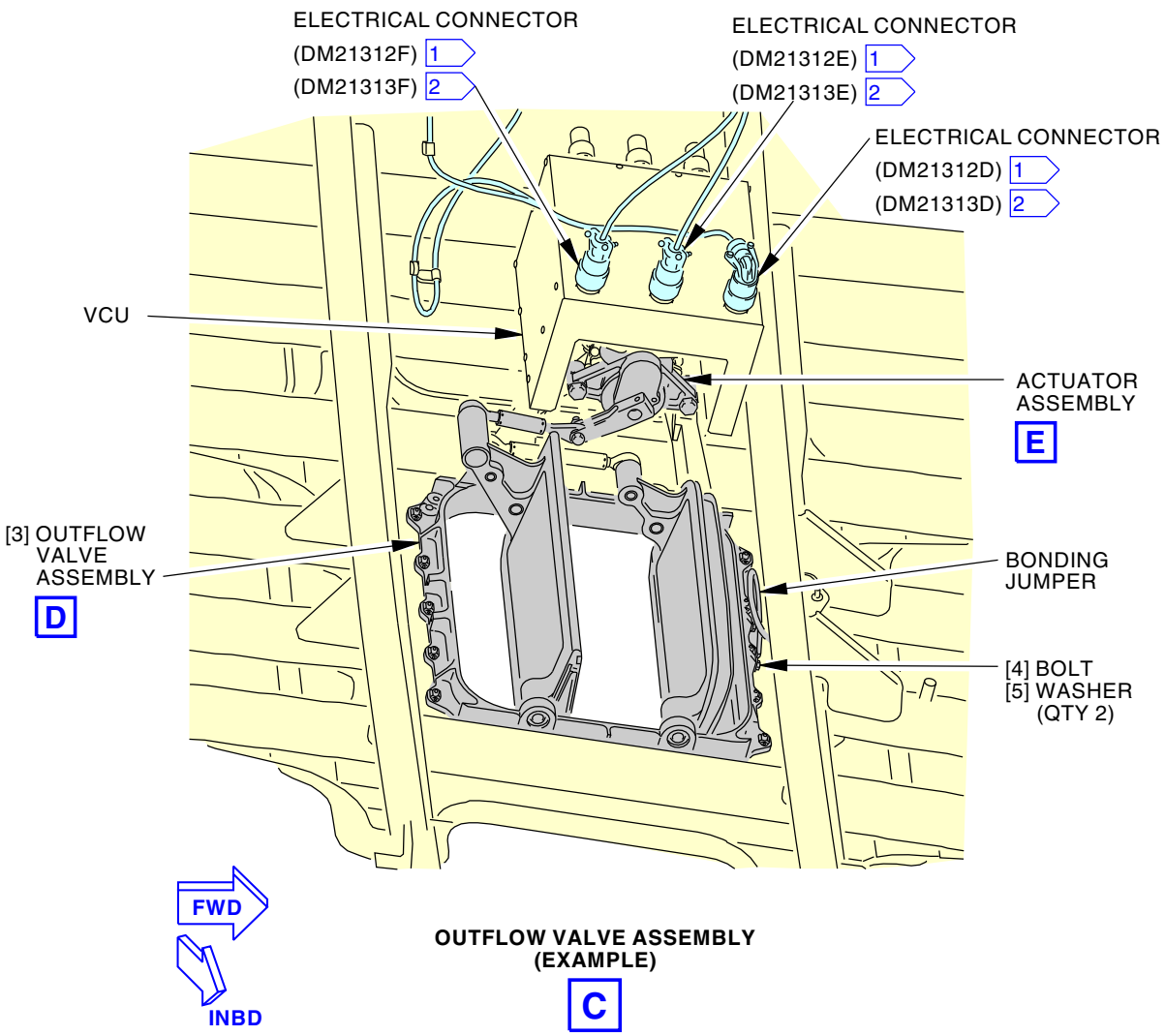

1 FORWARD OUTFLOW VALVE ASSEMBLY
2 AFT OUTFLOW VALVE ASSEMBLY

D12276 S0006403574_V2

Outflow Valve Assembly Installation
Figure 401/21-31-03-990-806-001 (Sheet 3 of 6)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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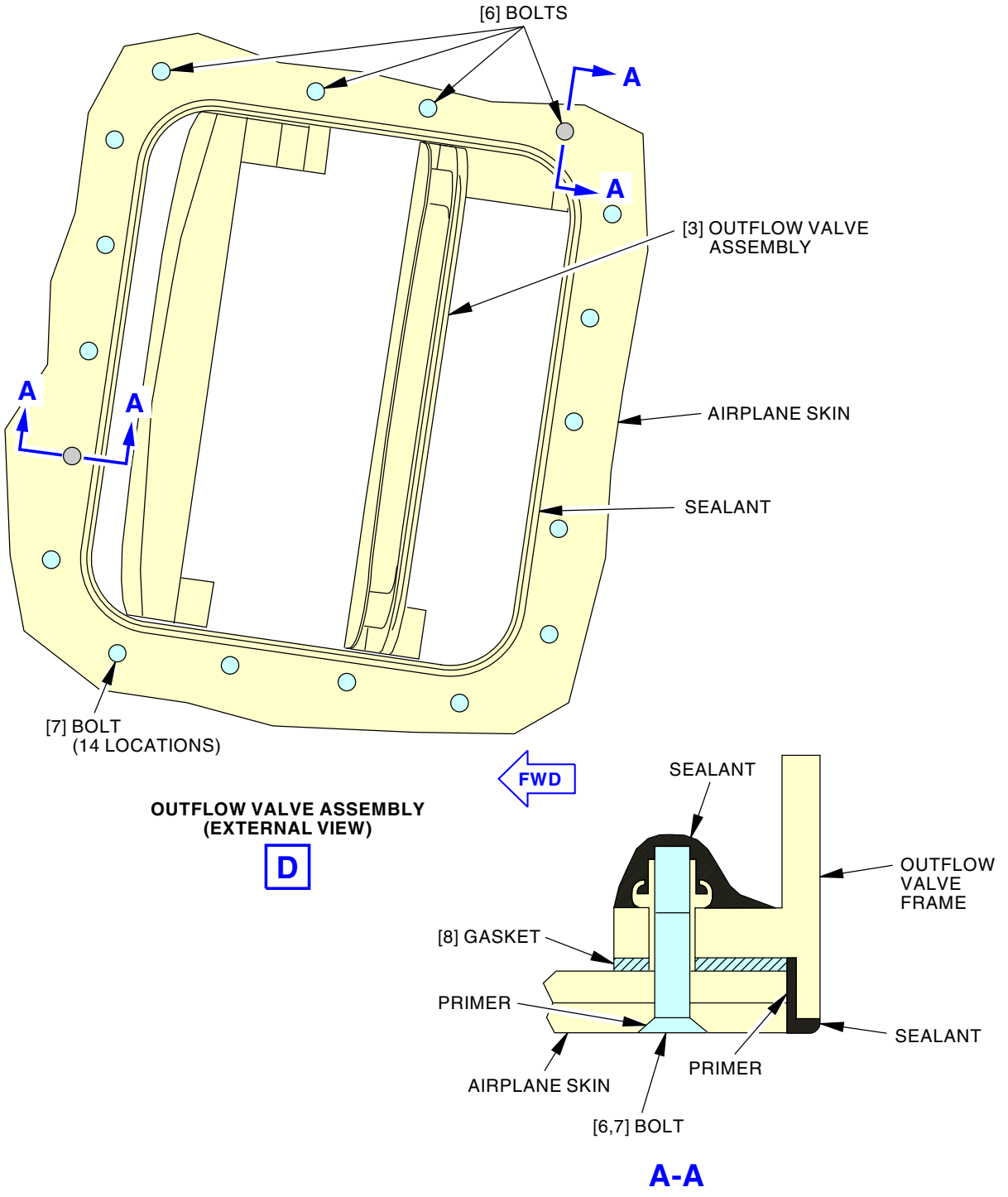

Outflow Valve Assembly Installation
Figure 401/21-31-03-990-806-001 (Sheet 4 of 6)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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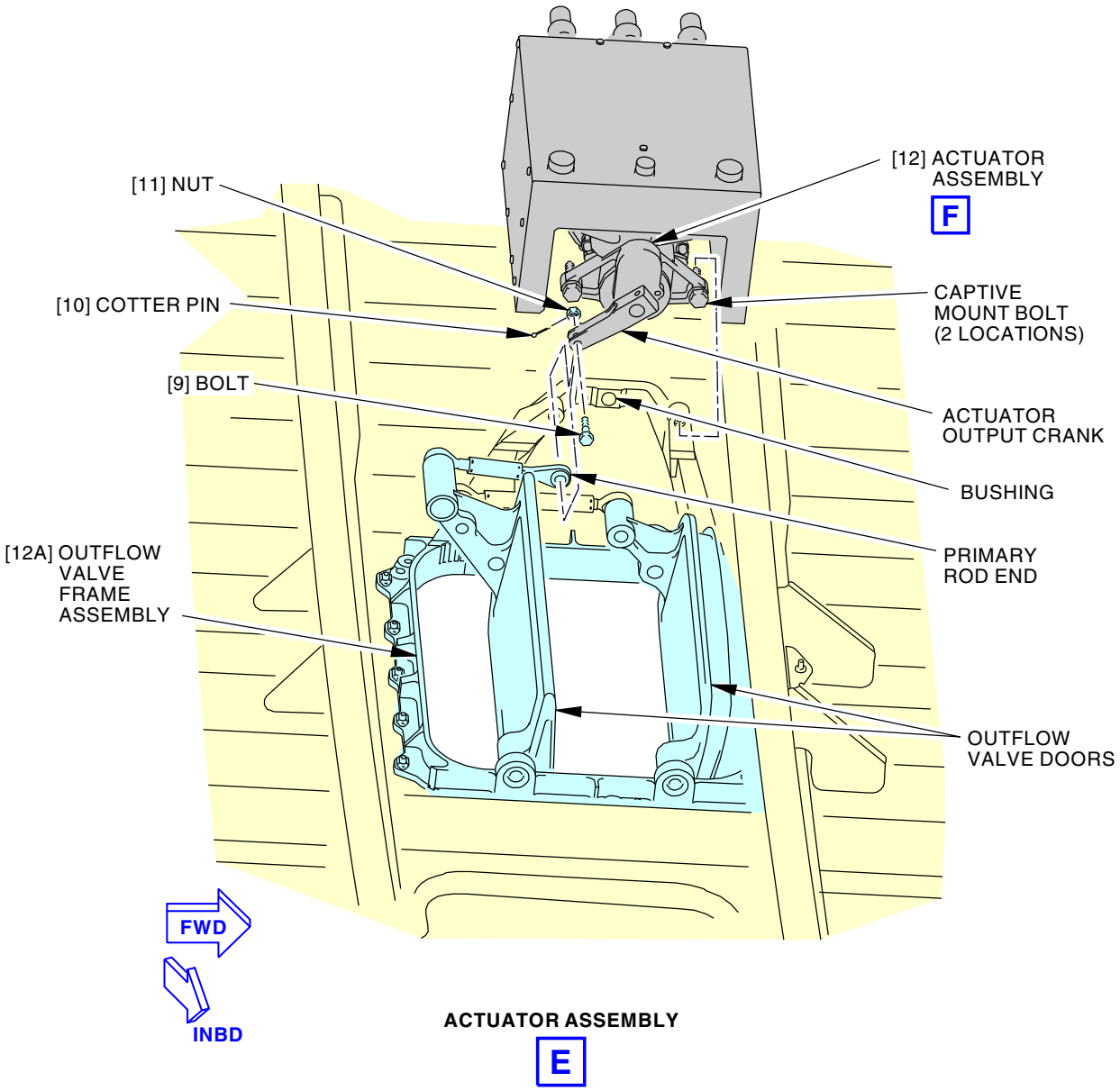

Outflow Valve Assembly Installation
Figure 401/21-31-03-990-806-001 (Sheet 5 of 6)

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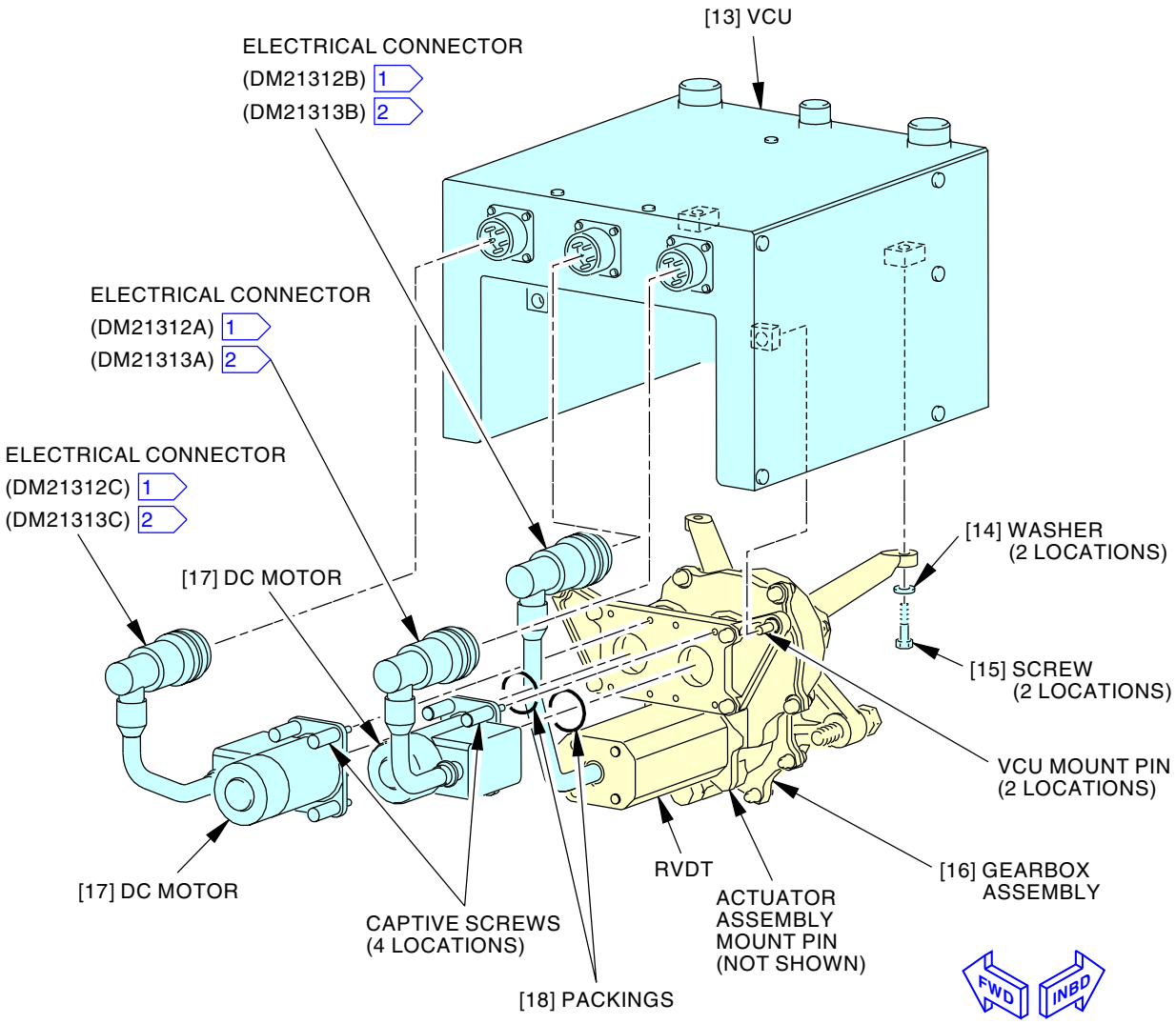

ACTUATOR ASSEMBLY

F

D12292 S0006403577_V2

Outflow Valve Assembly Installation
Figure 401/21-31-03-990-806-001 (Sheet 6 of 6)

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TASK 21-31-03-400-806-001

3. Outflow Valve Assembly Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) The forward outflow valve assembly can only be installed from within the airplane. The aft outflow valve assembly can be installed either from within the airplane or from outside of the airplane. You must be careful when you try to install the aft outflow valve assembly from outside of the airplane, because it is difficult to get access to the electrical connectors and damage could occur to the electrical connectors and to the outflow valve assembly.

(2) This task gives instructions to install the outflow valve assembly. Instructions to assemble the actuator assembly to the outflow valve frame assembly are also included.

B. References

Reference	Title
20-41-01-400-803	ESDS Handling for Metal Encased Unit Installation (P/B 201)
21-31-03-760-802-001	Outflow Valve Door Adjustment (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
51-31-01-390-806	Aerodynamic Smoother Application (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Valve assembly	21-31-03-01A-220	ARO ALL
		21-31-03-01A-510	ARO ALL
8	Gasket	21-31-03-01A-040	ARO ALL
		21-31-03-01A-325	ARO ALL
10	Pin	21-31-03-01A-070	ARO ALL
		21-31-03-01A-355	ARO ALL
13	VCU	Not Specified	

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

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F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

G. Outflow Valve Assembly Installation

(Figure 401)

SUBTASK 21-31-03-910-012-001

CAUTION

DO NOT TOUCH THE VCU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCU.

(1) Before you touch the Valve Control Unit (VCU [13]) on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-41-01-400-803.

SUBTASK 21-31-03-420-015-001

(2) Do these steps if the actuator assembly [12] was disassembled from the outflow valve frame assembly [12A] (Figure 401):

(a) Put the actuator assembly [12] in its position on the outflow valve frame assembly [12A].

1) Make sure the actuator assembly mount pin engages the bushing in the outflow valve frame.

(b) Install the captive mount bolts into the actuator assembly [12]

(c) Measure the maximum torque before the captive mount bolts are flush against the outflow valve subassembly. This is the rundown torque value. Record the value. Apply a final torque to each captive mount bolt of 55 in-lb (6 N·m) to 65 in-lb (7 N·m), plus the rundown torque value that was recorded for that bolt.

NOTE: The value of the rundown torque can be large and it can change for each bolt and locking mechanism.

(d) Install the bolt [9] and nut [11] to connect the primary rod end to the actuator output crank.

1) Tighten the bolt [9] to 55-65 pound-inches.

2) Install the cotter pin [10].

SUBTASK 21-31-03-420-016-001

(3) Remove any sealant that remains on the airplane skin, nutplates and the frame of the outflow valve.

SUBTASK 21-31-03-390-005-001

(4) Apply the primer, C00259 to the fastener holes and the edge of the opening on the airplane skin as shown in View A-A (Figure 401).

SUBTASK 21-31-03-390-006-001

(5) Apply the sealant, A02315 to the nutplates on the outflow valve frame as shown in View A-A (Figure 401).

SUBTASK 21-31-03-410-028-001

(6) Install a new gasket [8] on the opening in the airplane skin.

SUBTASK 21-31-03-410-029-001

(7) Install the outflow valve assembly [3] into the opening of the airplane skin:

(a) Put the outflow valve in the open position.

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(b) Align the holes in the outflow valve frame with the holes in the airplane skin and the gasket [8].

SUBTASK 21-31-03-410-030-001

(8) Loosely install the four bolts [6] along the upper edge of the opening in the airplane skin.

SUBTASK 21-31-03-410-031-001

(9) Loosely install the fourteen bolts [7] along the forward, aft, and lower edges of the opening in the airplane skin.

SUBTASK 21-31-03-410-032-001

(10) Center the frame of the outflow valve in the opening of the airplane skin.

SUBTASK 21-31-03-420-017-001

(11) In a diagonal pattern, tighten the bolt [6] and the bolts [7] to 20-26 pound-inches.

SUBTASK 21-31-03-390-007-001

(12) Apply the sealant, A00247 between the outflow valve frame and the airplane skin as shown in View A-A (Figure 401). For the correct application of an aerodynamic seal, do this task: Aerodynamic Smoother Application, TASK 51-31-01-390-806

SUBTASK 21-31-03-410-033-001

(13) Install the bolt [4] and the washers [5] to connect the bonding jumper to the outflow valve frame.

(a) Make sure that the bonding jumper, the bolt [4], the washers [5], and the outflow valve frame are clean before you connect them together.

SUBTASK 21-31-03-410-034-001

(14) For the forward outflow valve assembly [3], connect these three electrical connectors to the top of the VCU [13]; DM21312D, DM21312E, and DM21312F.

SUBTASK 21-31-03-410-035-001

(15) For the aft outflow valve assembly [3], connect these three electrical connectors to the top of the VCU [13]; DM21313D, DM21313E, and DM21313F.

SUBTASK 21-31-03-860-026-001

(16) For the forward outflow valve assembly [3],

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-860-027-001

(17) For the aft outflow valve assembly [3],

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

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Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

H. Outflow Valve Assembly Installation Test

SUBTASK 21-31-03-820-006-001

(1) If you installed a new outflow valve frame assembly [12A] or a new actuator assembly [12], do this task: Outflow Valve Door Adjustment, TASK 21-31-03-760-802-001.

SUBTASK 21-31-03-860-028-001

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

SUBTASK 21-31-03-740-007-001

WARNING MAKE SURE THAT PERSONS ARE CLEAR OF THE FORWARD AND THE AFT OUTFLOW VALVE ASSEMBLIES BEFORE YOU DO THIS TEST. INJURY TO PERSONS CAN OCCUR.

(3) Use a maintenance access terminal (MAT) to do the System Test of the outflow valve assembly. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Pressure Control System
5) SYSTEM TEST
6) Cabin Pressure Controller Test (Left and Right)
7) CONTINUE

(b) Do the instructions that show on the MAT 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) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE
2) EXIT MAINTENANCE

SUBTASK 21-31-03-710-006-001

(4) Do a manual operation test of the outflow valve assembly [3]:

(a) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure the MAN switch-light comes on.

(b) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to CLOSE on the PRESSURIZATION Module in the pilot's overhead panel, P5.

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1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to CLOSE on the EICAS ECS maintenance page.

2) Make sure the outflow valve assembly [3] is closed.

(c) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to OPEN.

1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to OPEN on the EICAS ECS maintenance page.

2) Make sure the outflow valve assembly [3] is open.

(d) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light.

1) Make sure the MAN switch-light goes off.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-410-036-001

(1) If you replaced the forward outflow valve assembly [3], put the floor panel [1] in its position below the Left Power Management Panel, P110 and install the screws [2] (Figure 401).

SUBTASK 21-31-03-410-037-001

(2) If you replaced the aft outflow valve assembly [3] from within the airplane, do these steps:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-31-03-410-038-001

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-31-03-000-807-001

4. Valve Control Unit (VCU) Removal

(Figure 401)

A. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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D. Prepare for the Removal

SUBTASK 21-31-03-010-025-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-010-026-001

(2) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(b) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center (Figure 401).

SUBTASK 21-31-03-010-027-001

(3) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(b) Do this task: Open the Door, TASK 52-36-00-860-801.

(c) Remove the left sidewall liner at the aft end of the bulk cargo compartment. To remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-31-03-910-013-001

CAUTION DO NOT TOUCH THE VCU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCU.

(4) Before you touch the Valve Control Unit (VCU [13]) on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

E. Valve Control Unit (VCU) Removal

SUBTASK 21-31-03-020-029-001

(1) Do the steps that follow to remove the actuator assembly [12] from the outflow valve frame (Figure 401):

(a) For the forward outflow valve assembly [3], disconnect these electrical connectors from the top of the VCU [13]; DM21312D, DM21312E, and DM21312F.

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(b) For the aft outflow valve assembly [3], disconnect these electrical connectors from the top of the VCU [13]; DM21313D, DM21313E, and DM21313F.

(c) Remove the cotter pin [10], nut [11] and the bolt [9] that connect the actuator output crank to the primary rod end.

(d) Loosen the captive mount bolts.

(e) Move the actuator assembly [12] toward the outflow valve doors to disengage the actuator assembly mount pin from bushing on the outflow valve frame.

(f) Remove the actuator assembly [12].

SUBTASK 21-31-03-020-030-001

(2) Do the steps that follow to remove the VCU [13] from the gearbox assembly [16] (Figure 401):

(a) For the forward outflow valve assembly [3], disconnect these electrical connectors from the backside of the VCU [13]; DM21312A, DM21312B, and DM21312C.

(b) For the aft outflow valve assembly [3], disconnect these electrical connectors from the backside of the VCU [13]; DM21313A, DM21313B, and DM21313C.

(c) Remove and discard the lockwire from the screws [15] that connect the VCU [13] to the gearbox assembly [16].

(d) Remove the screws [15] and the washers [14].

(e) Move the VCU [13] toward the DC motors [17] to disengage the from the VCU mount pins on the gearbox assembly [16].

(f) Remove the VCU [13].

——— END OF TASK ———

TASK 21-31-03-400-810-001

5. Valve Control Unit (VCU) Installation

(Figure 401)

A. 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)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
10	Pin	21-31-03-01A-070	ARO ALL
		21-31-03-01A-355	ARO ALL
13	VCU	Not Specified	

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

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D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Valve Control Unit (VCU) Installation

SUBTASK 21-31-03-910-014-001

CAUTION

DO NOT TOUCH THE VCU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCU.

(1) Before you touch the Valve Control Unit (VCU [13]) which is on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-41-01-400-803.

SUBTASK 21-31-03-420-018-001

(2) Do the steps that follow to install the VCU [13] to the gearbox assembly [16] (Figure 401):

(a) Put the VCU [13] in its position on the gearbox assembly [16].

1) Make sure the VCU mount pins on the gearbox assembly [16] engage the VCU [13].

(b) Install the screws [15] and the washers [14].

(c) Install a new lockwire to the screws [15].

(d) For the forward outflow valve assembly [3], connect these electrical connectors to the backside of the VCU [13]; DM21312A, DM21312B, and DM21312C.

(e) For the aft outflow valve assembly [3], connect these electrical connectors from the backside of the VCU [13]; DM21313A, DM21313B, and DM21313C.

SUBTASK 21-31-03-420-019-001

(3) Do the steps that follow to install the actuator assembly [12] to the outflow valve frame (Figure 401):

(a) Put the actuator assembly [12] in its position on the outflow valve frame.

1) Make sure the actuator assembly mount pin engages the bushing in the outflow valve frame.

(b) Install the captive mount bolts into the actuator assembly [12]

(c) Measure the maximum torque before the captive mount bolts are flush against the outflow valve subassembly. This is the rundown torque value. Record the value. Apply a final torque to each captive mount bolt of 55 in-lb (6 N·m) to 65 in-lb (7 N·m), plus the rundown torque value that was recorded for that bolt.

NOTE: The value of the rundown torque can be large and it can change for each bolt and locking mechanism.

(d) Install the bolt [9] and the nut [11] to connect the primary rod end to the actuator output crank.

1) Tighten the bolt [9] to 55-65 pound-inches.

2) Install the cotter pin [10].

(e) For the forward outflow valve assembly [3], connect these electrical connectors to the top of the VCU [13]; DM21312D, DM21312E, and DM21312F.

(f) For the aft outflow valve assembly [3], connect these electrical connectors to the top of the VCU [13]; DM21313D, DM21313E, and DM21313F.

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SUBTASK 21-31-03-860-029-001

(4) For the forward outflow valve assembly [3],

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-860-030-001

(5) For the aft outflow valve assembly [3],

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

F. Valve Control Unit (VCU) Installation Test

SUBTASK 21-31-03-860-031-001

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

SUBTASK 21-31-03-740-008-001

WARNING MAKE SURE THAT PERSONS ARE CLEAR OF THE FORWARD AND AFT OUTFLOW VALVE ASSEMBLIES BEFORE YOU DO THIS TEST. INJURY TO PERSONS CAN OCCUR.

(2) Use a maintenance access terminal (MAT) to do the System Test of the outflow valve assembly. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Pressure Control System
5) SYSTEM TEST
6) Cabin Pressure Controller Test (Left and Right)
7) CONTINUE

(b) Do the instructions that show on the MAT then make these selections:

1) CONTINUE
2) START TEST

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(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) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE

2) EXIT MAINTENANCE

SUBTASK 21-31-03-710-007-001

(3) Do a manual operation test of the outflow valve assembly:

(a) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure the MAN switch-light comes on.

(b) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to CLOSE on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to CLOSE on the EICAS ECS maintenance page.

2) Look at the outflow valve and make sure it is in the closed position.

(c) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to OPEN.

1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to OPEN on the EICAS ECS maintenance page.

2) Look at the outflow valve and make sure it is in the open position.

(d) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light.

1) Make sure the MAN switch-light goes off.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-710-008-001

(1) If you replaced the forward outflow valve assembly [3], put the floor panel [1] in its position below the Left Power Management Panel, P110 and install the screws [2] (Figure 401).

SUBTASK 21-31-03-410-039-001

(2) If you replaced the aft outflow valve assembly [3], do these steps:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-31-03-410-040-001

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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TASK 21-31-03-000-821-001

6. DC Motor Removal

(Figure 401)

A. General

(1) The forward and aft DC motors are identified as the motor-L and the motor-R in the Fault Isolation Manual.

(2) The electrical connector on the motor-L is identified with a label J1.

(3) The electrical connector on the motor-R is identified with a label J3.

B. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-31-03-010-028-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-010-029-001

(2) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(b) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center (Figure 401).

SUBTASK 21-31-03-010-030-001

(3) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(b) Do this task: Open the Door, TASK 52-36-00-860-801.

(c) Remove the left sidewall liner at the aft end of the bulk cargo compartment. To remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-31-03-910-015-001

CAUTION DO NOT TOUCH THE VCU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCU.

(4) Before you touch the Valve Control Unit (VCU [13]) on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

F. DC Motor Removal

SUBTASK 21-31-03-020-031-001

(1) Do the steps that follow to remove the DC motor [17] from the gearbox assembly [16] (Figure 401):

(a) For the forward outflow valve assembly [3], disconnect the electrical connector from the backside of the VCU [13]; DM21312A (aft DC motor) or DM21312C (forward DC motor).

(b) For the aft outflow valve assembly [3], disconnect the electrical connector from the backside of the VCU [13]; DM21313A (aft DC motor) or DM21313C (forward DC motor).

(c) Loosen the captive screws for the DC motor [17].

(d) Remove the DC motor [17].

(e) Remove and discard the packing [18].

——— END OF TASK ———

TASK 21-31-03-000-809-001

7. DC Motor Installation

(Figure 401)

A. 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)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

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B. Consumable Materials

Reference	Description	Specification
D00016	Grease - Aircraft, General Purpose, Wide Temperature Range	MIL-PRF-81322

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. DC Motor Installation

SUBTASK 21-31-03-910-016-001

CAUTION

DO NOT TOUCH THE VCU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCU.

(1) Before you touch the Valve Control Unit (VCU [13]) on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-41-01-400-803.

SUBTASK 21-31-03-420-020-001

(2) Do the steps that follow to install the DC motor [17] to the gearbox assembly [16] (Figure 401):

(a) Lubricate the new packing [18] with grease, D00016.

(b) Install the new packing [18] on the DC motor [17].

(c) Put the DC motor [17] in its position on the gearbox assembly [16].

ARO ALL

(d) Tighten the captive screws 6 to 9 pound-inches (0.68 to 1.02 newton-meters).

ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

(e) For the forward outflow valve assembly [3], connect the electrical connector to the backside of the VCU [13]; DM21312A (aft DC motor) or DM21312C (forward DC motor).

(f) For the aft outflow valve assembly [3], connect the electrical connector to the backside of the VCU [13]; DM21313A (aft DC motor) or DM21313C (forward DC motor).

SUBTASK 21-31-03-860-032-001

(3) For the forward outflow valve assembly [3],

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

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SUBTASK 21-31-03-860-033-001

(4) For the aft outflow valve assembly [3],

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

F. DC Motor Installation Test

SUBTASK 21-31-03-860-034-001

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

SUBTASK 21-31-03-740-009-001

WARNING MAKE SURE THAT PERSONS ARE CLEAR OF THE FORWARD AND AFT OUTFLOW VALVE ASSEMBLIES BEFORE YOU DO THIS TEST. INJURY TO PERSONS CAN OCCUR.

(2) Use a maintenance access terminal (MAT) to do the System Test of the outflow valve assembly. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Pressure Control System
5) SYSTEM TEST
6) Cabin Pressure Controller Test (Left and Right)
7) CONTINUE

(b) Do the instructions that show on the MAT 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) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE
2) EXIT MAINTENANCE

SUBTASK 21-31-03-710-009-001

(3) Do a manual operation test of the outflow valve assembly:

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(a) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure the MAN switch-light comes on.

(b) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to CLOSE on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to CLOSE on the EICAS ECS maintenance page.

2) Make sure the outflow valve assembly is closed.

(c) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to OPEN.

1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to OPEN on the EICAS ECS maintenance page.

2) Look at the outflow valve to make sure it is in the open position.

(d) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light.

1) Make sure the MAN switch-light goes off.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-410-041-001

(1) If you replaced DC motor for the forward outflow valve assembly [3], put the floor panel [1] in its position below the Left Power Management Panel, P110 and install the screws [2] (Figure 401).

SUBTASK 21-31-03-410-042-001

(2) If you replaced the DC motor for the aft outflow valve assembly [3], do these steps:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-31-03-410-043-001

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-31-03-000-810-001

8. Gearbox Assembly Removal

(Figure 401)

A. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

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C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-31-03-010-031-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-010-032-001

(2) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(b) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center (Figure 401).

SUBTASK 21-31-03-010-033-001

(3) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(b) Do this task: Open the Door, TASK 52-36-00-860-801.

(c) Remove the left sidewall liner at the aft end of the bulk cargo compartment. To remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-31-03-910-017-001

CAUTION

DO NOT TOUCH THE VCU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCU.

(4) Before you touch the Valve Control Unit (VCU [13]) on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

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E. Gearbox Assembly Removal

SUBTASK 21-31-03-020-032-001

(1) Do the steps that follow to remove the actuator assembly [12] from the outflow valve frame (Figure 401):

(a) For the forward outflow valve assembly [3], disconnect these electrical connectors from the top of the VCU [13]; DM21312D, DM21312E, and DM21312F.

(b) For the aft outflow valve assembly [3], disconnect these electrical connectors from the top of the VCU [13]; DM21313D, DM21313E, and DM21313F.

(c) Remove the cotter pin [10], nut [11] and the bolt [9] that connect the actuator output crank to the primary rod end.

(d) Loosen the captive mount bolts.

(e) Move the actuator assembly [12] toward the outflow valve doors to disengage the actuator assembly mount pin from the outflow valve frame.

(f) Remove the actuator assembly [12].

SUBTASK 21-31-03-020-033-001

(2) Do the steps that follow to remove the VCU [13] from the gearbox assembly [16] (Figure 401):

(a) For the forward outflow valve assembly [3], disconnect these electrical connectors from the backside of the VCU [13]; DM21312A, DM21312B, and DM21312C.

(b) For the aft outflow valve assembly [3], disconnect these electrical connectors from the backside of the VCU [13]; DM21313A, DM21313B, and DM21313C.

(c) Remove and discard the lockwire from the screws [15] that connect the VCU [13] to the gearbox assembly [16].

(d) Remove the screws [15] and the washers [14].

(e) Move the VCU [13] toward the DC motor [17] to disengage the VCU [13] from the VCU mount pins on the gearbox assembly [16].

(f) Remove the VCU [13].

SUBTASK 21-31-03-020-034-001

(3) Do the steps that follow to remove the two DC motors [17] from the gearbox assembly [16] (Figure 401):

(a) Loosen the captive screws on each DC motor [17].

(b) Remove each DC motor [17].

SUBTASK 21-31-03-020-035-001

(4) Remove the gearbox assembly [16].

——— END OF TASK ———

TASK 21-31-03-400-808-001

9. Gearbox Assembly Installation

(Figure 401)

A. References

Reference	Title
20-41-01-400-803	ESDS Handling for Metal Encased Unit Installation (P/B 201)
21-31-03-760-802-001	Outflow Valve Door Adjustment (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)

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(Continued)

Reference	Title
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
10	Pin	21-31-03-01A-070	ARO ALL
		21-31-03-01A-355	ARO ALL
13	VCU	Not Specified	

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Gearbox Assembly Installation

SUBTASK 21-31-03-910-018-001

CAUTION

DO NOT TOUCH THE VCU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCU.

(1) Before you touch the Valve Control Unit (VCU [13]) on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-41-01-400-803.

SUBTASK 21-31-03-420-021-001

(2) Do the steps that follow to install the two DC motors [17] to the gearbox assembly [16] (Figure 401):

(a) Put each DC motor [17] in its position on the gearbox assembly [16].

ARO ALL

(b) Tighten the captive screws 6 to 9 pound-inches (0.68 to 1.02 newton-meters).

ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

SUBTASK 21-31-03-420-022-001

(3) Do the steps that follow to install the VCU [13] to the gearbox assembly [16] (Figure 401):

(a) Put the VCU [13] in its position on the gearbox assembly [16].

1) Make sure the VCU mount pins on the gearbox assembly [16] engage the VCU [13].

(b) Install the screws [15] and the washers [14].

(c) Install a new lockwire to the screws [15].

(d) For the forward outflow valve assembly [3], connect these electrical connectors to the backside of the VCU [13]; DM21312A, DM21312B, and DM21312C.

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(e) For the aft outflow valve assembly [3], connect these electrical connectors to the backside of the VCU [13]; DM21313A, DM21313B, and DM21313C.

SUBTASK 21-31-03-420-023-001

(4) Do the steps that follow to install the actuator assembly [12] to the outflow valve frame (Figure 401):

(a) Put the actuator assembly [12] in its position on the outflow valve frame.

1) Make sure the actuator assembly mount pin engages the bushing in the outflow valve frame.

(b) Tighten the captive mount bolts to 55-65 pound-inches.

(c) Install the bolt [9] and the nut [11] to connect the primary rod end to the actuator output crank.

1) Tighten the bolt [9] to 55-65 pound-inches.

2) Install the cotter pin [10].

(d) For the forward outflow valve assembly [3], connect these electrical connectors to the top of the VCU [13]; DM21312D, DM21312E, and DM21312F.

(e) For the aft outflow valve assembly [3], connect these electrical connectors to the top of the VCU [13]; DM21313D, DM21313E, and DM21313F.

SUBTASK 21-31-03-860-035-001

(5) For the forward outflow valve assembly [3],

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-860-036-001

(6) For the aft outflow valve assembly [3],

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-03-820-007-001

(7) Do this task: Outflow Valve Door Adjustment, TASK 21-31-03-760-802-001.

F. Gearbox Assembly Installation Test

SUBTASK 21-31-03-860-037-001

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

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SUBTASK 21-31-03-740-010-001

WARNING MAKE SURE THAT PERSONS ARE CLEAR OF THE FORWARD AND AFT OUTFLOW VALVE ASSEMBLIES BEFORE YOU DO THIS TEST. INJURY TO PERSONS CAN OCCUR.

(2) Use a maintenance access terminal (MAT) to do the System Test of the outflow valve assembly. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Pressure Control System
5) SYSTEM TEST
6) Cabin Pressure Controller Test (Left and Right)
7) CONTINUE

(b) Do the instructions that show on the MAT 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) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE
2) EXIT MAINTENANCE

SUBTASK 21-31-03-710-010-001

(3) Do a manual operation test of the outflow valve assembly:

(a) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure the MAN switch-light comes on.

(b) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to CLOSE on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to CLOSE on the EICAS ECS maintenance page.
2) Look at outflow valve to make sure it is in the closed position.

(c) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to OPEN.

1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to OPEN on the EICAS ECS maintenance page.
2) Look at the outflow valve to make sure it is in the open position.

(d) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light.

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1) Make sure the MAN switch-light goes off.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-410-044-001

(1) If you replaced the gearbox assembly for the forward outflow valve assembly [3] put the floor panel [1] in its position below the Left Power Management Panel, P110 and install the screws [2] (Figure 401).

SUBTASK 21-31-03-410-045-001

(2) If you replaced gearbox assembly for the aft outflow valve assembly [3], do these steps:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-31-03-410-046-001

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-31-03-000-822-001

10. Actuator Assembly Removal

(Figure 401)

A. General

(1) This procedure gives instructions to remove the actuator assembly from the installed forward or aft outflow valve assembly. Instructions to remove the actuator assembly with the outflow valve assembly removed are provided in the outflow valve assembly removal task.

B. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-31-03-010-034-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-31-03-010-035-001

(2) Do these steps if you remove the actuator assembly [12] for the forward outflow valve assembly [3]:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(b) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center (Figure 401).

SUBTASK 21-31-03-010-036-001

(3) Do these steps if you remove the actuator assembly [12] for the aft outflow valve assembly [3]:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(b) Do this task: Open the Door, TASK 52-36-00-860-801.

(c) Remove the left sidewall liner at the aft end of the bulk cargo compartment. To remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-31-03-910-019-001

CAUTION

DO NOT TOUCH THE VCU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCU.

(4) Before you touch the Valve Control Unit (VCU), do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

F. Actuator Assembly Removal

(Figure 401)

SUBTASK 21-31-03-020-036-001

(1) Do the steps that follow to remove the actuator assembly [12]:

(a) To remove the actuator assembly [12] on the forward outflow valve assembly [3], disconnect these three electrical connectors on the top of the VCU [13]; DM21312D, DM21312E, and DM21312F.

(b) To remove the actuator assembly [12] on the aft outflow valve assembly [3], disconnect these three electrical connectors on the top of the VCU [13]; DM21313D, DM21313E, and DM21313F.

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(c) Remove the cotter pin [10], nut [11] and the bolt [9] that connect the actuator output crank to the primary rod end.

(d) Loosen the captive mount bolts.

(e) Move the actuator assembly [12] toward the outflow valve doors to disengage the actuator assembly mount pin from the outflow valve frame.

(f) Remove the actuator assembly [12].

——— END OF TASK ———

TASK 21-31-03-400-818-001

11. Actuator Assembly Installation

(Figure 401)

A. General

(1) This procedure gives instructions to install the actuator assembly on to the installed forward or aft outflow valve assembly. Instructions to install the actuator assembly with the outflow valve assembly removed are provided in the outflow valve assembly installation task.

B. References

Reference	Title
20-41-01-400-803	ESDS Handling for Metal Encased Unit Installation (P/B 201)
21-31-03-760-802-001	Outflow Valve Door Adjustment (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
10	Pin	21-31-03-01A-070	ARO ALL
		21-31-03-01A-355	ARO ALL
13	VCU	Not Specified	

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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F. Actuator Assembly Installation

(Figure 401)

SUBTASK 21-31-03-910-020-001

CAUTION

DO NOT TOUCH THE VCU BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCU.

(1) Before you touch the Valve Control Unit (VCU [13]) on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-41-01-400-803.

SUBTASK 21-31-03-420-024-001

(2) Do the steps that follow to install the actuator assembly [12] to the outflow valve frame (Figure 401):

(a) Put the actuator assembly [12] in its position on the outflow valve frame.

1) Make sure the actuator assembly mount pin engages the bushing in the outflow valve frame.

(b) Tighten the captive mount bolts to 55-65 pound-inches.

(c) Install the bolt [9] and the nut [11] to connect the primary rod end to the actuator output crank.

1) Tighten the bolt [9] to 55-65 pound-inches.

2) Install the cotter pin [10].

(d) For the forward outflow valve actuator assembly [12], connect these electrical connectors to the top of the VCU [13]; DM21312D, DM21312E, and DM21312F.

(e) For the aft outflow valve actuator assembly [12], connect these electrical connectors to the top of the VCU [13]; DM21313D, DM21313E, and DM21313F.

SUBTASK 21-31-03-860-038-001

(3) For the forward outflow valve actuator assembly [12],

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-860-039-001

(4) For the aft outflow valve actuator assembly [12],

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

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Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

G. Outflow Valve Assembly Installation Test

SUBTASK 21-31-03-860-040-001

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

SUBTASK 21-31-03-820-008-001

(2) Do this task: Outflow Valve Door Adjustment, TASK 21-31-03-760-802-001.

SUBTASK 21-31-03-740-011-001

WARNING MAKE SURE THAT PERSONS ARE CLEAR OF THE FORWARD AND THE AFT OUTFLOW VALVE ASSEMBLIES BEFORE YOU DO THIS TEST. INJURY TO PERSONS CAN OCCUR.

(3) Use a maintenance access terminal (MAT) to do the System Test of the outflow valve assembly. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Pressure Control System
5) SYSTEM TEST
6) Cabin Pressure Controller Test (Left and Right)
7) CONTINUE

(b) Do the instructions that show on the MAT 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) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE
2) EXIT MAINTENANCE

SUBTASK 21-31-03-710-011-001

(4) Do a manual operation test of the outflow valve assembly:

(a) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure the MAN switch-light comes on.

(b) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to CLOSE on the PRESSURIZATION Module in the pilot's overhead panel, P5.

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1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to CLOSE on the EICAS ECS maintenance page.

2) Make sure the outflow valve assembly is closed.

(c) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to OPEN.

1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to OPEN on the EICAS ECS maintenance page.

2) Make sure the outflow valve assembly is open.

(d) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light.

1) Make sure the MAN switch-light goes off.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-410-047-001

(1) If you replaced the forward outflow actuator assembly [12], put the floor panel [1] in its position below the Left Power Management Panel, P110 and install the screws [2] (Figure 401)).

SUBTASK 21-31-03-410-048-001

(2) If you replaced the aft outflow actuator assembly [12], do these steps:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-31-03-410-049-001

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-31-03-000-823-001

12. Outflow Valve Frame Assembly Removal

Figure 402

A. General

(1) The forward outflow valve assembly can only be removed from within the airplane. The aft outflow valve assembly can be removed either from within the airplane or from outside of the airplane. You must be careful when you try to remove the aft outflow valve assembly from outside of the airplane, because it is difficult to get access to the electrical connectors and damage could occur to the electrical connectors and to the outflow valve assembly.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

C. Removal

SUBTASK 21-31-03-020-053

(1) Do this task to remove the applicable outflow valve:

Outflow Valve Assembly Removal, TASK 21-31-03-000-806-001

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SUBTASK 21-31-03-020-054

(2) Do these steps to remove the actuator assembly [12] from the outflow valve frame assembly [12A]:

(a) Remove the cotter pin [10], nut [11], and the bolt [9] that connect the actuator output crank to the primary rod end.

(b) Loosen the captive mount bolts.

(c) Move the actuator assembly [12] toward the outflow valve doors to disengage the actuator assembly mount pin from the bushing in the outflow valve frame.

(d) Remove the actuator assembly [12].

(e) Remove the outflow valve frame assembly [12A].

——— END OF TASK ———

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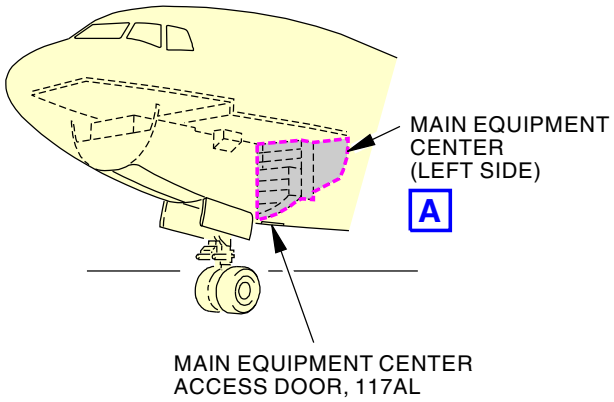

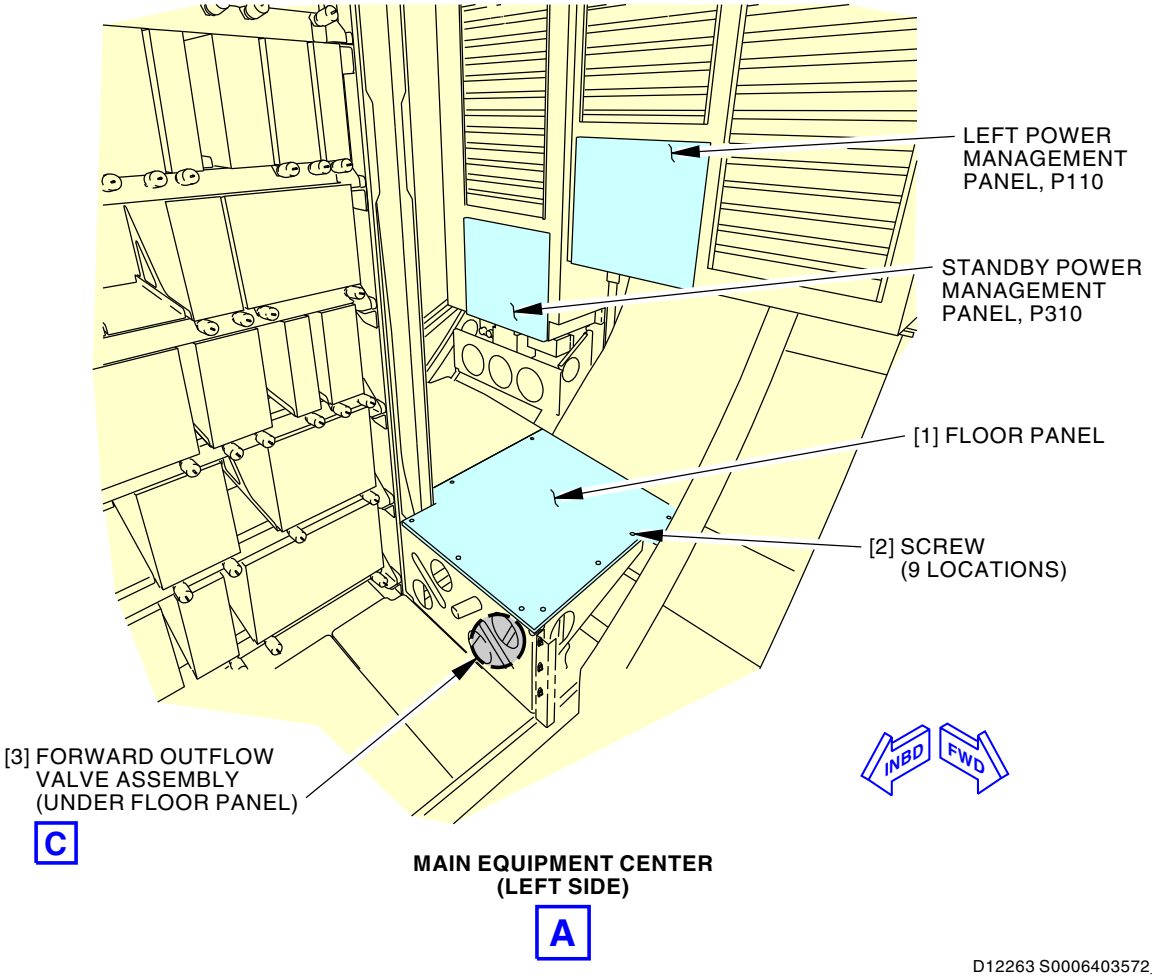

D12263 S0006403572_V2

Outflow Valve Assembly Installation
Figure 402/21-31-03-990-824 (Sheet 1 of 6)

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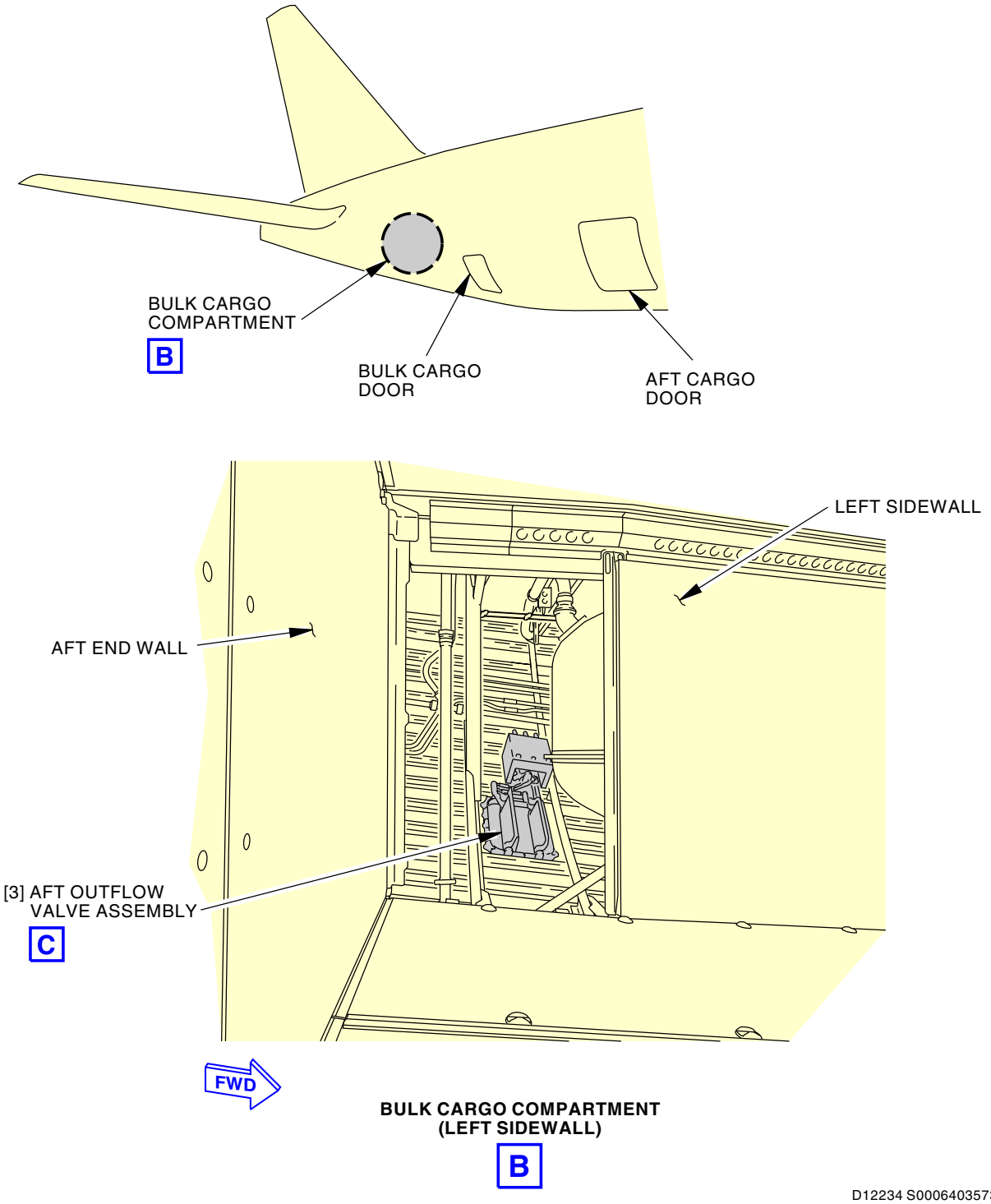

Outflow Valve Assembly Installation
Figure 402/21-31-03-990-824 (Sheet 2 of 6)

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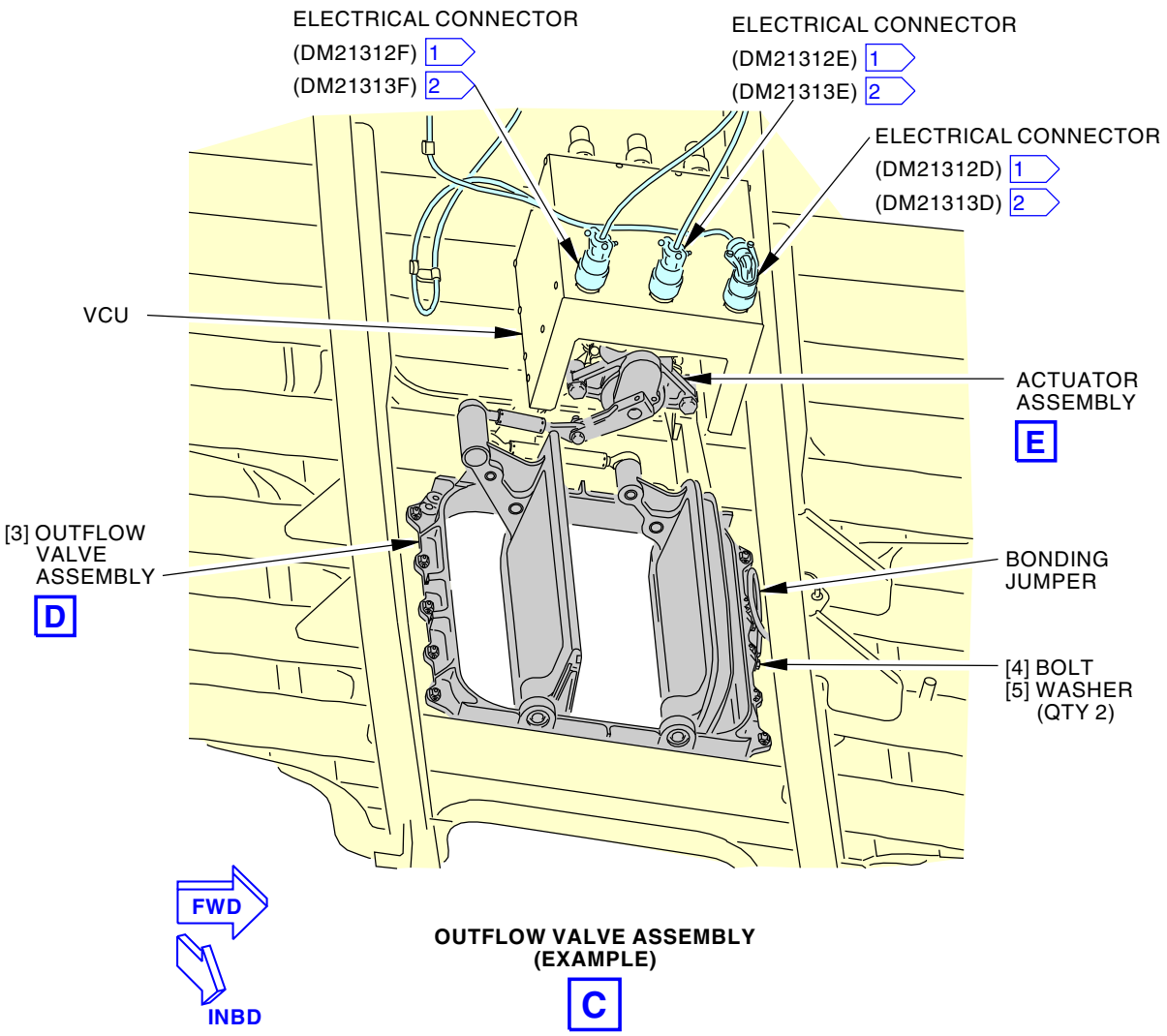

1 FORWARD OUTFLOW VALVE ASSEMBLY
2 AFT OUTFLOW VALVE ASSEMBLY

D12276 S0006403574_V2

Outflow Valve Assembly Installation
Figure 402/21-31-03-990-824 (Sheet 3 of 6)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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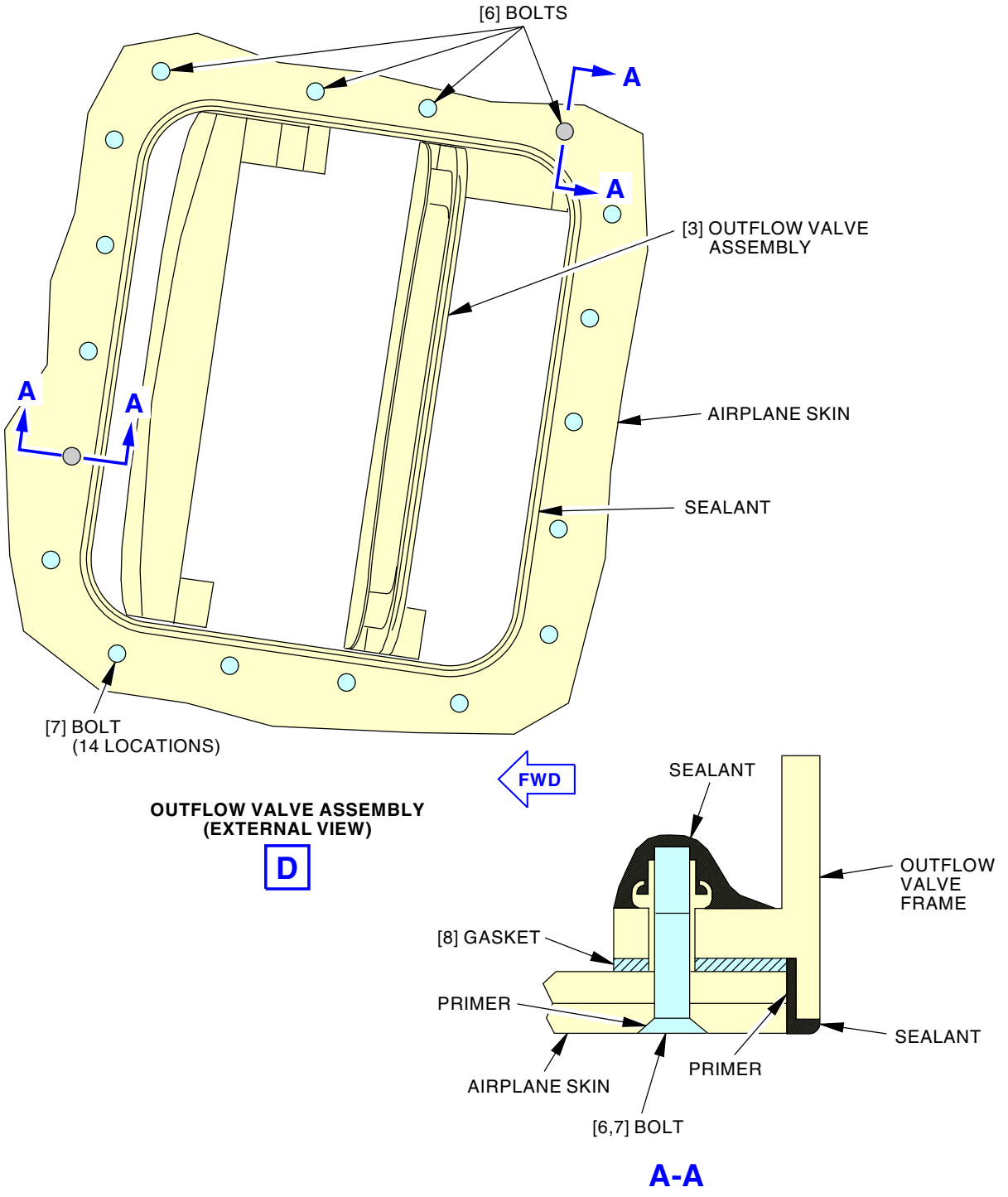

Outflow Valve Assembly Installation
Figure 402/21-31-03-990-824 (Sheet 4 of 6)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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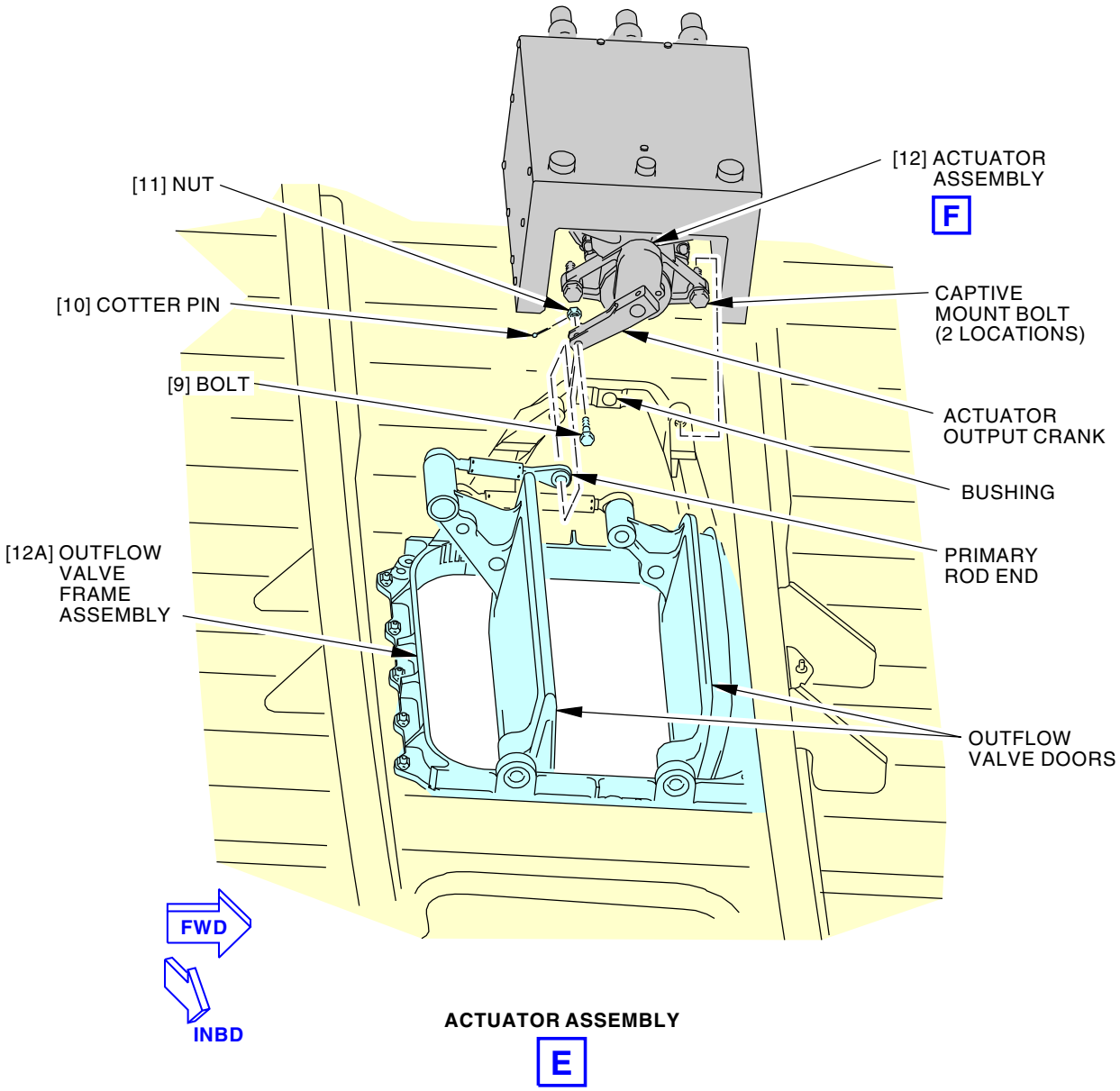

D12289 S0006403576_V2

Outflow Valve Assembly Installation
Figure 402/21-31-03-990-824 (Sheet 5 of 6)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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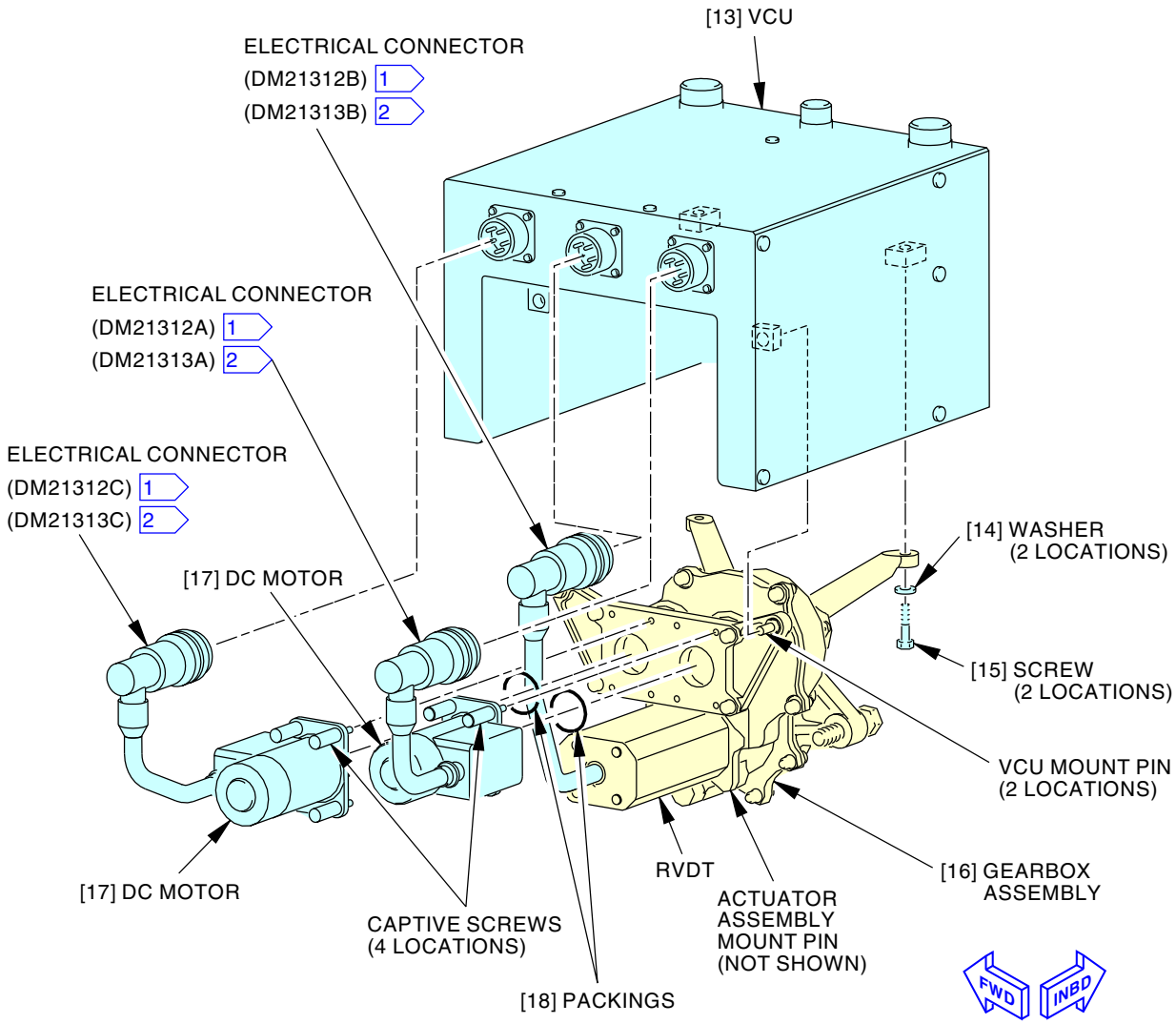

ACTUATOR ASSEMBLY

F

D12292 S0006403577_V2

Outflow Valve Assembly Installation
Figure 402/21-31-03-990-824 (Sheet 6 of 6)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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TASK 21-31-03-400-819-001

13. Outflow Valve Frame Assembly Installation

Figure 402

A. General

(1) The forward outflow valve assembly can only be installed from within the airplane. The aft outflow valve assembly can be installed either from within the airplane or from outside of the airplane. You must be careful when you try to install the aft outflow valve assembly from outside of the airplane, because it is difficult to get access to the electrical connectors and damage could occur to the electrical connectors and to the outflow valve assembly.

(2) This task gives instructions to assemble the actuator assembly to the outflow valve frame assembly, and to install the outflow valve assembly.

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Valve assembly	21-31-03-01A-220	ARO ALL
		21-31-03-01A-510	ARO ALL
10	Pin	21-31-03-01A-070	ARO ALL
		21-31-03-01A-355	ARO ALL

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Prepare for Installation

SUBTASK 21-31-03-420-039

(1) Do these steps to install the actuator assembly [12] on to the outflow valve frame assembly [12A]:

(a) Put the actuator assembly [12] in its position on the outflow valve frame assembly [12A].

1) Make sure the actuator assembly mount pin engages the bushing in the outflow valve frame.

(b) Install the captive mount bolts into the actuator assembly [12]

(c) Measure the maximum torque before the captive mount bolts are flush against the outflow valve subassembly. This is the rundown torque value. Record the value. Apply a final torque to each captive mount bolt of 55 in-lb (6 N·m) to 65 in-lb (7 N·m), plus the rundown torque value that was recorded for that bolt.

NOTE: The value of the rundown torque can be large and it can change for each bolt and locking mechanism.

(d) Install the bolt [9] and nut [11] to connect the primary rod end to the actuator output crank.

1) Tighten the bolt [9] to 55-65 pound-inches.

2) Install the cotter pin [10].

E. Installation

SUBTASK 21-31-03-420-040

(1) Do this task to install the outflow valve assembly [3]:

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Outflow Valve Assembly Installation, TASK 21-31-03-400-806-001

——— END OF TASK ———

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CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has the following tasks which give instructions for the removal and installation of the forward and aft cabin pressure outflow valve (CPOV) assemblies and their individual subcomponents:

(1) Cabin Pressure Outflow Valve (CPOV) Assembly Removal

(a) This task gives instructions to remove the outflow valve frame/doors and the Valve Controller Assembly (VCA) as a single unit from the fuselage. Instructions are also provided to disassemble the Valve Controller Assembly (VCA) from the outflow valve frame (if needed).

(2) Cabin Pressure Outflow Valve (CPOV) Assembly Installation

(a) This task gives instructions to install the outflow valve frame/doors and the Valve Controller Assembly (VCA) as a single unit to the fuselage.

(3) Valve Controller Assembly (VCA) Removal

(a) The task gives instructions to remove the VCA from the outflow valve frame.

(4) Valve Controller Assembly (VCA) Installation

(a) This task gives instructions to install the VCA to the outflow valve frame.

(5) Electronic Control Unit (ECU) Removal

(a) This task gives instructions to remove the left ECU and right ECU from the Valve Controller Assembly (VCA).

(6) Electronic Control Unit (ECU) Installation

(a) This task gives instructions to install the left ECU and right ECU to the Valve Controller Assembly (VCA).

(7) DC Auto Motor Removal

(a) This task gives instructions to remove the left DC auto motor and right DC auto motor from the Valve Controller Assembly (VCA).

(8) DC Auto Motor Installation

(a) This task gives instructions to install the left DC auto motor and right DC auto motor to the Valve Controller Assembly (VCA).

(9) Rotary Actuator Assembly Removal

(a) Removal of the Rotary Actuator Assembly consists of the removal of the Valve Controller Assembly (VCA) from the outflow valve frame and removal of both Electronic Control Units (ECU) from the VCA.

(10) Rotary Actuator Assembly Installation

(11) Cabin Pressure Outflow Valve (CPOV) Frame Assembly Removal

(12) Cabin Pressure Outflow Valve (CPOV) Frame Assembly Installation

(13) Cabin Pressure Outflow Valve (CPOV) Assembly Installation Test

B. Each outflow valve assembly consists of these components:

(1) Outflow valve

(a) Valve doors

(b) Valve frame

(c) Valve linkages

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(2) Valve Controller Assembly (VCA)
  (a) Left Electronic Control Unit (ECU)
  (b) Right Electronic Control Unit (ECU)
  (c) Rotary Actuator Assembly
    1) Left DC Auto Motor (brushless)
    2) Right DC Auto Motor (brushless)
    3) Manual Control Module with DC motor (not an LRU)
    4) Gearbox (not an LRU)
    5) Wire harness
    6) Connector bracket

C. The forward cabin pressure outflow valve assembly is found under the floor panel below the Left Power Management Panel, P110, along left sidewall in the Main Equipment Center (MEC).

D. The aft cabin pressure outflow valve assembly is found behind the left sidewall liner at the aft end of the bulk cargo compartment.

TASK 21-31-03-000-812-002

2. Cabin Pressure Outflow Valve (CPOV) Assembly Removal

(Figure 401)

A. General

(1) The forward outflow valve assembly can only be removed from within the airplane. The aft outflow valve assembly can be removed either from within the airplane or from outside of the airplane. You must be careful when you try to remove the aft outflow valve assembly from outside of the airplane, because it is difficult to get access to the electrical connectors and damage could occur to the electrical connectors and to the outflow valve assembly.

B. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-31-03-010-052-002

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-31-03-010-053-002

(2) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(b) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center (View A, Figure 401).

SUBTASK 21-31-03-010-054-002

(3) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(b) Do the steps which follow when you want to remove the aft outflow valve assembly [3] from within the airplane:

1) Do this task: Open the Door, TASK 52-36-00-860-801.

2) Remove the left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-000-801).

SUBTASK 21-31-03-010-055-002

CAUTION DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(4) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

F. Outflow Valve Assembly Removal

SUBTASK 21-31-03-020-037-002

(1) For the forward outflow valve assembly [3], disconnect these three electrical connectors on the top of the VCA [11]: DM21312D, DM21312E, and DM21312F.

SUBTASK 21-31-03-860-044-002

(2) For the aft outflow valve assembly [3], disconnect these three electrical connectors on the top of the VCA [11]: DM21313D, DM21313E, and DM21313F.

SUBTASK 21-31-03-020-038-002

(3) Remove the screw [5] and the washers [6] to disconnect the bonding jumper [4] from the outflow valve assembly [3].

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SUBTASK 21-31-03-020-039-002

(4) Remove the sealant between the outflow valve assembly [3] and the airplane skin.

SUBTASK 21-31-03-020-040-002

(5) Remove the four bolts [7] along the upper edge of the opening in the airplane skin and the 14 bolts [8] along the forward, aft, and lower edges of the opening in the airplane skin.

NOTE: The four bolts removed from the upper edge should be installed in the same location during outflow valve assembly installation.

SUBTASK 21-31-03-020-042-002

(6) Remove the outflow valve assembly [3] from the opening in the airplane skin.

SUBTASK 21-31-03-020-043-002

(7) Remove and discard the gasket [9] from the outflow valve assembly [3].

SUBTASK 21-31-03-020-044-002

(8) Remove the sealant from the nutplates on the outflow valve frame, and any remaining sealant around the opening in the airplane skin.

SUBTASK 21-31-03-020-045-002

(9) If it is necessary, you can remove the VCA [11] from the outflow valve frame [12] as follows (Figure 402):

(a) Remove the cotter pin [14], nut [15], and the bolt [13] that connect the actuator output crank to the primary rod end.

(b) Remove the bolts [17] and washers [16] that hold the VCA [11] to the outflow valve frame [12].

(c) Move the VCA [11] toward the valve doors to disengage the mounting pin from the bushing in the outflow valve frame [12].

(d) Remove the VCA [11].

——— END OF TASK ———

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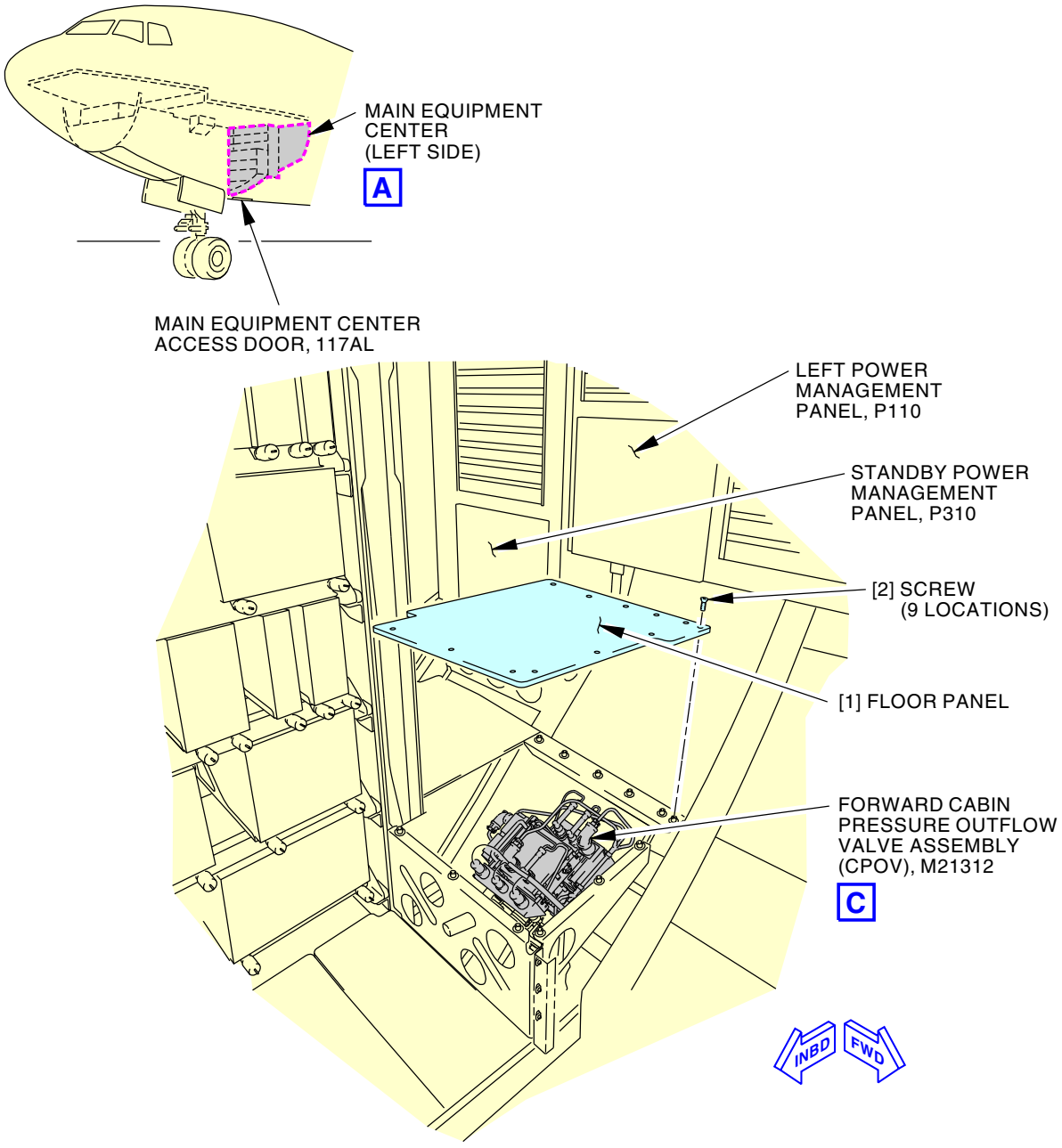

Cabin Pressure Outflow Valve (CPOV) Assembly Installation
Figure 401/21-31-03-990-813-002 (Sheet 1 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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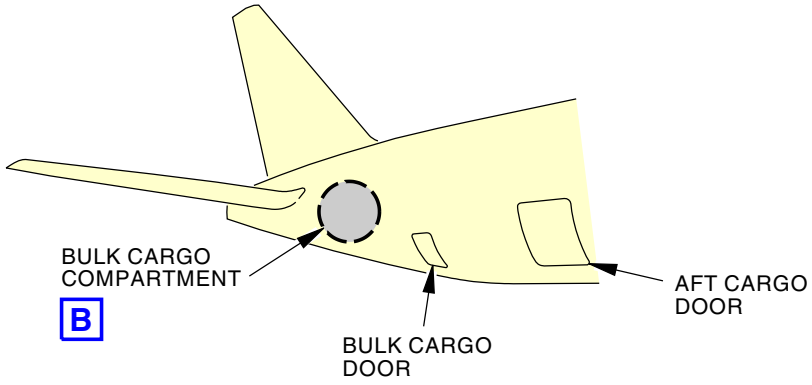

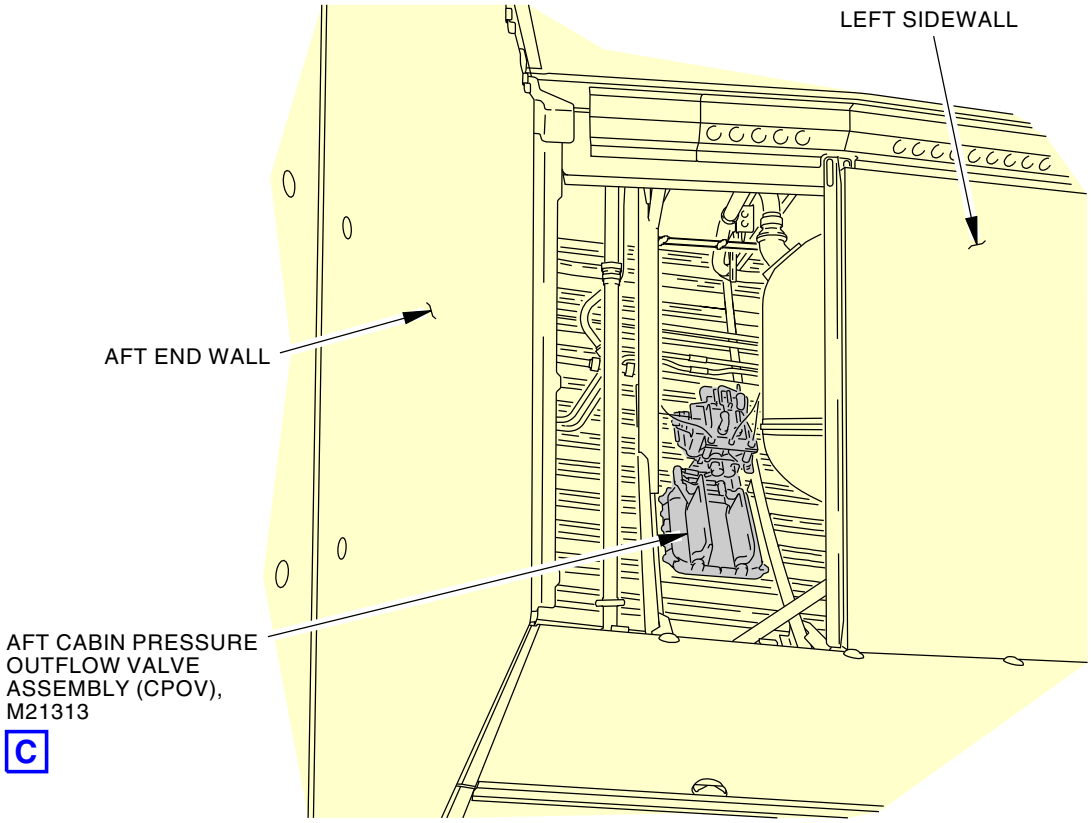

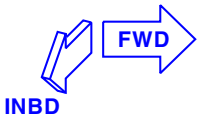

**BULK CARGO COMPARTMENT
(LEFT SIDEWALL)**

B

W68772 S0000127692_V2

**Cabin Pressure Outflow Valve (CPOV) Assembly Installation
Figure 401/21-31-03-990-813-002 (Sheet 2 of 4)**

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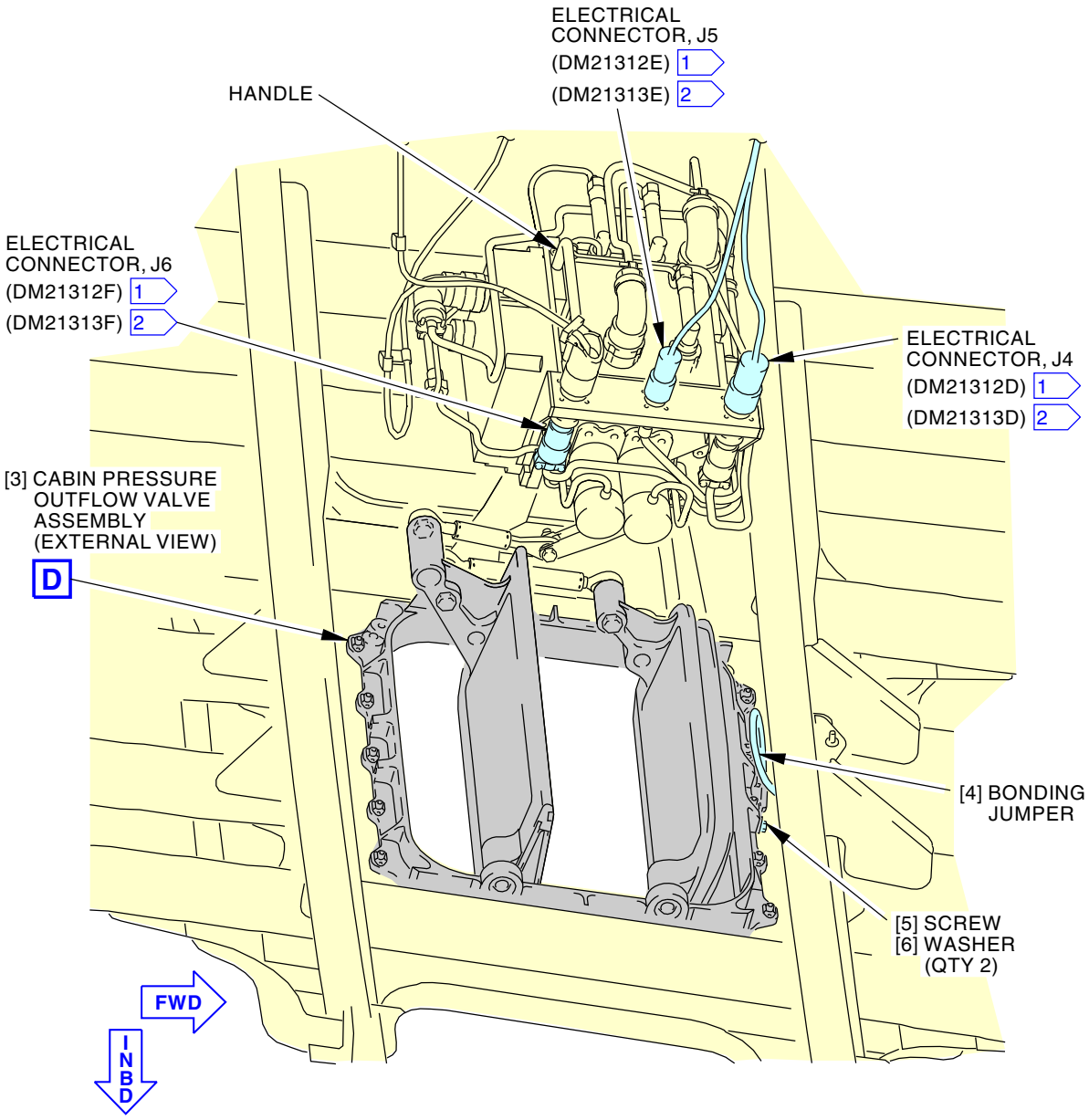

CABIN PRESSURE OUTFLOW VALVE ASSEMBLY (CPOV)

C

NOTE:

AFT CPOV IS SHOWN,
FORWARD CPOV IS THE SAME.

1 FORWARD OUTFLOW VALVE ASSEMBLY

2 AFT OUTFLOW VALVE ASSEMBLY

W68834 S0000127402_V2

Cabin Pressure Outflow Valve (CPOV) Assembly Installation
Figure 401/21-31-03-990-813-002 (Sheet 3 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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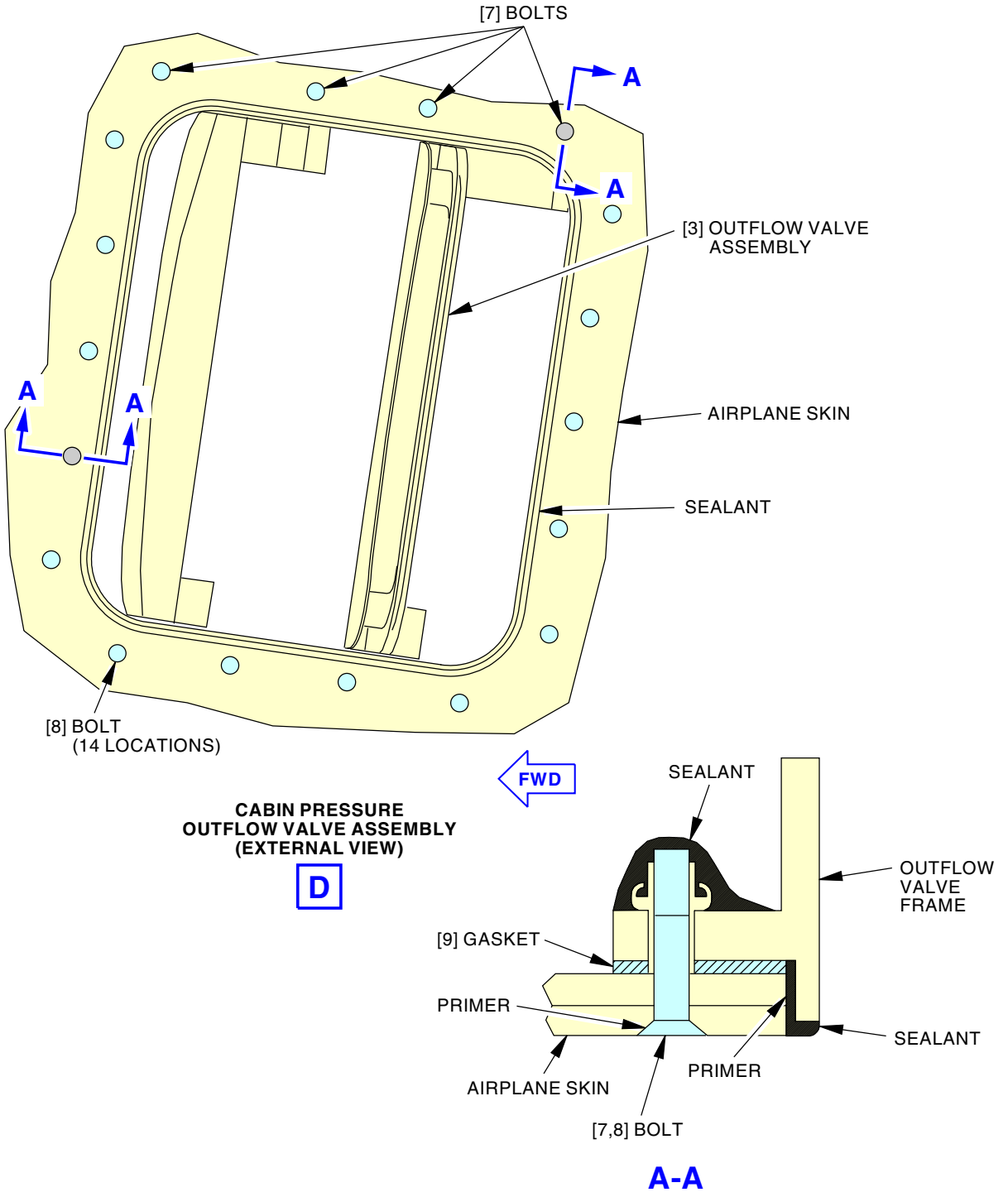

CABIN PRESSURE OUTFLOW VALVE ASSEMBLY (EXTERNAL VIEW)

D

Cabin Pressure Outflow Valve (CPOV) Assembly Installation
Figure 401/21-31-03-990-813-002 (Sheet 4 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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TASK 21-31-03-400-811-002

3. Cabin Pressure Outflow Valve (CPOV) Assembly Installation

(Figure 401)

A. General

(1) The forward outflow valve assembly can only be installed from within the airplane. The aft outflow valve assembly can be installed either from within the airplane or from outside of the airplane. You must be careful when you try to install the aft outflow valve assembly from outside of the airplane, because it is difficult to get access to the electrical connectors and damage could occur to the electrical connectors and to the outflow valve assembly.

(2) This task gives instructions to install the outflow valve assembly. Instructions to assemble the Valve Controller Assembly (VCA) to the outflow valve frame assembly are also included.

B. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
51-31-01-390-806	Aerodynamic Smoother Application (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Outflow valve assembly	21-31-03-01A-045	ARO ALL
		21-31-03-01A-330	ARO ALL

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

F. Outflow Valve Assembly Installation

(Figure 401)

SUBTASK 21-31-03-910-022-002

CAUTION

DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(1) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

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SUBTASK 21-31-03-410-056-002

(2) Do these steps if the VCA [11] was disassembled from the outflow valve frame [12] (Figure 402):

(a) Put the VCA [11] in its position on the outflow valve frame [12].

1) Make sure the VCA [11] mounting pin engages the bushing in the outflow valve frame [12].

(b) Install the washers [16] and bolts [17] that hold the VCA [11] to the outflow valve frame [12].

1) Tighten the bolts [17] to 60 ±5 in-lb (6.8 ±0.6 N·m).

2) If the bolts are configured for lockwire, then install MS20995C32 lockwire, G01048 to the bolts [17].

(c) Install the bolt [13] and nut [15] to connect the primary rod end to the actuator output crank.

1) Tighten the bolt [13] and nut [15] to 60 ±5 in-lb (6.8 ±0.6 N·m).

2) Install a new cotter pin [14].

SUBTASK 21-31-03-160-016-002

(3) Remove any sealant that remains on the airplane skin, nutplates and the frame of the outflow valve.

SUBTASK 21-31-03-410-057-002

(4) Install a gasket [9] on the opening in the airplane skin.

SUBTASK 21-31-03-390-008-002

(5) Apply primer, C00259, to the fastener holes (View A-A, Figure 401).

SUBTASK 21-31-03-420-028-002

(6) Install the outflow valve assembly [3] in the opening of the airplane skin:

(a) Put the outflow valve assembly [3] into the opening.

(b) Align the holes in the outflow valve assembly [3] frame with the holes in the airplane skin and the gasket [9].

SUBTASK 21-31-03-420-029-002

(7) Loosely install the four bolts [7] along the upper edge of the opening in the airplane skin.

NOTE: The four bolts removed from the upper edge during outflow valve assembly removal should be installed in the same location during installation.

SUBTASK 21-31-03-420-030-002

(8) Loosely install the 14 bolts [8] along the forward, aft, and lower edges of the opening in the airplane skin.

SUBTASK 21-31-03-420-031-002

(9) Center the frame of the outflow valve assembly [3] in the opening of the airplane skin.

SUBTASK 21-31-03-420-032-002

(10) In a diagonal pattern, tighten the four bolts [7] and the 14 bolts [8] to 23 ±4 in-lb (2.6 ±0.5 N·m).

SUBTASK 21-31-03-390-009-002

(11) Apply the sealant, A02315, to the nutplates on the outflow valve frame (View A-A, Figure 401).

SUBTASK 21-31-03-390-010-002

(12) Apply the sealant, A00247, between the outflow valve frame and the airplane skin (View A-A, Figure 401).

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(a) For the correct application of an aerodynamic seal, do this task: Aerodynamic Smoother Application, TASK 51-31-01-390-806.

SUBTASK 21-31-03-420-033-002

(13) Install the washers [6] and the screw [5] to connect the bonding jumper [4] to the outflow valve frame [12].

(a) Make sure that the bonding jumper [4], the screw [5], the washers [6], and the outflow valve frame [12] are clean before you connect them together.

SUBTASK 21-31-03-430-003-002

(14) For the forward outflow valve assembly [3], connect these three electrical connectors to the top of the VCA [11]: DM21312D, DM21312E, and DM21312F.

SUBTASK 21-31-03-430-004-002

(15) For the aft outflow valve assembly [3], connect these three electrical connectors to the top of the VCA [11]: DM21313D, DM21313E, and DM21313F.

SUBTASK 21-31-03-860-045-002

(16) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-860-046-002

(17) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-03-710-012-002

(18) Do this task: Cabin Pressure Outflow Valve (CPOV) Assembly Installation Test, TASK 21-31-03-720-801-002.

——— END OF TASK ———

TASK 21-31-03-000-813-002

4. Valve Controller Assembly (VCA) Removal

(Figure 402)

A. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)

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(Continued)

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-31-03-010-056-002

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-860-047-002

(2) To remove the VCA [11] from the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(b) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center (Figure 401).

SUBTASK 21-31-03-860-048-002

(3) To remove the VCA [11] from the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(b) Do this task: Open the Door, TASK 52-36-00-860-801

(c) Remove the left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-000-801).

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SUBTASK 21-31-03-910-023-002

CAUTION

DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(4) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

E. VCA Removal

SUBTASK 21-31-03-030-001-002

(1) For the forward outflow valve assembly [3], disconnect these three electrical connectors on the top of the VCA [11]: DM21312D, DM21312E, and DM21312F.

SUBTASK 21-31-03-010-057-002

(2) For the aft outflow valve assembly [3], disconnect these three electrical connectors on the top of the VCA [11]: DM21313D, DM21313E, and DM21313F.

SUBTASK 21-31-03-030-002-002

(3) Do the following to remove the VCA [11] from the outflow valve frame [12]:

(a) Remove the cotter pin [14], nut [15], and the bolt [13] that connect the actuator output crank to the primary rod end.

(b) Remove the bolts [17] and washers [16] that hold the VCA [11] to the outflow valve frame [12].

(c) Move the VCA [11] toward the outflow valve doors to disengage the mounting pin from the bushing in the outflow valve frame [12].

(d) Remove the VCA [11].

——— END OF TASK ———

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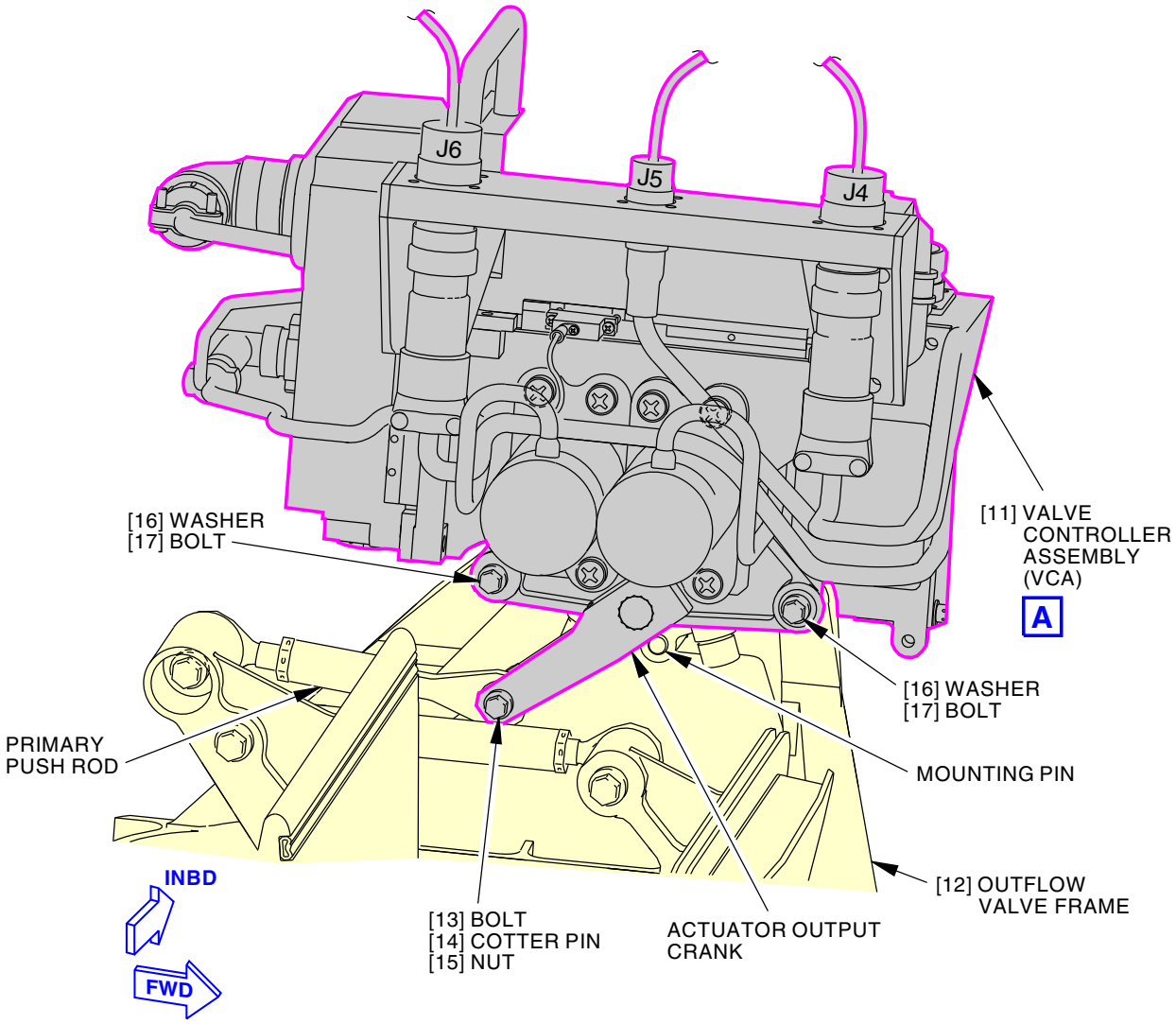

W69571 S0000127404_V2

Valve Controller Assembly (VCA) Installation
Figure 402/21-31-03-990-818-002 (Sheet 1 of 2)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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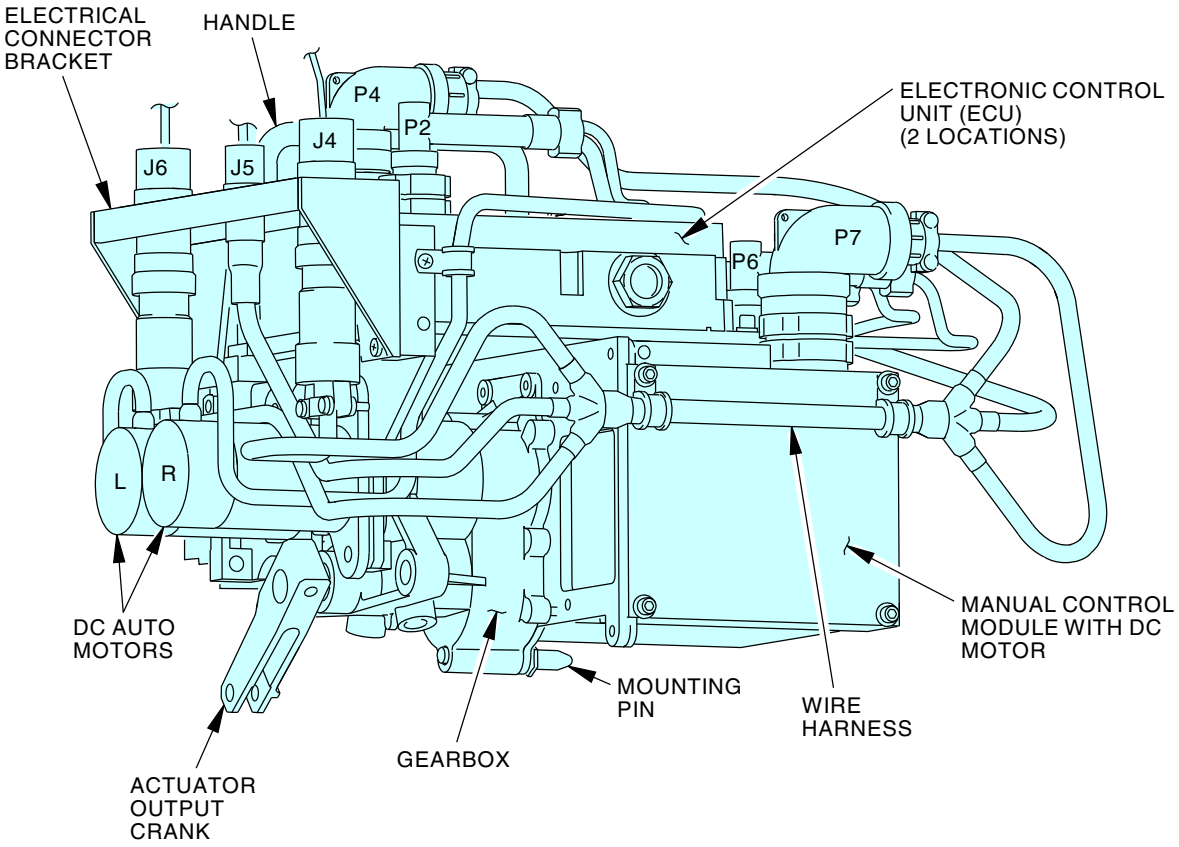

VALVE CONTROLLER ASSEMBLY (VCA)

A

W68911 S0000127405_V2

Valve Controller Assembly (VCA) Installation
Figure 402/21-31-03-990-818-002 (Sheet 2 of 2)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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TASK 21-31-03-400-812-002

5. Valve Controller Assembly (VCA) Installation

(Figure 402)

A. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)

B. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. VCA Installation

SUBTASK 21-31-03-910-024-002

CAUTION

DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(1) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

SUBTASK 21-31-03-420-034-002

(2) Do these steps to install the VCA [11] on the outflow valve frame [12]:

(a) Put the VCA [11] in its position on the outflow valve frame [12].

1) Make sure the VCA [11] mounting pin engages the bushing in the outflow valve frame [12].

(b) Install the washers [16] and bolts [17] that hold the VCA [11] to the outflow valve frame [12].

1) Tighten the bolts [17] to 60 ±5 in-lb (6.8 ±0.6 N·m).

2) If the bolts are configured for lockwire, then install MS20995C32 lockwire, G01048 to the bolts [17].

(c) Install the bolt [13] and nut [15] to connect the primary rod end to the actuator output crank.

1) Tighten the bolt [13] and nut [15] to 60 ±5 in-lb (6.8 ±0.6 N·m).

(d) Install a new cotter pin [14].

SUBTASK 21-31-03-430-001-002

(3) For the forward outflow valve assembly [3], connect these three electrical connectors to the top of the VCA [11]: DM21312D, DM21312E, and DM21312F.

SUBTASK 21-31-03-430-002-002

(4) For the aft outflow valve assembly [3], connect these three electrical connectors to the top of the VCA [11]: DM21313D, DM21313E, and DM21313F.

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SUBTASK 21-31-03-860-049-002

(5) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-860-050-002

(6) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-03-710-013-002

(7) Do this task: Cabin Pressure Outflow Valve (CPOV) Assembly Installation Test, TASK 21-31-03-720-801-002.

——— END OF TASK ———

TASK 21-31-03-000-817-002

6. Electronic Control Unit (ECU) Removal

(Figure 403)

A. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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D. Prepare for the Removal

SUBTASK 21-31-03-010-058-002

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-860-051-002

(2) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(b) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center (Figure 401).

SUBTASK 21-31-03-860-052-002

(3) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(b) Do the steps which follow when you want to remove the aft outflow valve assembly [3] from within the airplane:

1) Do this task: Open the Door, TASK 52-36-00-860-801.

2) Remove the left sidewall liner at the aft end of the bulk cargo compartment. To remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-31-03-910-025-002

CAUTION

DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(4) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

E. ECU Removal

SUBTASK 21-31-03-030-003-002

(1) Do the following steps to remove the left ECU [23] from the VCA [11]:

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(a) Disconnect electrical connectors P1 and P3 from the left ECU [23].

(b) Disconnect personality plug P8 from the left ECU [23].

(c) Loosen the captive screws [22] that hold the left ECU [23] to the VCA [11].

(d) Remove the left ECU [23].

SUBTASK 21-31-03-030-004-002

(2) Do the following steps to remove the right ECU [21] from the VCA [11]:

(a) Disconnect connectors P2 and P4 from the right ECU [21].

(b) Disconnect personality plug P9 from the right ECU [21].

(c) Loosen the captive screws [22] that hold the right ECU [21] to the VCA [11].

(d) Remove the right ECU [21].

——— END OF TASK ———

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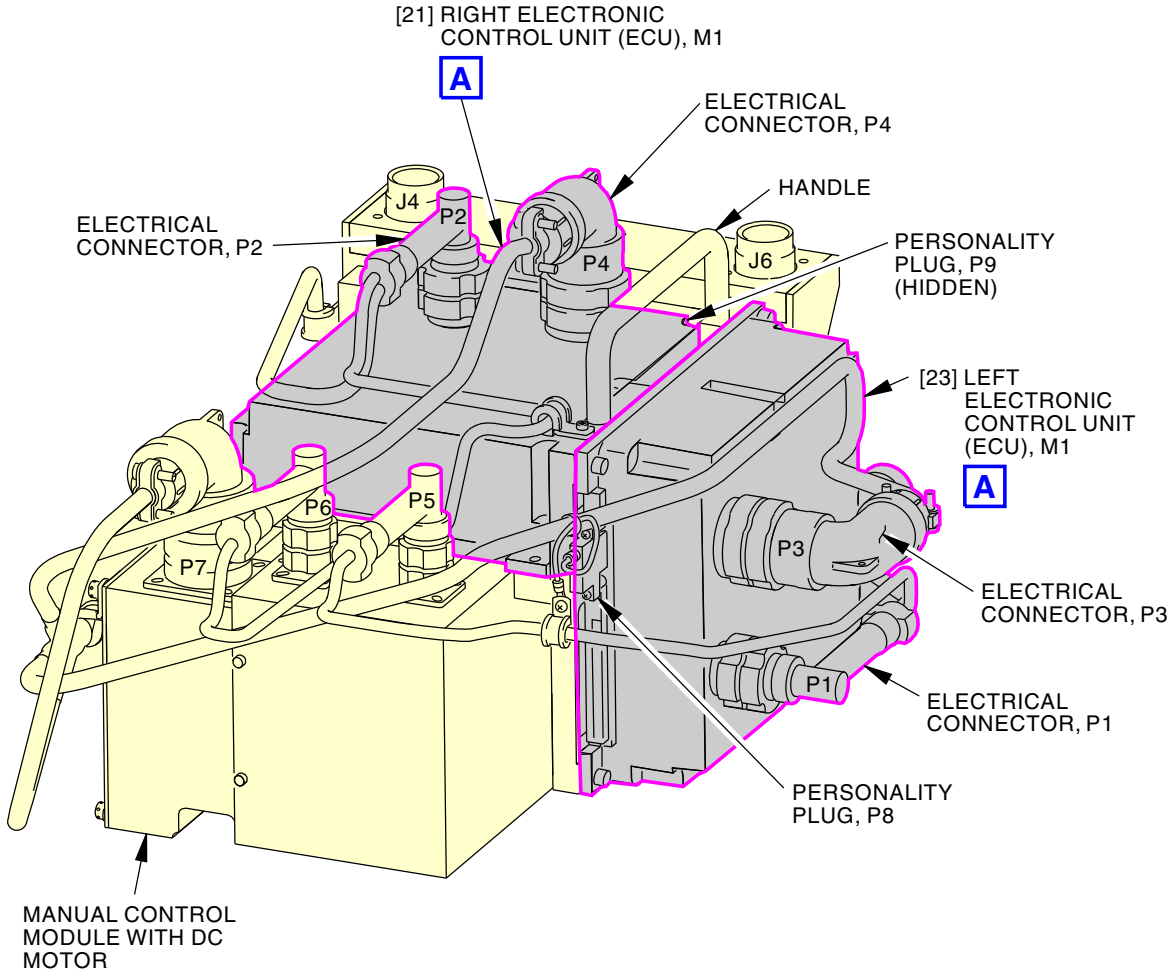

VALVE CONTROLLER ASSEMBLY (VCA)

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Electronic Control Unit (ECU) Installation
Figure 403/21-31-03-990-821-002 (Sheet 1 of 3)

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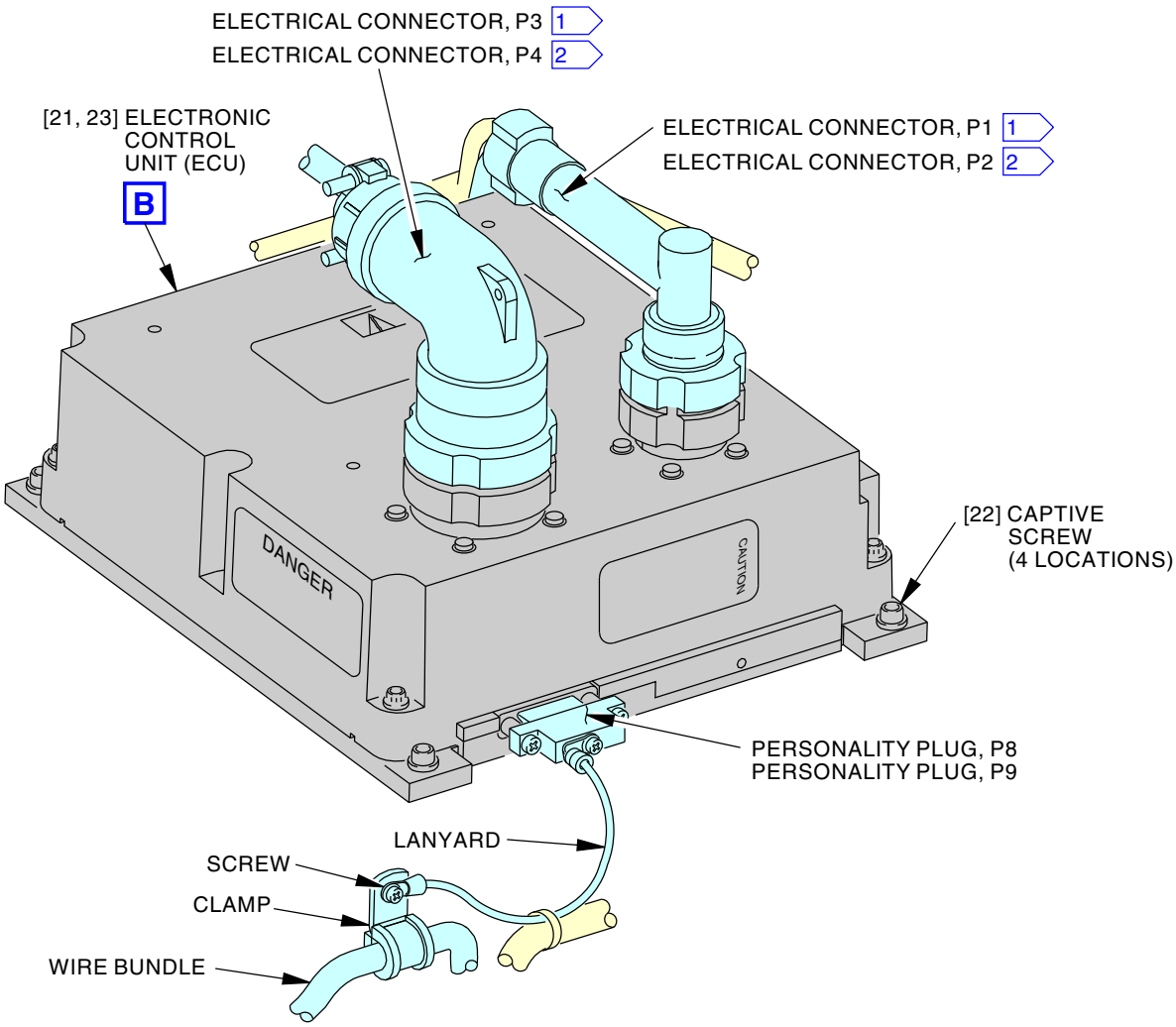

ELECTRONIC CONTROL UNIT (ECU)

A

1 LEFT ECU
2 RIGHT ECU

W69752 S0000127939_V2

Electronic Control Unit (ECU) Installation
Figure 403/21-31-03-990-821-002 (Sheet 2 of 3)

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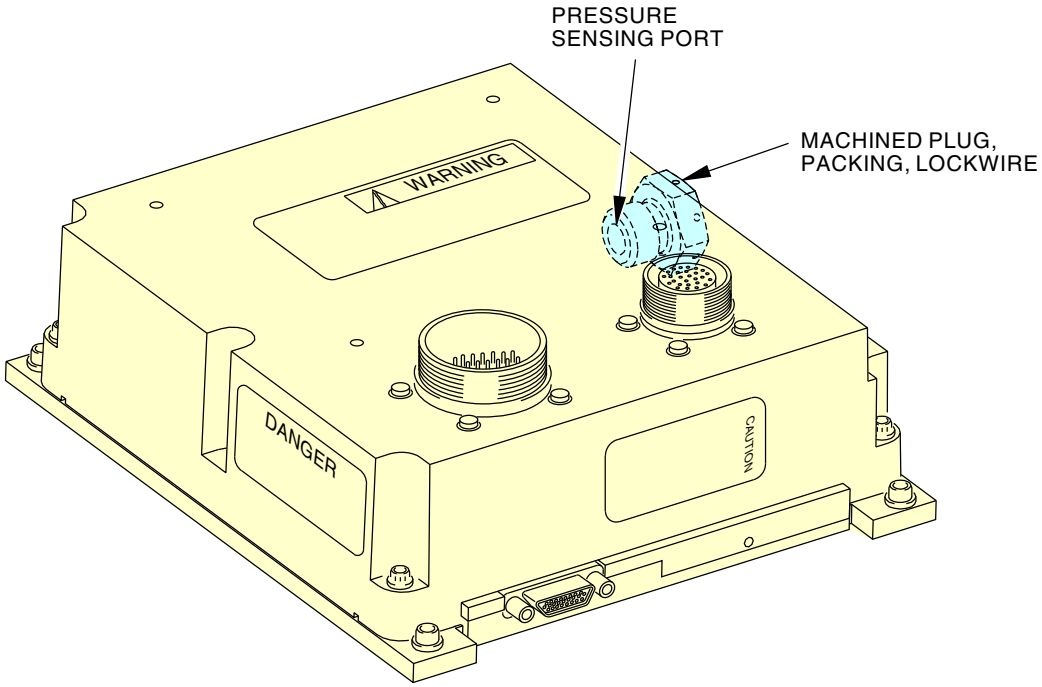

ELECTRONIC CONTROL UNIT (ECU)

B

W69878 S0000128131_V2

Electronic Control Unit (ECU) Installation
Figure 403/21-31-03-990-821-002 (Sheet 3 of 3)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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TASK 21-31-03-400-816-002

7. Electronic Control Unit (ECU) Installation

(Figure 403)

A. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

C. Prepare for the Installation

SUBTASK 21-31-03-910-026-002

CAUTION DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(1) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

D. ECU Installation

SUBTASK 21-31-03-420-035-002

(1) Do the following steps to install the right ECU [21] to the VCA [11]:

(a) Put the right ECU [21] in its position on the VCA [11].

1) Make sure the receptacles J2, J4, and J9 are near the output crank.

(b) Tighten the captive screws [22].

(c) Connect connectors P2 and P4 to the right ECU [21].

(d) Connect personality plug P9 to the right ECU [21].

(2) Do the following steps to install the left ECU [23] to the VCA [11]:

(a) Put the left ECU [23] in its position on the VCA [11].

1) Make sure the receptacles J1, J3, and J8 are near the opposite end of the VCA [11] from the actuator output crank.

(b) Tighten the captive screws [22].

(c) Connect connectors P1 and P3 to the left ECU [23].

(d) Connect personality plug P8 to the left ECU [23].

SUBTASK 21-31-03-860-061-002

(3) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

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Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-860-062-002

(4) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-03-710-014-002

(5) Do this task: Cabin Pressure Outflow Valve (CPOV) Assembly Installation Test, TASK 21-31-03-720-801-002.

——— END OF TASK ———

TASK 21-31-03-000-815-002

8. DC Auto Motor Removal

(Figure 404)

A. General

(1) Each DC auto motor and attached wire harness with two connectors is removed and installed as a unit.

B. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-31-03-010-059-002

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-860-053-002

(2) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(b) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center (Figure 401).

SUBTASK 21-31-03-860-054-002

(3) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(b) Do this task: Open the Door, TASK 52-36-00-860-801.

(c) Remove the left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-000-801).

SUBTASK 21-31-03-910-027-002

CAUTION

DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(4) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

F. DC Auto Motor Removal

SUBTASK 21-31-03-020-046-002

(1) Do the steps that follow to remove the left DC auto motor [31] from the VCA [11]:

(a) Disconnect the electrical connector P1 from the left ECU [23].

(b) Disconnect the electrical connector P5 from the top of the VCA [11].

(c) Loosen the screw [33] on the clamp [34] that holds the left DC auto motor [31] wire harness to the front of the VCA [11].

1) Remove the screw [33] and clamp [34] from the lanyard [35] the and left DC auto motor [31] wire harness.

(d) Loosen the screw [36] on the clamp [37] that holds the left DC auto motor [31] wire harness to the rear of the VCA [11].

1) Remove the screw [36] and clamp [37] from the lanyard [38] and left DC auto motor [31] wire harness.

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(e) Loosen the captive screws [32] that hold the left DC auto motor [31] to the VCA [11].

(f) Remove the left DC auto motor [31].

SUBTASK 21-31-03-020-047-002

(2) Do the steps that follow to remove the right DC auto motor [41] from the VCA [11]:

(a) Disconnect the electrical connector P4 from the right ECU [21].

(b) Disconnect the electrical connector P6 from the top of the VCA [11].

(c) Loosen the screw [43] on the clamp [44] that holds the right DC auto motor [41] wire harness to the front of the VCA [11].

1) Remove the screw [43] and clamp [44] from the right DC auto motor [41] wire harness.

(d) Loosen the screw [45] on the clamp [46] that holds the right DC auto motor [41] wire harness to the rear of the VCA [11].

1) Remove the screw [45] and clamp [46] from the right DC auto motor [41] wire harness.

(e) Loosen the captive screws [42] that hold the right DC auto motor [41] to the VCA [11].

(f) Remove the right DC auto motor [41].

——— END OF TASK ———

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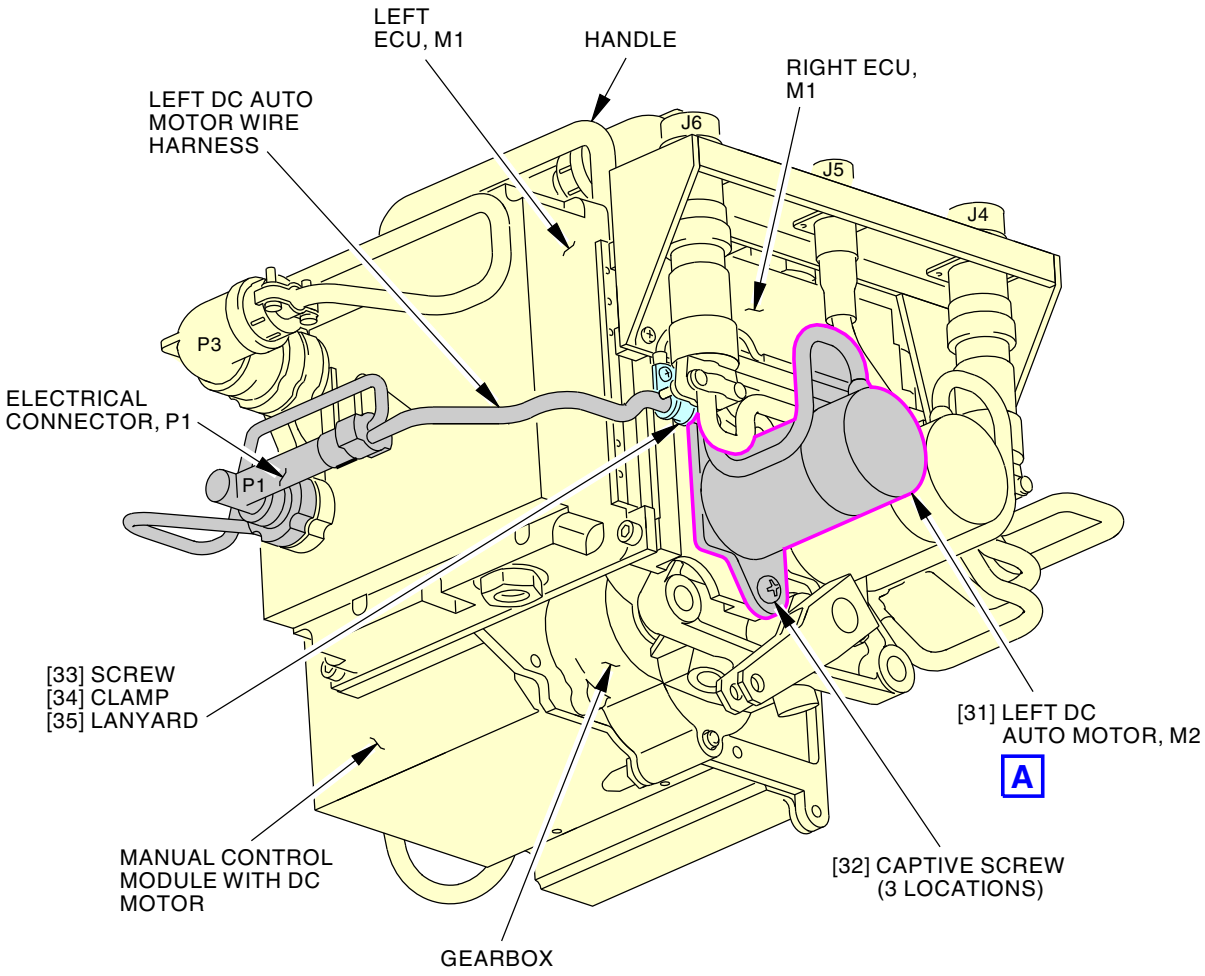

**VALVE CONTROLLER ASSEMBLY (VCA)
(LEFT SIDE)**

W70427 S0000128101_V2

**DC Auto Motor Installation
Figure 404/21-31-03-990-816-002 (Sheet 1 of 4)**

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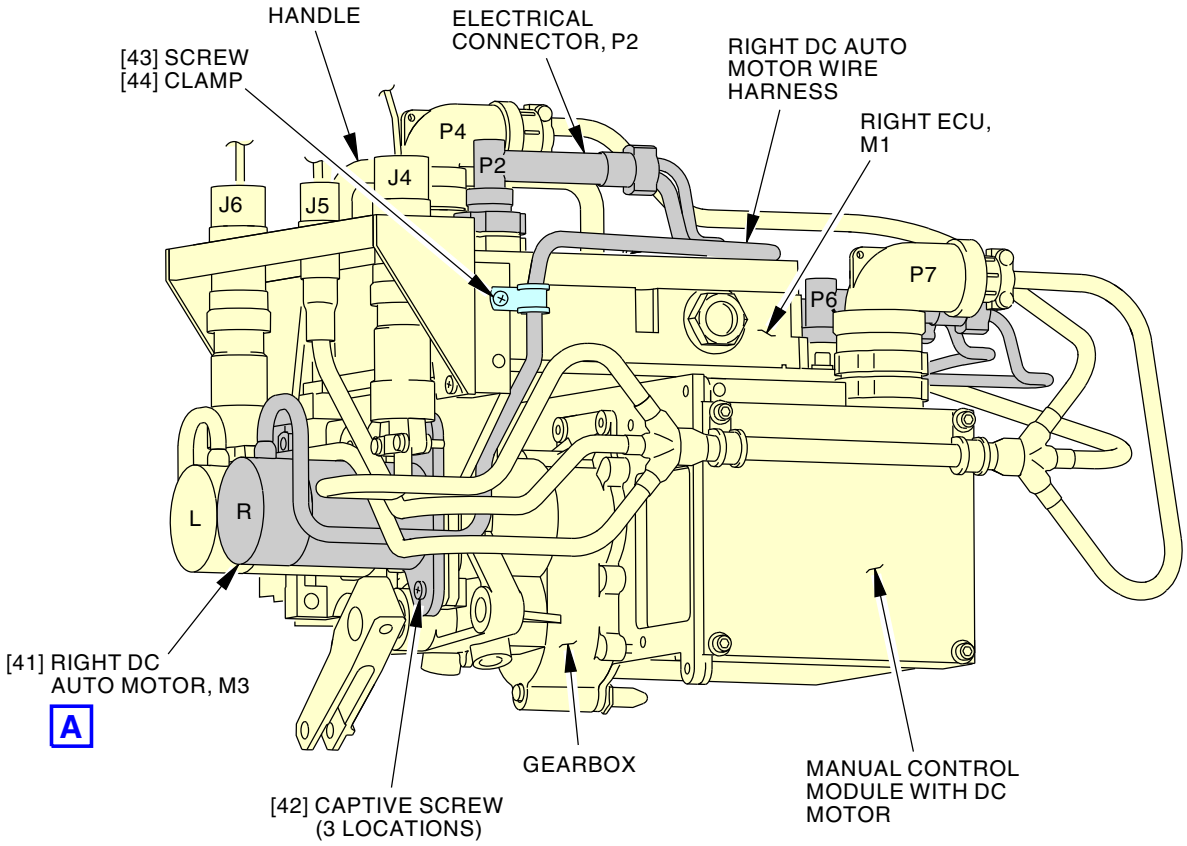

**VALVE CONTROLLER ASSEMBLY (VCA)
(RIGHT SIDE)**

W70533 S0000128097_V2

**DC Auto Motor Installation
Figure 404/21-31-03-990-816-002 (Sheet 2 of 4)**

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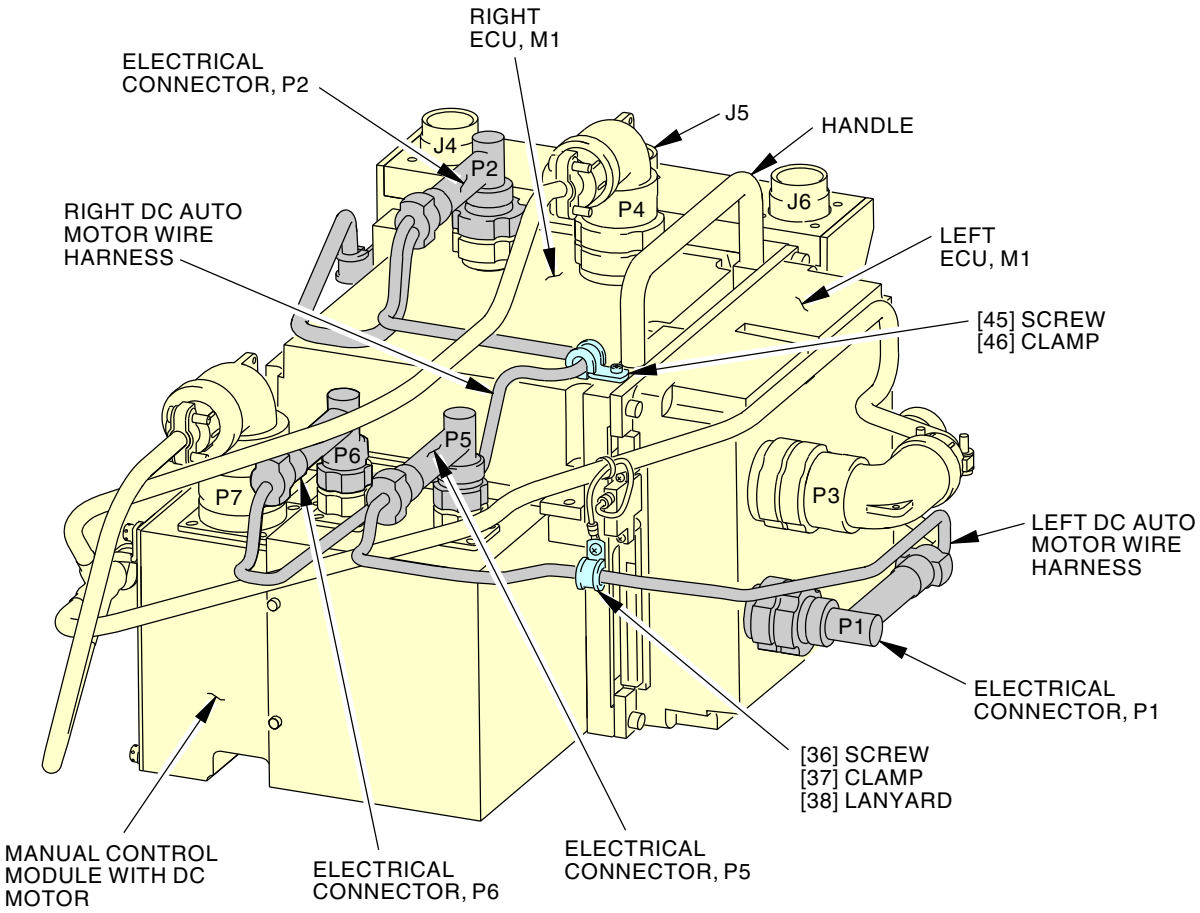

**VALVE CONTROLLER ASSEMBLY (VCA)
(BACK SIDE)**

W70605 S0000128098_V2

**DC Auto Motor Installation
Figure 404/21-31-03-990-816-002 (Sheet 3 of 4)**

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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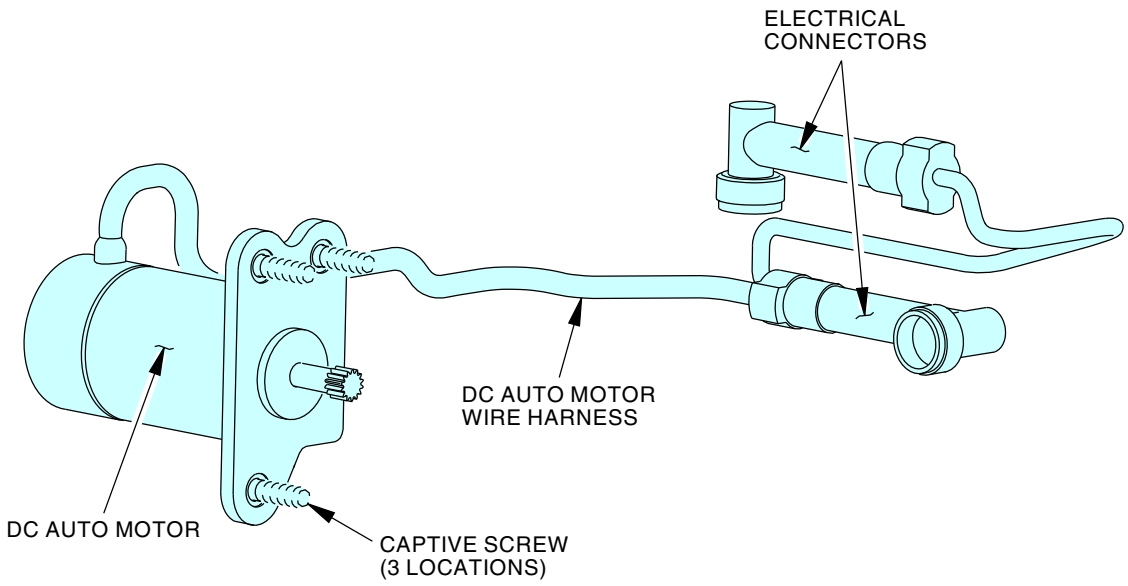

DC AUTO MOTOR

A

W70513 S0000128099_V2

DC Auto Motor Installation
Figure 404/21-31-03-990-816-002 (Sheet 4 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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TASK 21-31-03-400-814-002

9. DC Auto Motor Installation

(Figure 404)

A. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)

B. Consumable Materials

Reference	Description	Specification
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. DC Auto Motor Installation

SUBTASK 21-31-03-910-028-002

CAUTION

DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(1) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

SUBTASK 21-31-03-410-072-002

(2) Do the steps that follow to install the right DC auto motor [41] on the VCA [11]:

(a) Wet the captive screw [42] with primer, C00259.

(b) Put the right DC auto motor [41] in its position on the VCA [11].

1) Tighten the captive screw [42] to 27 ±2 in-lb (3.1 ±0.3 N·m).

(c) Connect the electrical connector P4 to the right ECU [21].

(d) Connect the electrical connector P6 to the top of the VCA [11].

(e) Do the following to attach the right DC auto motor [41] wire harness to the VCA [11]:

1) Put the clamp [44] and the screw [43] on the right DC auto motor [41] wire harness between connector P4 and the right DC auto motor [41].

2) Wet the threads of the screw [43] with primer, C00259.

3) Install the clamp [44] and screw [43] in its position on the VCA [11].

a) Tighten the screw [43] to 12.5 ±2.5 in-lb (1.4 ±0.3 N·m).

4) Put the clamp [46] and the screw [45] on the right DC auto motor [41] wire harness between connector P4 and connector P6.

5) Wet the threads of the screw [45] with primer, C00259.

6) Install the clamp [46] and the screw [45] in its position on the rear of the VCA [11].

a) Tighten the screw [45] to 12.5 ±2.5 in-lb (1.4 ±0.3 N·m).

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SUBTASK 21-31-03-420-036-002

(3) Do the steps that follow to install the left DC auto motor [31] to the VCA [11]:

(a) Wet the captive screws [32] with primer, C00259.

(b) Put the left DC auto motor [31] in its position on the VCA [11].

1) Tighten the captive screws [32] to 27 ±2 in-lb (3.1 ±0.3 N·m).

(c) Connect the electrical connector P1 to the left ECU [23]

(d) Connect the electrical connector P5 to the top of the VCA [11].

(e) Do the following to attach the left DC auto motor [31] wire harness to the VCA [11]:

1) Put the clamp [34], the screw [33], and the lanyard [35] on the left DC auto motor [31] wire harness between connector P1 and the left DC auto motor.

2) Wet the threads of the screw [33] with primer, C00259.

3) Put the screw [33] in its position on the front of the VCA [11].

a) Tighten the screw [33] to 12.5 ±2.5 in-lb (1.4 ±0.3 N·m).

4) Put the clamp [37], the screw [36], and the lanyard [38] on the left DC auto motor [31] wire harness between connector P1 and connector P5.

5) Wet the threads of the screw [36] with primer, C00259.

6) Install the screw [36] in its position on the rear of the VCA [11].

a) Tighten the screw [36] to 12.5 ±2.5 in-lb (1.4 ±0.3 N·m).

SUBTASK 21-31-03-860-055-002

(4) For the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-860-056-002

(5) For the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-03-710-016-002

(6) Do this task: Cabin Pressure Outflow Valve (CPOV) Assembly Installation Test, TASK 21-31-03-720-801-002.

END OF TASK

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TASK 21-31-03-000-816-002

10. Rotary Actuator Assembly Removal

(Figure 405)

A. General

(1) The rotary actuator assembly consists of the gearbox, manual drive assembly (DC motor, RVDTs, CCA controller), DC auto motors, connector bracket, and wire harness.

B. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare for the Removal

SUBTASK 21-31-03-010-060-002

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-860-057-002

(2) For the rotary actuator assembly on the forward outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(b) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center (Figure 401).

SUBTASK 21-31-03-860-058-002

(3) For the rotary actuator assembly on the aft outflow valve assembly [3], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

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Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(b) For the aft outflow valve assembly [3] do these steps:

1) Do this task: Open the Door, TASK 52-36-00-860-801.

2) Remove the left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-000-801).

SUBTASK 21-31-03-910-029-002

CAUTION

DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(4) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

F. Rotary Actuator Assembly Removal

SUBTASK 21-31-03-010-076-002

(1) Do the following task to remove the VCA [11] from the outflow valve assembly [3]: Valve Controller Assembly (VCA) Removal, TASK 21-31-03-000-813-002.

SUBTASK 21-31-03-010-077-002

(2) Do the following task to remove the left ECU [23] and the right ECU [21] from the VCA [11]: Electronic Control Unit (ECU) Removal, TASK 21-31-03-000-817-002.

SUBTASK 21-31-03-020-051-002

(3) Remove the rotary actuator assembly.

——— END OF TASK ———

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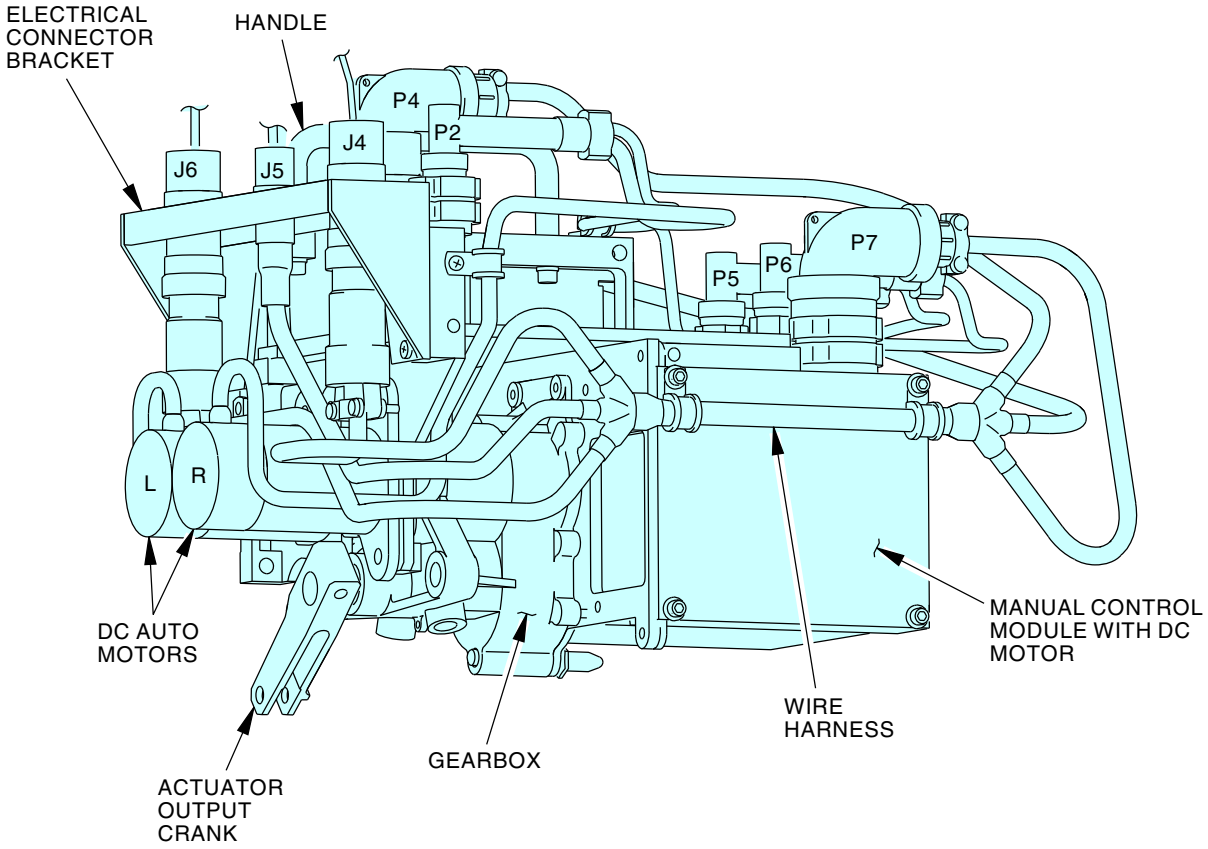

ROTARY ACTUATOR ASSEMBLY

W69630 S0000128104_V2

Rotary Actuator Assembly Installation
Figure 405/21-31-03-990-819-002

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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TASK 21-31-03-400-817-002

11. Rotary Actuator Assembly Installation

(Figure 405)

A. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

C. Rotary Actuator Assembly Installation

SUBTASK 21-31-03-910-030-002

CAUTION DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(1) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

SUBTASK 21-31-03-410-073-002

(2) Do the following task to install the left ECU [23] and the right ECU [21] on the rotary actuator: Electronic Control Unit (ECU) Installation, TASK 21-31-03-400-816-002.

NOTE: Do not do the Outflow Valve Assembly Installation Test until the VCA is installed on the outflow valve assembly in the next step.

SUBTASK 21-31-03-410-074-002

(3) Do the following task to install the VCA [11] to the outflow valve assembly [3]: Valve Controller Assembly (VCA) Installation, TASK 21-31-03-400-812-002.

——— END OF TASK ———

TASK 21-31-03-000-824-002

12. Cabin Pressure Outflow Valve (CPOV) Frame Assembly Removal

Figure 406

A. General

(1) The forward outflow valve assembly can only be removed from within the airplane. The aft outflow valve assembly can be removed either from within the airplane or from outside of the airplane. You must be careful when you try to remove the aft outflow valve assembly from outside of the airplane, because it is difficult to get access to the electrical connectors and damage could occur to the electrical connectors and to the outflow valve assembly.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

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C. Removal

SUBTASK 21-31-03-020-055

(1) Do this task to remove the outflow valve:

Cabin Pressure Outflow Valve (CPOV) Assembly Removal, TASK 21-31-03-000-812-002

SUBTASK 21-31-03-020-056

(2) Remove the VCA [11] from the outflow valve frame [12] as follows:

(a) Remove the cotter pin [14], nut [15], and the bolt [13] that connect the actuator output crank to the primary rod end.

(b) Remove the bolts [17] and washers [16] that hold the VCA [11] to the outflow valve frame [12].

(c) Move the VCA [11] toward the valve doors to disengage the mounting pin from the bushing in the outflow valve frame [12].

(d) Remove the VCA [11].

——— END OF TASK ———

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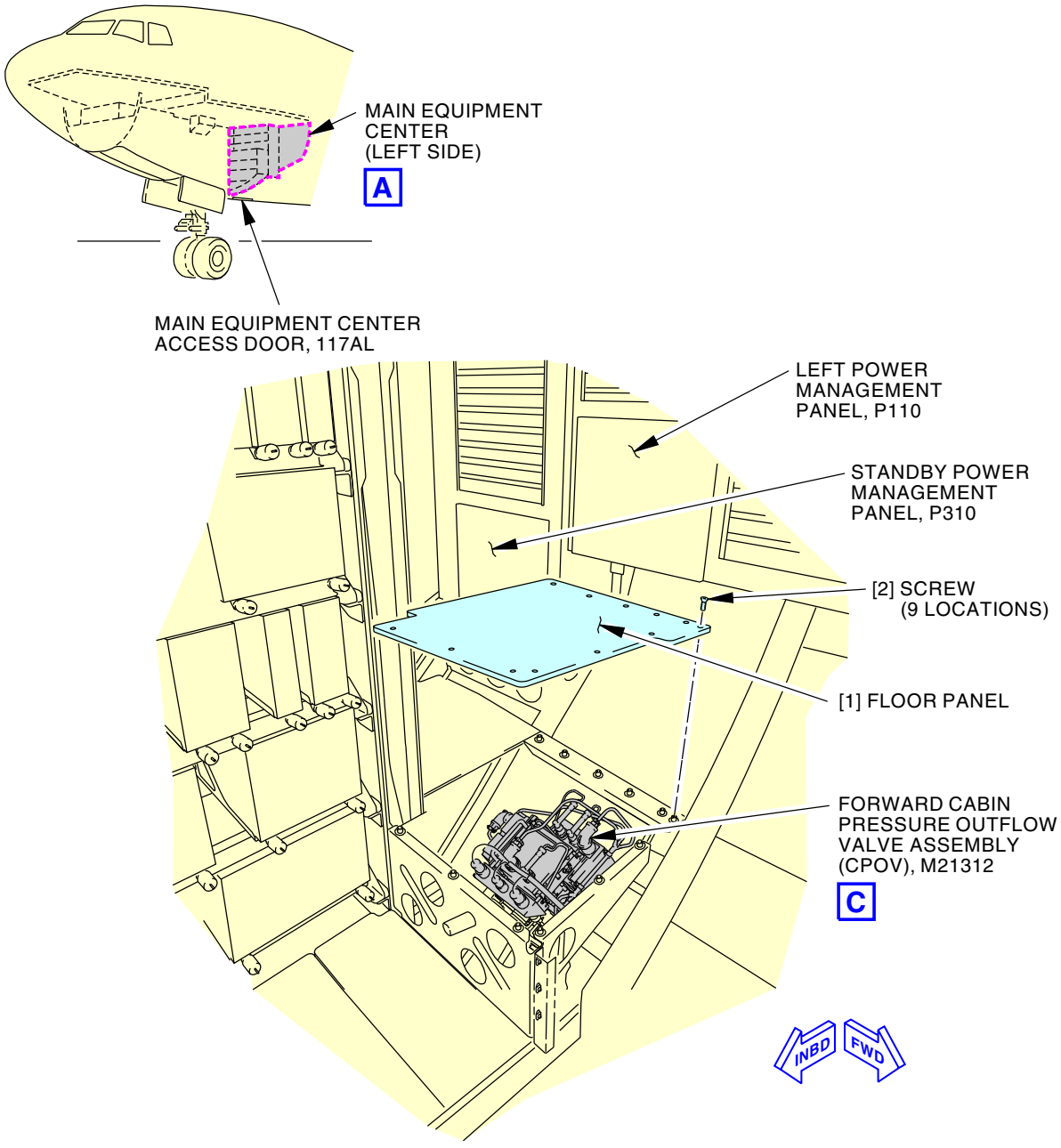

MAIN EQUIPMENT CENTER
(LEFT SIDE)

A

W68755 S0000127690_V2

Cabin Pressure Outflow Valve (CPOV) Assembly Installation
Figure 406/21-31-03-990-825 (Sheet 1 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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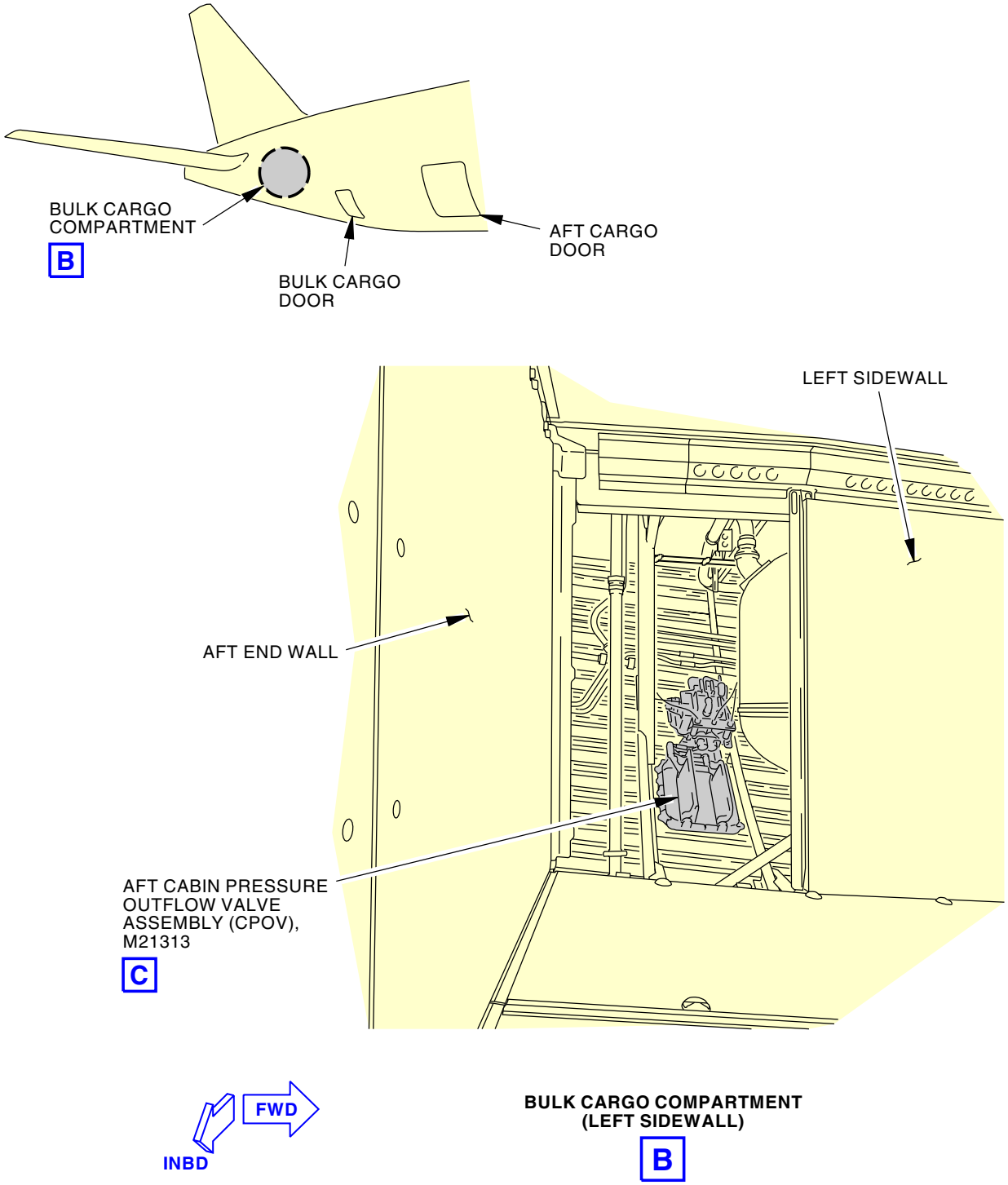

Cabin Pressure Outflow Valve (CPOV) Assembly Installation
Figure 406/21-31-03-990-825 (Sheet 2 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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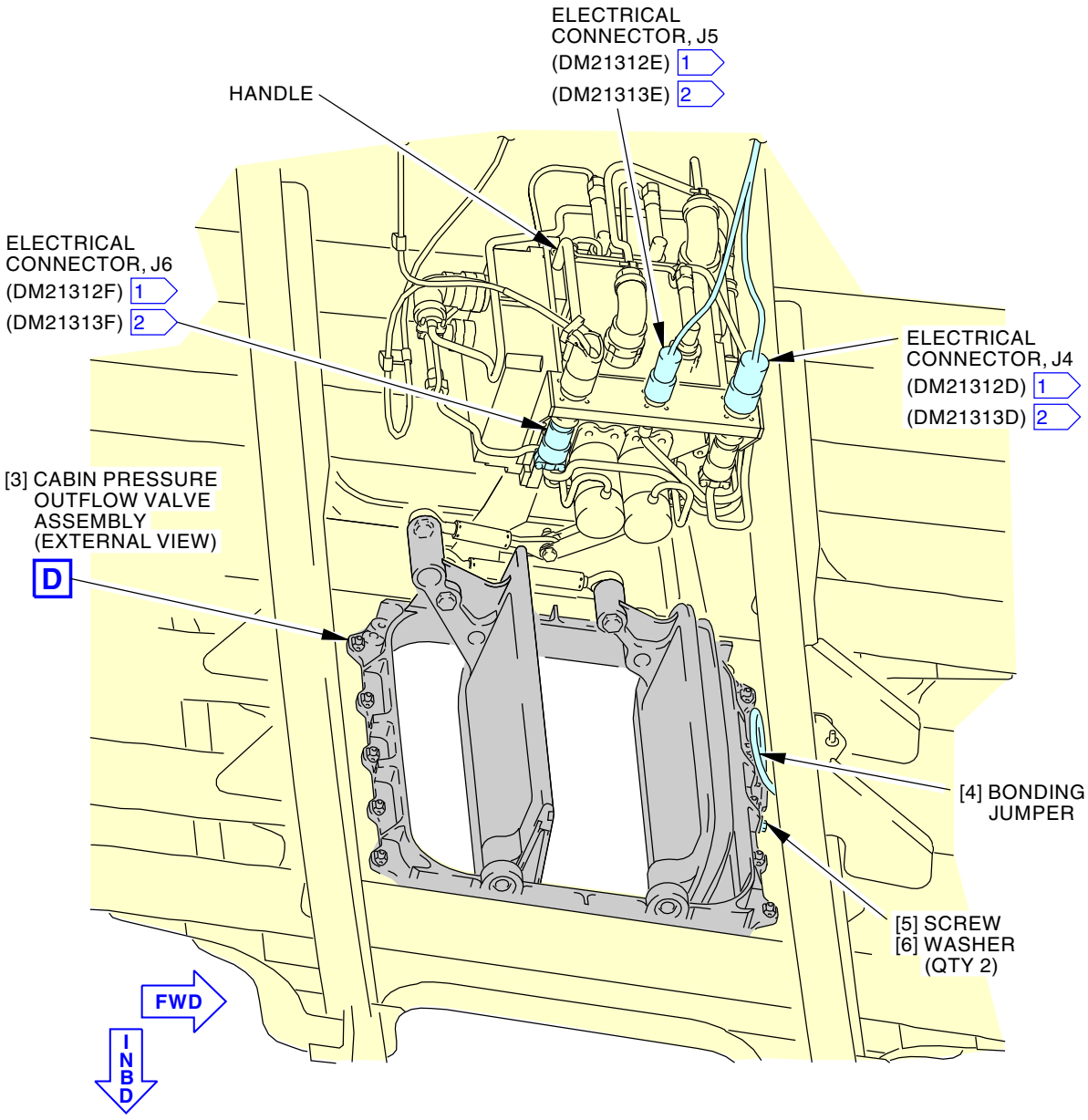

CABIN PRESSURE OUTFLOW VALVE ASSEMBLY (CPOV)

C

NOTE:

AFT CPOV IS SHOWN,
FORWARD CPOV IS THE SAME.

1 FORWARD OUTFLOW VALVE ASSEMBLY

2 AFT OUTFLOW VALVE ASSEMBLY

W68834 S0000127402_V2

Cabin Pressure Outflow Valve (CPOV) Assembly Installation
Figure 406/21-31-03-990-825 (Sheet 3 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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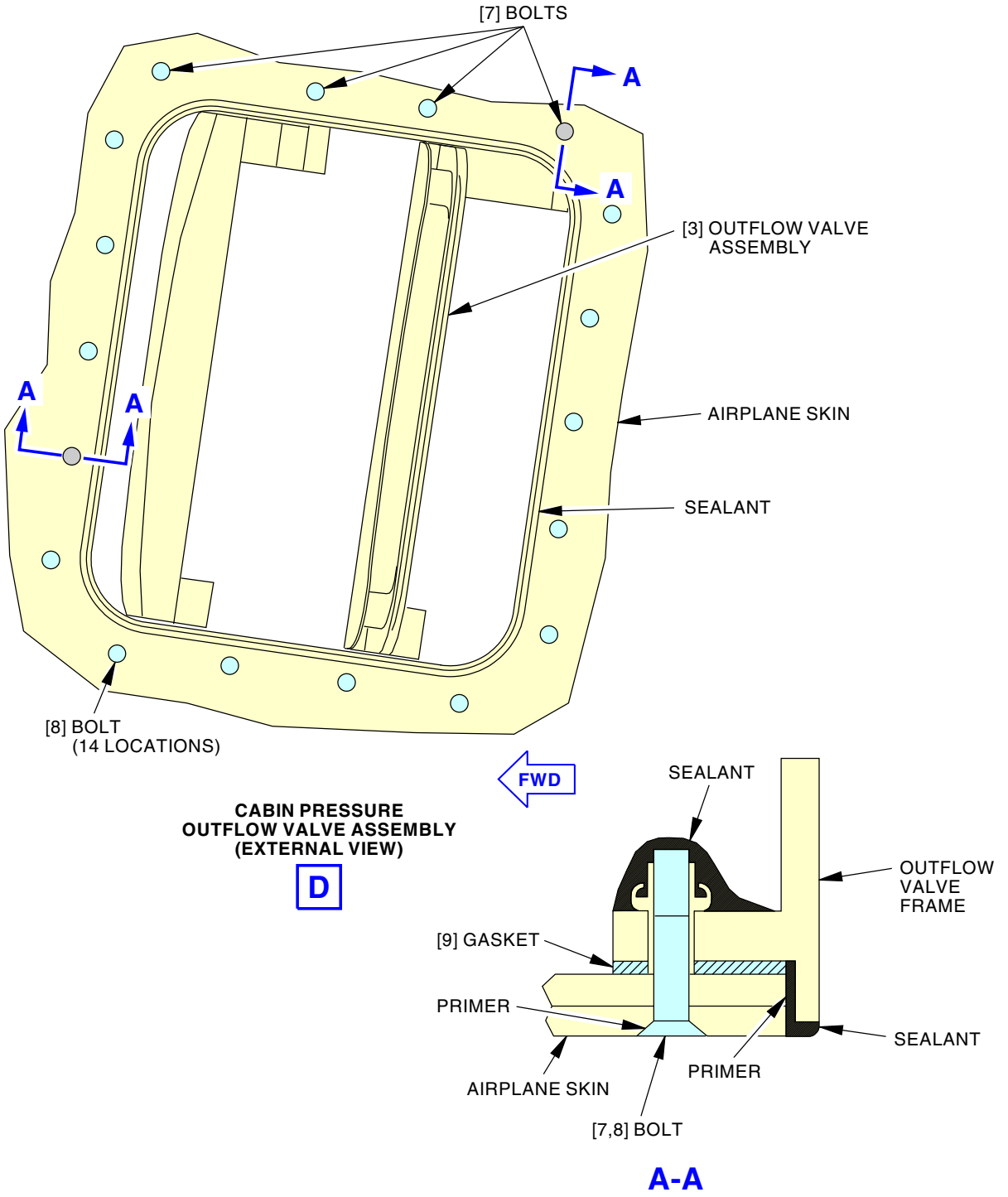

CABIN PRESSURE OUTFLOW VALVE ASSEMBLY (EXTERNAL VIEW)

D

Cabin Pressure Outflow Valve (CPOV) Assembly Installation
Figure 406/21-31-03-990-825 (Sheet 4 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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TASK 21-31-03-400-820-002

13. Cabin Pressure Outflow Valve (CPOV) Frame Assembly Installation

(Figure 406)

A. General

(1) The forward outflow valve assembly can only be installed from within the airplane. The aft outflow valve assembly can be installed either from within the airplane or from outside of the airplane. You must be careful when you try to install the aft outflow valve assembly from outside of the airplane, because it is difficult to get access to the electrical connectors and damage could occur to the electrical connectors and to the outflow valve assembly.

(2) This task gives instructions to assemble the Valve Controller Assembly (VCA) to the outflow valve frame assembly, and to install the outflow valve assembly.

B. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
14	Cotter pin	21-31-03-01A-070	ARO ALL
		21-31-03-01A-355	ARO ALL

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

F. Prepare for Installation

SUBTASK 21-31-03-760-001

CAUTION

DO NOT TOUCH THE VCA BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE VCA.

(1) Before you touch the VCA [11] on the outflow valve assembly [3], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

SUBTASK 21-31-03-420-041

(2) Do these steps to reinstall the VCA [11] on to the outflow valve frame [12] (Figure 402):

(a) Put the VCA [11] in its position on the outflow valve frame [12].

1) Make sure the VCA [11] mounting pin engages the bushing in the outflow valve frame [12].

(b) Install the washers [16] and bolts [17] that hold the VCA [11] to the outflow valve frame [12].

1) Tighten the bolts [17] to 60 ±5 in-lb (6.8 ±0.6 N·m).

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2) If the bolts are configured for lockwire, then install MS20995C32 lockwire, G01048 on to the bolts [17].

(c) Install the bolt [13] and nut [15] to connect the primary rod end to the actuator output crank.

1) Tighten the bolt [13] and nut [15] to 60 ±5 in-lb (6.8 ±0.6 N·m).

2) Install a new cotter pin [14].

G. Installation

SUBTASK 21-31-03-420-042

(1) Do this task to install the outflow valve assembly [3]: Cabin Pressure Outflow Valve (CPOV) Assembly Installation, TASK 21-31-03-400-811-002.

——— END OF TASK ———

TASK 21-31-03-720-801-002

14. Cabin Pressure Outflow Valve (CPOV) Assembly Installation Test

A. References

Reference	Title
21-31-03-760-803-002	Outflow Valve Door Adjustment (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Location Zones

Zone	Area
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Test

SUBTASK 21-31-03-820-011-002

(1) If you installed a new outflow valve frame [12] or a new VCA [11], do this task: Outflow Valve Door Adjustment, TASK 21-31-03-760-803-002.

SUBTASK 21-31-03-860-059-002

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

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E. Outflow Valve Assembly Installation Test

SUBTASK 21-31-03-710-018-002

> **WARNING** MAKE SURE THAT PERSONNEL ARE CLEAR OF THE FORWARD AND THE AFT OUTFLOW VALVE ASSEMBLIES BEFORE YOU DO THIS TEST. INJURIES TO PERSONNEL CAN OCCUR.

(1) Use a maintenance access terminal (MAT) to do the System Test of the outflow valve assembly [3]. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Pressure Control System
5) SYSTEM TEST
6) Cabin Pressure Controller Test (Left and Right)
7) CONTINUE

(b) Do the instructions that show on the MAT 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) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE
2) EXIT MAINTENANCE

SUBTASK 21-31-03-710-019-002

(2) Do a manual operation test of the outflow valve assembly [3]:

(a) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure the MAN switch-light comes on.

(b) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to CLOSE on the PRESSURIZATION Module in the pilot's overhead panel, P5.

1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to CLOSE on the EICAS ECS maintenance page.
2) Make sure the outflow valve assembly [3] is closed.

(c) Move the (FWD or AFT) OUTFLOW VALVE-MANUAL OPEN/CLOSE toggle switch to OPEN.

1) Make sure the (FWD or AFT) OUTFLOW VALVE position indication moves to OPEN on the EICAS ECS maintenance page.
2) Make sure the outflow valve assembly [3] is open.

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(d) Push the (FWD or AFT) OUTFLOW VALVE-AUTO/MAN switch-light.

1) Make sure the MAN switch-light goes off.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-410-061-002

(1) If you replaced the forward outflow valve assembly [3], put the floor panel [1] in its position below the Left Power Management Panel, P110 and install the screws [2] (Figure 401).

SUBTASK 21-31-03-410-062-002

(2) If you replaced the aft outflow valve assembly [3] from within the airplane, do these steps:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-31-03-410-063-002

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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OUTFLOW VALVE ASSEMBLY - ADJUSTMENT/TEST

1. General

A. This procedure has the task to adjust the doors for the outflow valve assembly.

B. The doors for the outflow valve assembly must be adjusted after installation of a new gearbox assembly, outflow valve frame assembly, primary push rod assembly, or the secondary push rod assembly.

TASK 21-31-03-760-802-001

2. Outflow Valve Door Adjustment

(Figure 501)

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.

(2) This procedure uses input monitoring to check the target value for the forward or aft outflow valves monitored position. If the outflow valves monitored position is not the same as the target value, then you will use manual mode control to move the outflow valve open or closed in order to reach the target value. When the outflow valve is at the target value, then you will check the actual position of the outflow valve door gap and adjust if necessary.

(3) You can get access to the forward outflow valve through the main equipment center access door. The aft outflow valve is found in the bulk cargo compartment on the left side.

B. References

Reference	Title
21-31-00-700-806-001	Cabin Pressure Control System - System Test (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1107	Gauge - Feeler, 0.0 - 0.5 Inch, Readable to 1/1000th

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

E. Procedure

SUBTASK 21-31-03-860-041-001

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

SUBTASK 21-31-03-740-012-001

(2) Use a Maintenance Access Terminal (MAT) to do input monitoring of the forward or aft outflow valve door position:

(a) Make these selections on the MAT:

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1) ONBOARD MAINTENANCE
2) OTHER FUNCTIONS
3) INPUT MONITORING
4) GENERAL INPUT
5) CONTINUE

(b) Put the cursor in the direct entry field.

(c) If L AIMS is in control use the keyboard to type this:

NOTE: If the monitored signal does not show then change from L to R AIMS.

1) L/629/SYS L/E5D/1/4-4 (for the forward outflow valve)
2) L/629/SYS L/E5D/1/5-5 (for the aft outflow valve)

(d) If R AIMS is in control use the keyboard to type this:

NOTE: If the monitored signal does not show then change from R to L AIMS.

1) R/629/SYS L/E5D/1/4-4 (for the forward outflow valve)
2) R/629/SYS L/E5D/1/5-5 (for the aft outflow valve)

(e) Select UNITS

(f) Select Hexadecimal

(g) Select CONTINUE

(h) Select RUN to start the input monitoring.

SUBTASK 21-31-03-820-009-001

(3) Read the hexadecimal value from the MAT for the monitored signal.

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE FORWARD AND THE AFT OUTFLOW VALVE ASSEMBLIES BEFORE YOU DO THIS TEST. INJURIES TO PERSONNEL CAN OCCUR.

(a) If the hexadecimal value is not equal to 00B6 then do these steps:

NOTE: If you adjust the aft outflow valve doors do the applicable instructions within the parenthesis.

1) Push the FWD (AFT) OUTFLOW VALVE - AUTO/MAN switch-light, on the P5 overhead panel, to the MAN position.
2) If the hexadecimal value is less than 00B6, then push and hold the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position until the hexadecimal value is equal to 00B6.
   a) When the hexadecimal value is close to the target value, momentarily open or close the outflow valve in small quick steps in order to reach the target value.
3) If the hexadecimal value is more than 00B6, then push and hold the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position until the hexadecimal value is equal to 00B6.
   a) When the hexadecimal value is close to the target value, momentarily open or close the outflow valve in small quick steps in order to reach the target value.

(b) If the hexadecimal value is equal to 00B6, then continue.

SUBTASK 21-31-03-010-037-001

(4) For the forward outflow valve, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-010-038-001

(5) For the aft outflow valve, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-03-820-010-001

(6) Do these steps to check the outflow valve door clearance and adjust if necessary:

(a) From outside the airplane, measure the distance between the outflow valve doors with a 0.0 - 0.5 Inch feeler gauge, STD-1107, or micrometer (0-1 inch, readable to 1/1000 inch), STD-1096.

1) Measure between the metallic surface of the forward door and the taped surface of the aft door.

2) Take the measurement at the center of each of the outflow valve doors.

3) Make sure that the measurement is between 0.039 in. (0.99 mm) and 0.111 in. (2.82 mm).

(b) If the distance between the outflow doors is not between 0.039 in. (0.99 mm) and 0.111 in. (2.82 mm), then do these steps to adjust the outflow valve doors:

1) Remove the lockwire from the two jamnuts on the primary push rod assembly.

2) Loosen the two jamnuts on the primary push rod assembly.

3) Turn the hexagonal push rod until the distance between the outflow valve doors is between 0.039 in. (0.99 mm) and 0.111 in. (2.82 mm).

NOTE: For each 0.080 in. (2.03 mm) inch out of tolerance on the door gap, you will need to turn the hexagonal push rod 1/2 turn. The direction you turn the hexagonal push rod depends on whether you want to make the primary push rod assembly shorter (decreases the distance between the doors) or longer (increases the distance between the doors).

4) Tighten the two jamnuts on the primary push rod assembly.

5) Install a new lockwire to the two jamnuts.

SUBTASK 21-31-03-730-002-001

(7) Do this task: Cabin Pressure Control System - System Test, TASK 21-31-00-700-806-001.

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SUBTASK 21-31-03-860-042-001

(8) For the forward outflow valve, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-860-043-001

(9) For the aft outflow valve, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-03-860-112-001

(10) If necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

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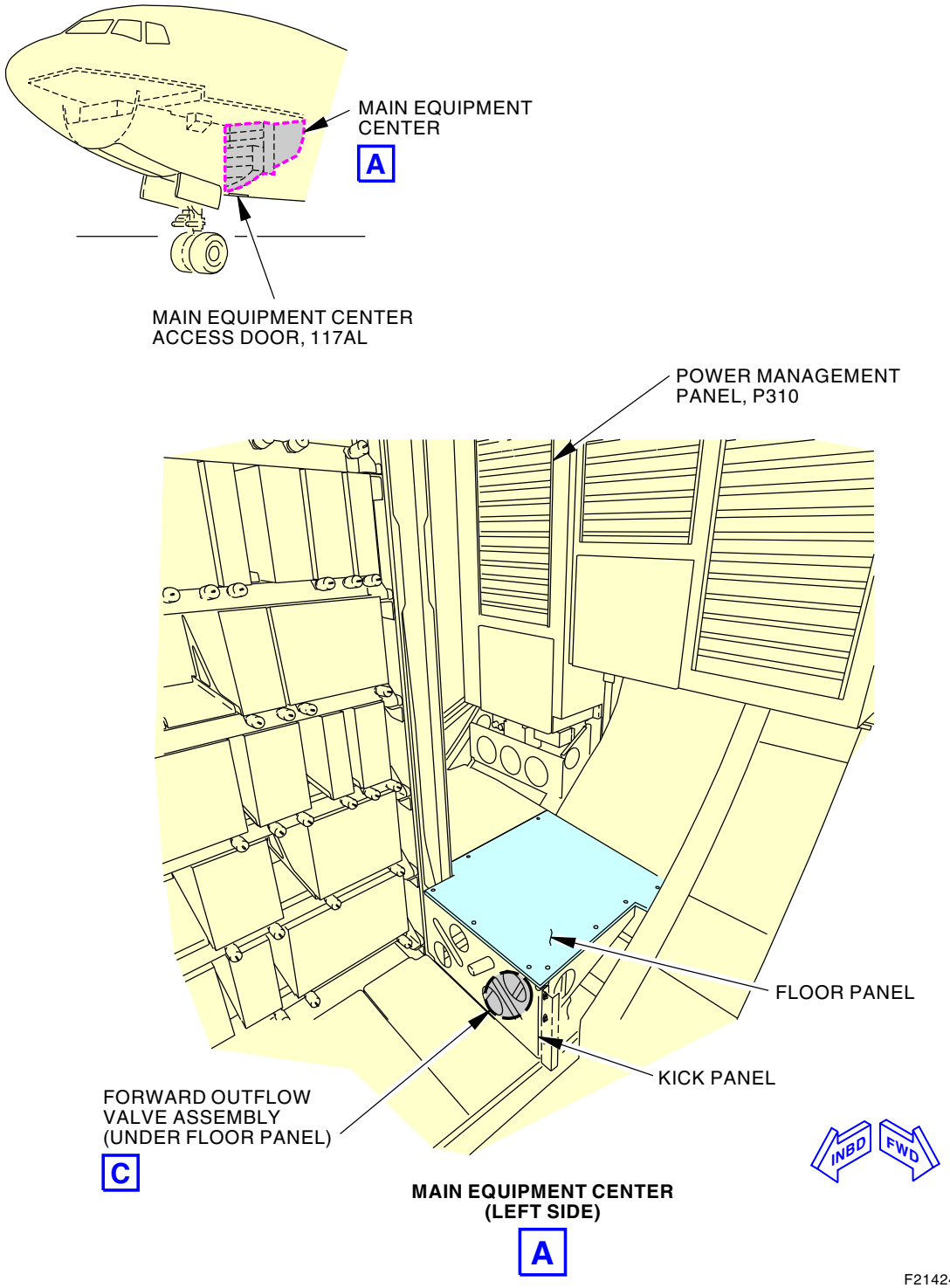

Outflow Valve Door Adjustment
Figure 501/21-31-03-990-807-001 (Sheet 1 of 4)

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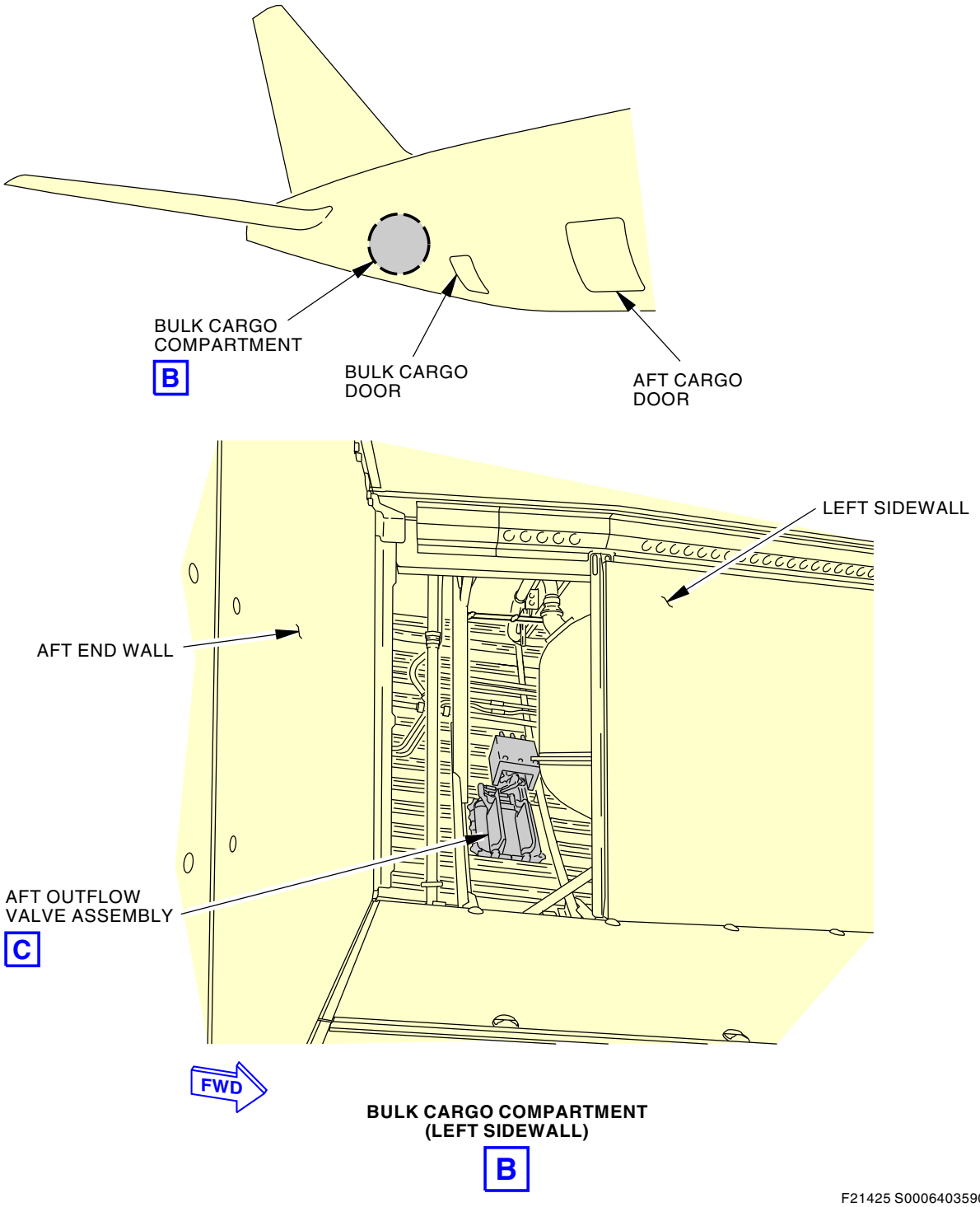

Outflow Valve Door Adjustment
Figure 501/21-31-03-990-807-001 (Sheet 2 of 4)

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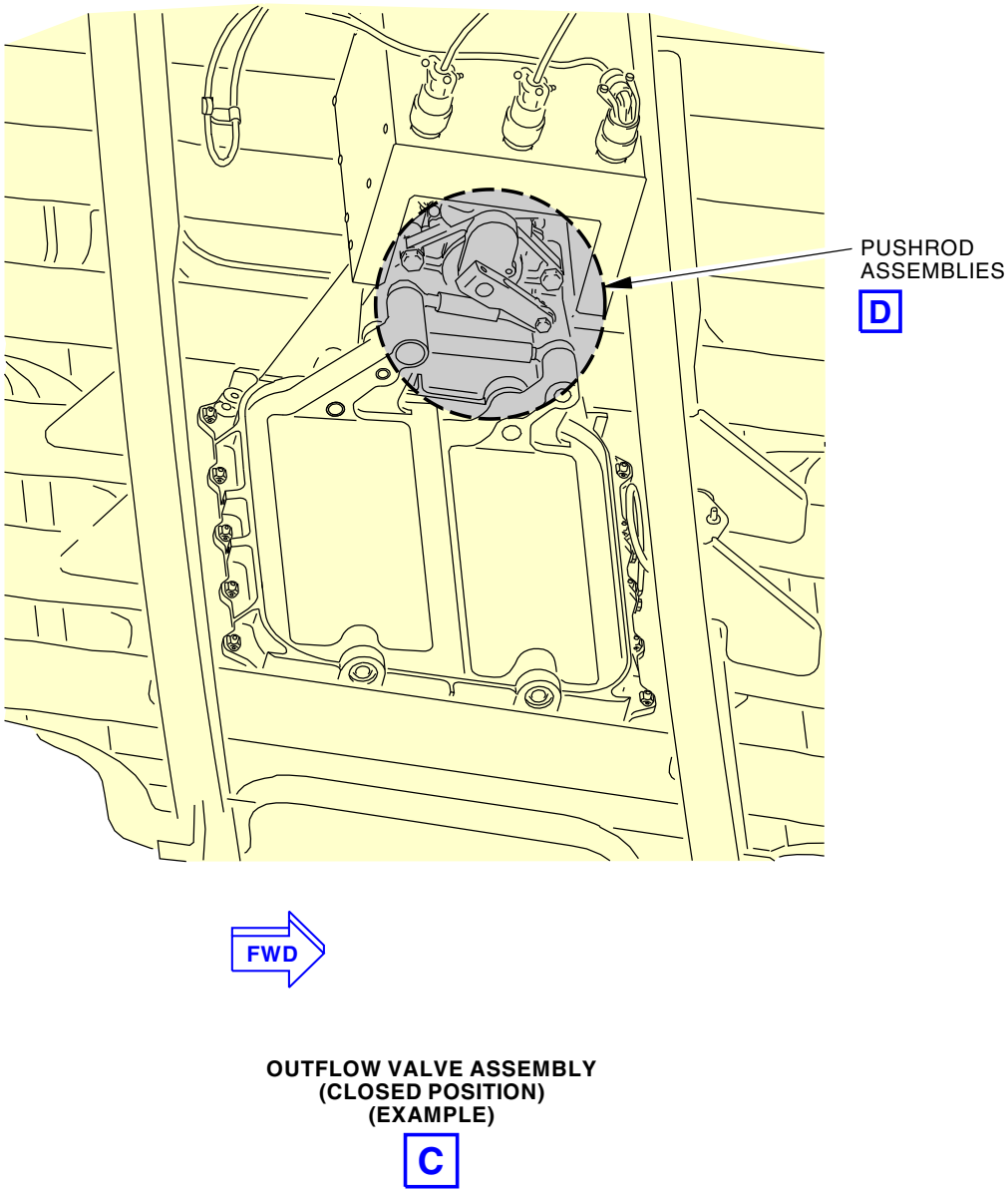

**OUTFLOW VALVE ASSEMBLY
(CLOSED POSITION)
(EXAMPLE)**

C

F21426 S0006403591_V2

**Outflow Valve Door Adjustment
Figure 501/21-31-03-990-807-001 (Sheet 3 of 4)**

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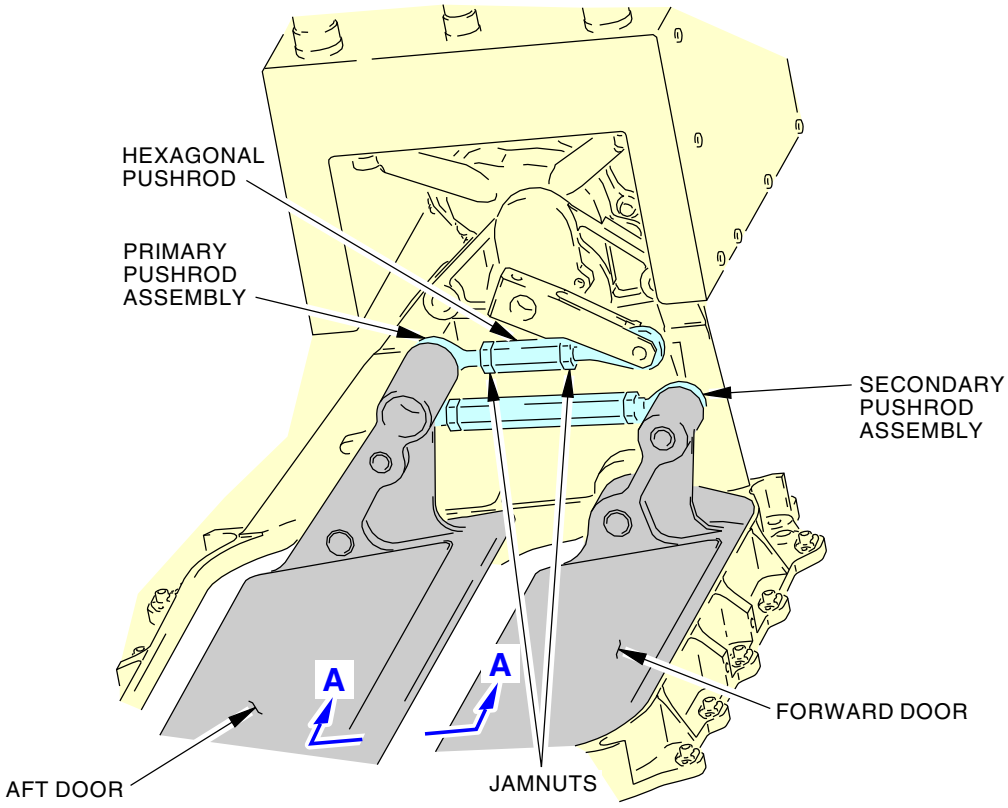
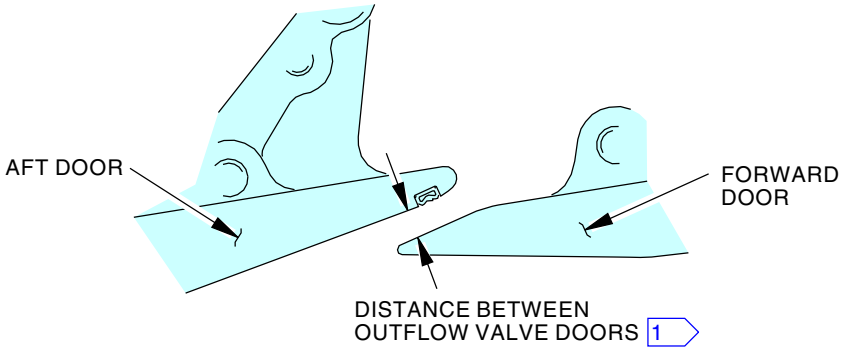


PUSHROD ASSEMBLIES

D



A-A

1 TAKE THE MEASUREMENT OF THE DISTANCE BETWEEN THE OUTFLOW VALVE DOORS AT THE CENTER OF THE DOORS.

F21429 S0006403592_V3

Outflow Valve Door Adjustment
Figure 501/21-31-03-990-807-001 (Sheet 4 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY - ADJUSTMENT/TEST

1. General

A. This procedure has the task to adjust the valve doors on the cabin pressure outflow valve (CPOV) assembly.

B. The valve doors for the cabin pressure outflow valve assembly must be adjusted after installation of a new rotary actuator assembly, valve frame, primary push rod assembly, or the secondary push rod assembly.

TASK 21-31-03-760-803-002

2. Outflow Valve Door Adjustment

(Figure 501)

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.

(2) This procedure uses input monitoring to check the target value for the forward or aft outflow valves monitored position. If the outflow valves monitored position is not the same as the target value, then you will use manual mode control to move the outflow valve open or closed in order to reach the target value. When the outflow valve is at the target value, then you will check the actual position of the outflow valve door gap and adjust if necessary.

(3) You can get access to the forward outflow valve through the main equipment center access door. The aft outflow valve is found in the bulk cargo compartment on the left side.

B. References

Reference	Title
21-31-00-700-806-001	Cabin Pressure Control System - System Test (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1107	Gauge - Feeler, 0.0 - 0.5 Inch, Readable to 1/1000th

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

E. Procedure

SUBTASK 21-31-03-860-060-002

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

SUBTASK 21-31-03-740-013-002

(2) Use a Maintenance Access Terminal (MAT) to do input monitoring of the forward or aft outflow valve door position:

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(a) Make these selections on the MAT:
  1) ONBOARD MAINTENANCE
  2) OTHER FUNCTIONS
  3) INPUT MONITORING
  4) GENERAL INPUT
  5) CONTINUE

(b) Put the cursor in the direct entry field.

(c) If L AIMS is in control use the keyboard to type this:

NOTE: If the monitored signal does not show then change from L to R AIMS.

  1) L/629/SYS L/E5D/1/4-4 (for the forward outflow valve)
  2) L/629/SYS L/E5D/1/5-5 (for the aft outflow valve)

(d) If R AIMS is in control use the keyboard to type this:

NOTE: If the monitored signal does not show then change from R to L AIMS.

  1) R/629/SYS L/E5D/1/4-4 (for the forward outflow valve)
  2) R/629/SYS L/E5D/1/5-5 (for the aft outflow valve)

(e) Select UNITS

(f) Select Hexadecimal

(g) Select CONTINUE

(h) Select RUN to start the input monitoring.

SUBTASK 21-31-03-820-012-002

(3) Read the hexadecimal value from the MAT for the monitored signal.

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE FORWARD AND THE AFT OUTFLOW VALVE ASSEMBLIES BEFORE YOU DO THIS TEST. INJURIES TO PERSONNEL CAN OCCUR.

(a) If the hexadecimal value is not equal to 00B6 then do these steps:

NOTE: If you adjust the aft outflow valve doors do the applicable instructions within the parenthesis.

  1) Push the FWD (AFT) OUTFLOW VALVE - AUTO/MAN switch-light, on the P5 overhead panel, to the MAN position.
  2) If the hexadecimal value is less than 00B6, then push and hold the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the OPEN position until the hexadecimal value is equal to 00B6.
    a) When the hexadecimal value is close to the target value, momentarily open or close the outflow valve in small quick steps in order to reach the target value.
  3) If the hexadecimal value is more than 00B6, then push and hold the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch to the CLOSE position until the hexadecimal value is equal to 00B6.
    a) When the hexadecimal value is close to the target value, momentarily open or close the outflow valve in small quick steps in order to reach the target value.

(b) If the hexadecimal value is equal to 00B6, then continue.

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SUBTASK 21-31-03-862-001-002

(4) For the forward outflow valve, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-862-002-002

(5) For the aft outflow valve, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-03-820-013-002

(6) Do these steps to check the outflow valve door clearance and adjust if necessary:

(a) Measure the distance between the outflow valve doors with a 0.0 - 0.5 Inch feeler gauge, STD-1107, or micrometer (0-1 inch, readable to 1/1000 inch), STD-1096.

1) Make sure that the distance is between 0.039 in. (0.99 mm) and 0.111 in. (2.82 mm).

2) Make sure the measurement is at the center of the outflow valve doors.

(b) If the distance between the outflow doors is not between 0.039 in. (0.99 mm) and 0.111 in. (2.82 mm), then do these steps to adjust the outflow valve doors:

1) Remove the lockwire from the two jamnuts on the primary push rod assembly.

2) Loosen the two jamnuts on the primary push rod assembly.

3) Turn the hexagonal push rod until the distance between the outflow valve doors is between 0.039 in. (0.99 mm) and 0.111 in. (2.82 mm).

NOTE: For each 0.080 in. (2.03 mm) out of tolerance on the door gap, you will need to turn the hexagonal push rod 1/2 turn. The direction you turn the hexagonal push rod depends on whether you want to make the primary push rod assembly shorter (decreases the distance between the doors) or longer (increases the distance between the doors).

4) Tighten the two jamnuts on the primary push rod assembly.

5) Install a new lockwire to the two jamnuts.

SUBTASK 21-31-03-861-001-002

(7) For the forward outflow valve, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

SUBTASK 21-31-03-861-002-002

(8) For the aft outflow valve, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

SUBTASK 21-31-03-730-004-002

(9) Do this task: Cabin Pressure Control System - System Test, TASK 21-31-00-700-806-001.

SUBTASK 21-31-03-860-113-002

(10) If necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

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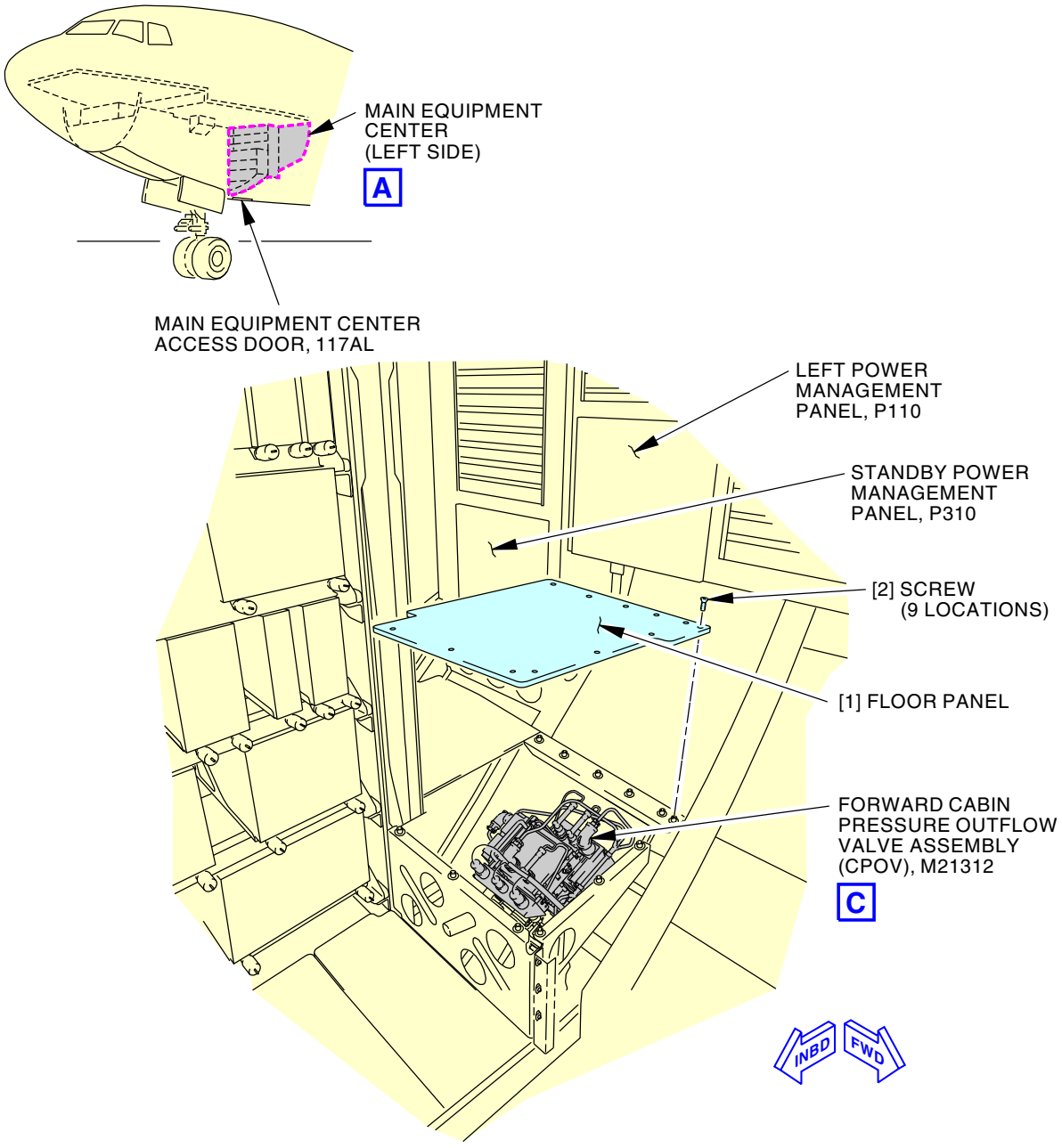

W68755 S0000127690_V2

Outflow Valve Door Adjustment
Figure 501/21-31-03-990-814-002 (Sheet 1 of 4)

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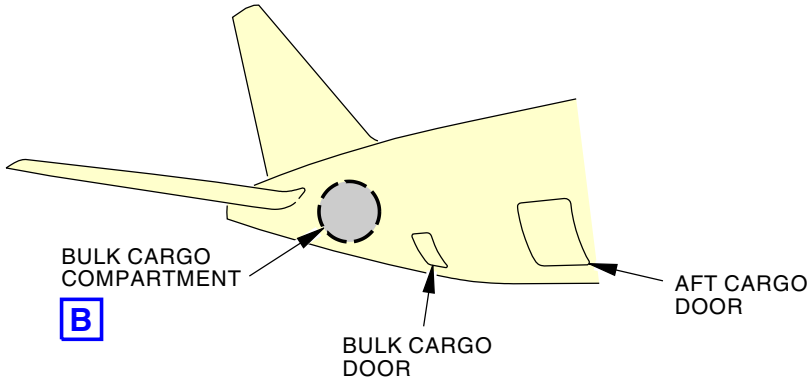

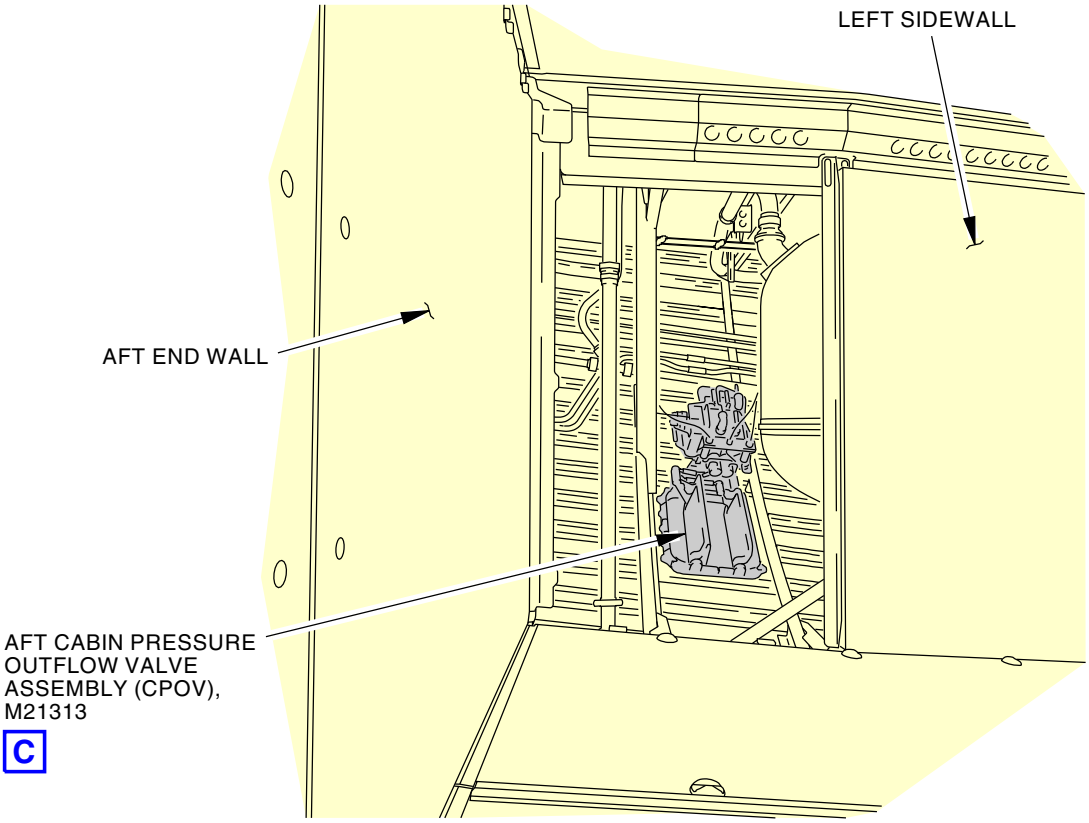

W68772 S0000127692_V2

Outflow Valve Door Adjustment
Figure 501/21-31-03-990-814-002 (Sheet 2 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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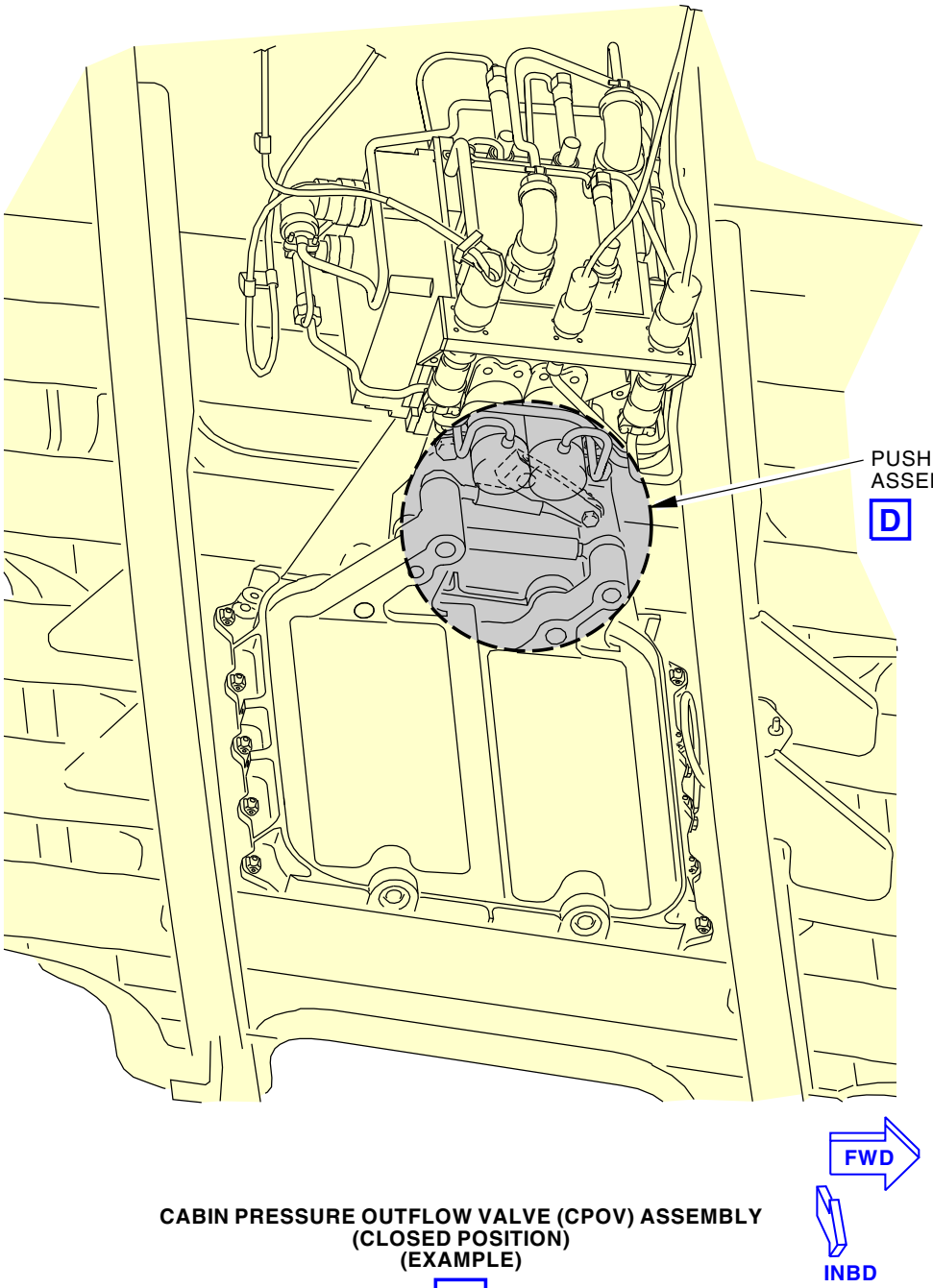

**CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY
(CLOSED POSITION)
(EXAMPLE)**

C

NOTE:

THE AFT CPOV IS SHOWN, THE FORWARD CPOV IS EQUIVALENT.

W67837 S0000127900_V2

**Outflow Valve Door Adjustment
Figure 501/21-31-03-990-814-002 (Sheet 3 of 4)**

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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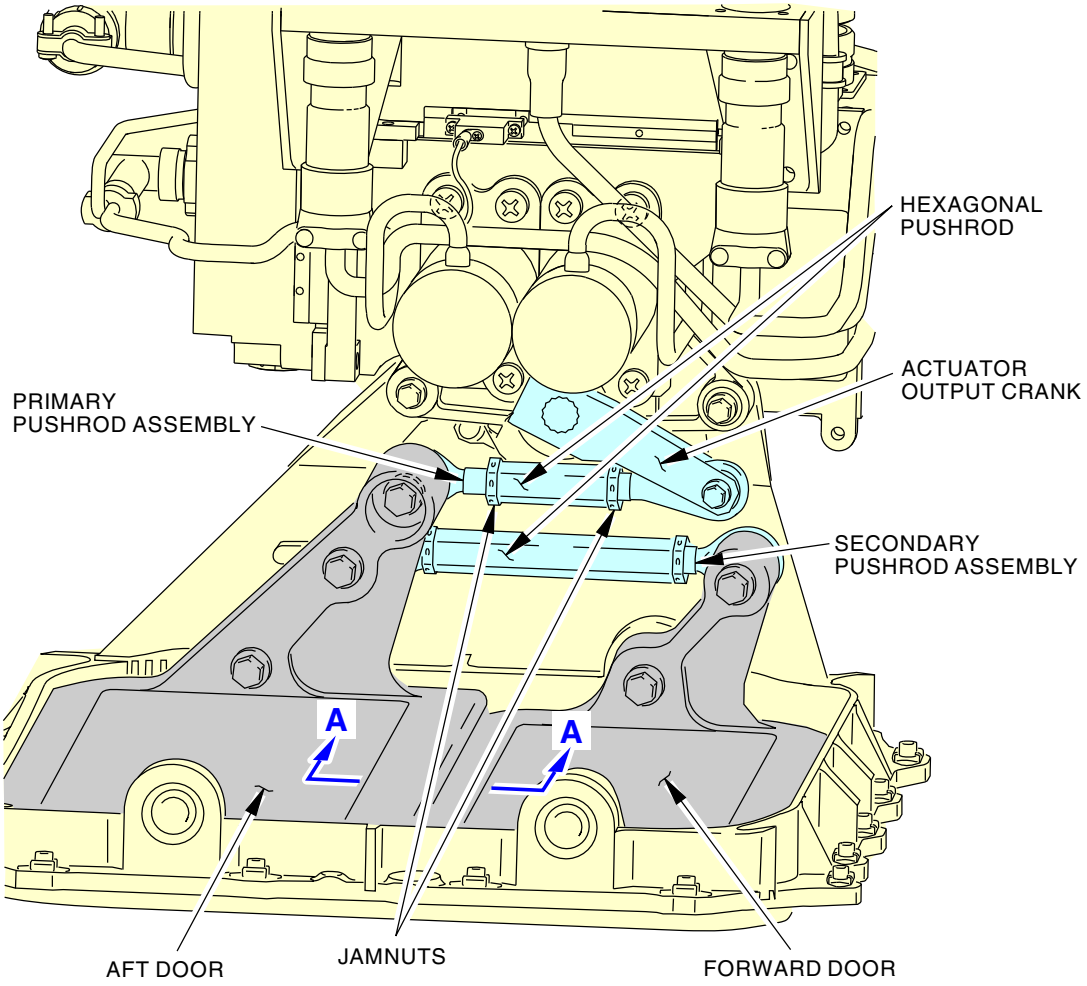
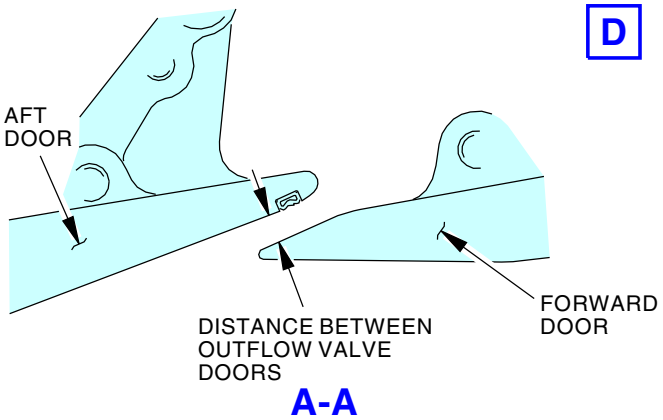


PUSHROD ASSEMBLIES

D



A-A

W67944 S0000127901_V2

Outflow Valve Door Adjustment
Figure 501/21-31-03-990-814-002 (Sheet 4 of 4)

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OUTFLOW VALVE ASSEMBLY - INSPECTION/CHECK

1. General

A. This procedure has one task. This task gives instructions to do a visual inspection of the condition of the outflow valve assembly.

B. You can get access to the forward outflow valve assembly through the main equipment center on the left side. You can get access to the aft outflow valve assembly through the left sidewall liner at the aft end of the bulk cargo compartment.

C. Each Outflow Valve Assembly consists of these components:

(1) Outflow valve

(a) Valve doors

(b) Valve frame

(c) Valve linkages

(2) Actuator assembly

(a) Gearbox assembly

1) Gearbox

2) Rotary Variable Differential Transformers (RVDTs)

(b) Valve Control Unit (VCU)

(c) Two DC motors

D. The valve control unit will be called the VCU throughout this procedure.

TASK 21-31-03-200-802-001

2. Outflow Valve Assembly Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-31-03-000-806-001	Outflow Valve Assembly Removal (P/B 401)
21-31-03-100-804-001	Outflow Valve Assembly Cleaning (P/B 701)
21-31-03-400-806-001	Outflow Valve Assembly Installation (P/B 401)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

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C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Procedure

SUBTASK 21-31-03-010-084-001

(1) Remove conditioned air from the airplane (TASK 21-00-00-800-802).

SUBTASK 21-31-03-010-080

(2) For the forward outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(c) Get access to the forward outflow valve assembly as follows:

NOTE: The forward outflow valve assembly is under the floor panel which is below the Left Power Management Panel, P110 in the main equipment center.

1) Remove the screws [2] that attach the floor panel [1] to the structure.

2) Remove the floor panel [1].

SUBTASK 21-31-03-010-081

(3) For the aft outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(c) Do this task: Open the Door, TASK 52-36-00-860-801.

(d) Remove the left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-000-801).

SUBTASK 21-31-03-140-002-001

(4) Do this task: Outflow Valve Assembly Cleaning, TASK 21-31-03-100-804-001.

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SUBTASK 21-31-03-210-004-001

(5) Examine the outflow valve assembly as follows:

(a) Make sure the electrical connectors and all wiring on the outflow valve assembly are not damaged and do not have contamination.

(b) Make sure there is not too much grease leakage from the gearbox assembly.

1) Clean the gearbox assembly with a lint-free cloth if you find that it has grease leakage.

(c) Make sure the outflow valve doors [8] and hinges are not loose, damaged or worn.

(d) Make sure the valve door seals [11] are in place and are held in by 6 retaining pins [10] on each door [9].

(e) Make sure the outflow valve door seal [11] is not damaged or worn:

1) Do this step to make sure that the valve door seals are satisfactory for service:

a) A damaged valve door seal is permitted with these conditions:

<1> Less than 2.75 in. (69.85 mm) of the seal length is damaged

<2> Door seals are in the installed position in the door groove

<3> All spring pins are in the installed position

<4> No outflow valve EICAS or maintenance messages are active.

(f) Make sure there are no cracks in the outflow valve frame [7].

(g) Make sure the outflow valve linkages [3] are not damaged or worn, and do not have corrosion on them.

(h) Make sure the captive fasteners for the DC Motors [5] and the actuator assembly [6] are not loose.

1) Tighten the loose captive fasteners that you find.

(i) Make sure the VCU [4] mount screws are not loose.

1) Tighten the loose VCU [4] mount screws that you find.

SUBTASK 21-31-03-420-025-001

(6) Replace the outflow valve assembly if you find that it has damage, wear or corrosion.

These are the tasks:

Outflow Valve Assembly Removal, TASK 21-31-03-000-806-001,

Outflow Valve Assembly Installation, TASK 21-31-03-400-806-001.

SUBTASK 21-31-03-410-075

(7) For the forward outflow valve assembly, do the steps that follow:

(a) Put the floor panel [1] in its position.

(b) Install the screws [2].

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

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Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-410-076

(8) For the aft outflow valve assembly, do the steps that follow:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-410-079-001

(9) If it is necessary, supply conditioned air to the airplane (TASK 21-00-00-800-801).

END OF TASK

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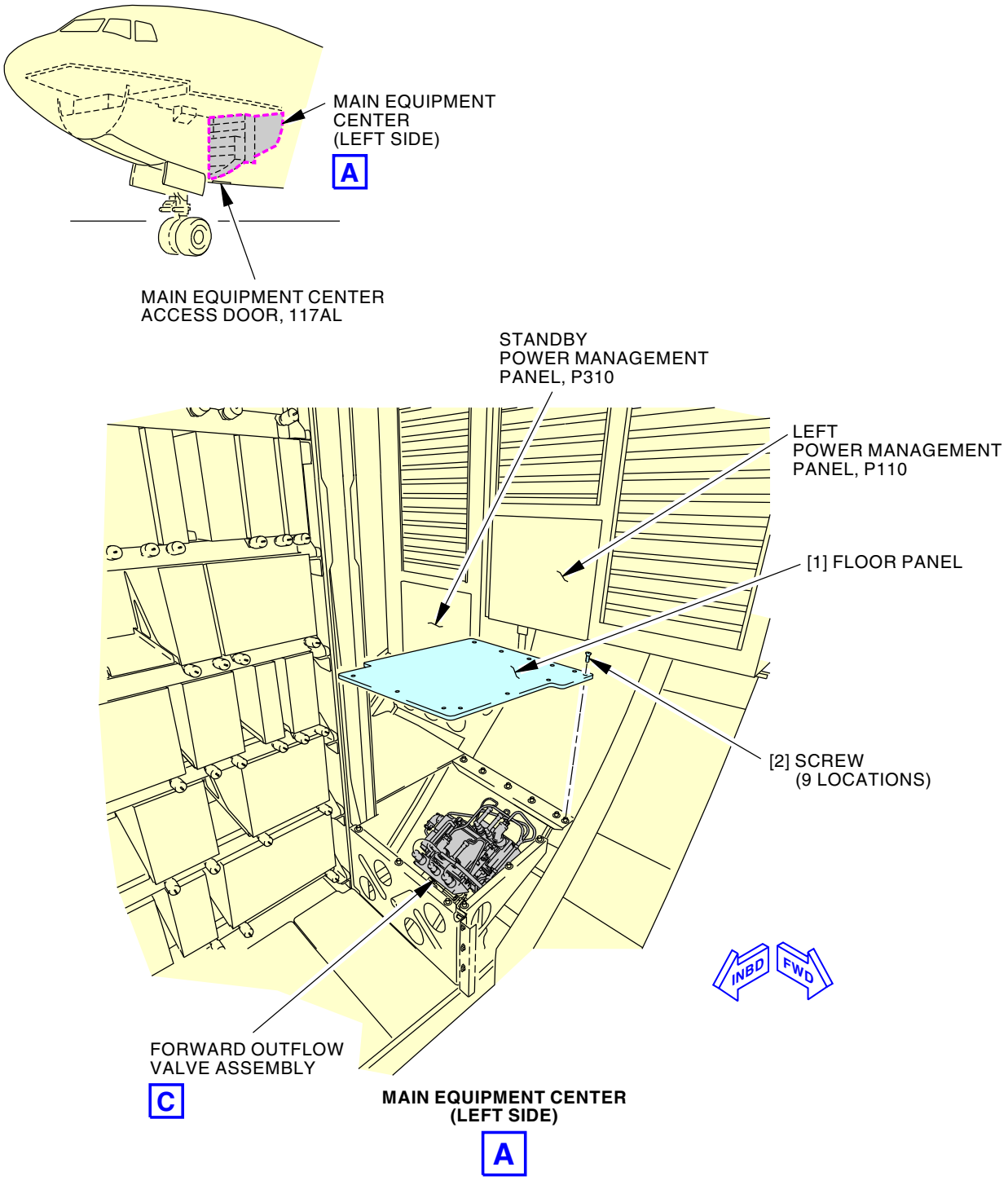

Outflow Valve Assembly Inspection
Figure 601/21-31-03-990-808-001 (Sheet 1 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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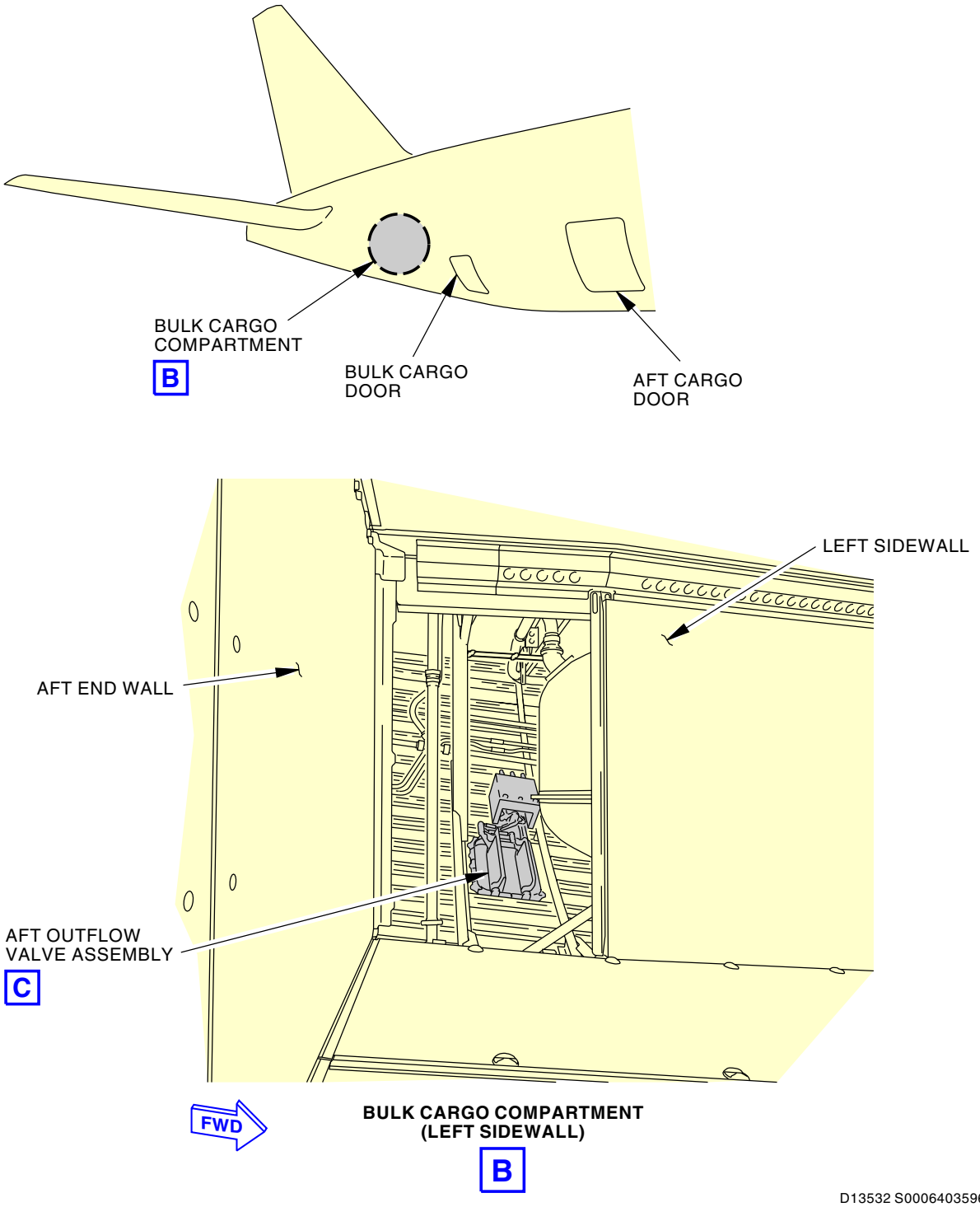

Outflow Valve Assembly Inspection
Figure 601/21-31-03-990-808-001 (Sheet 2 of 4)

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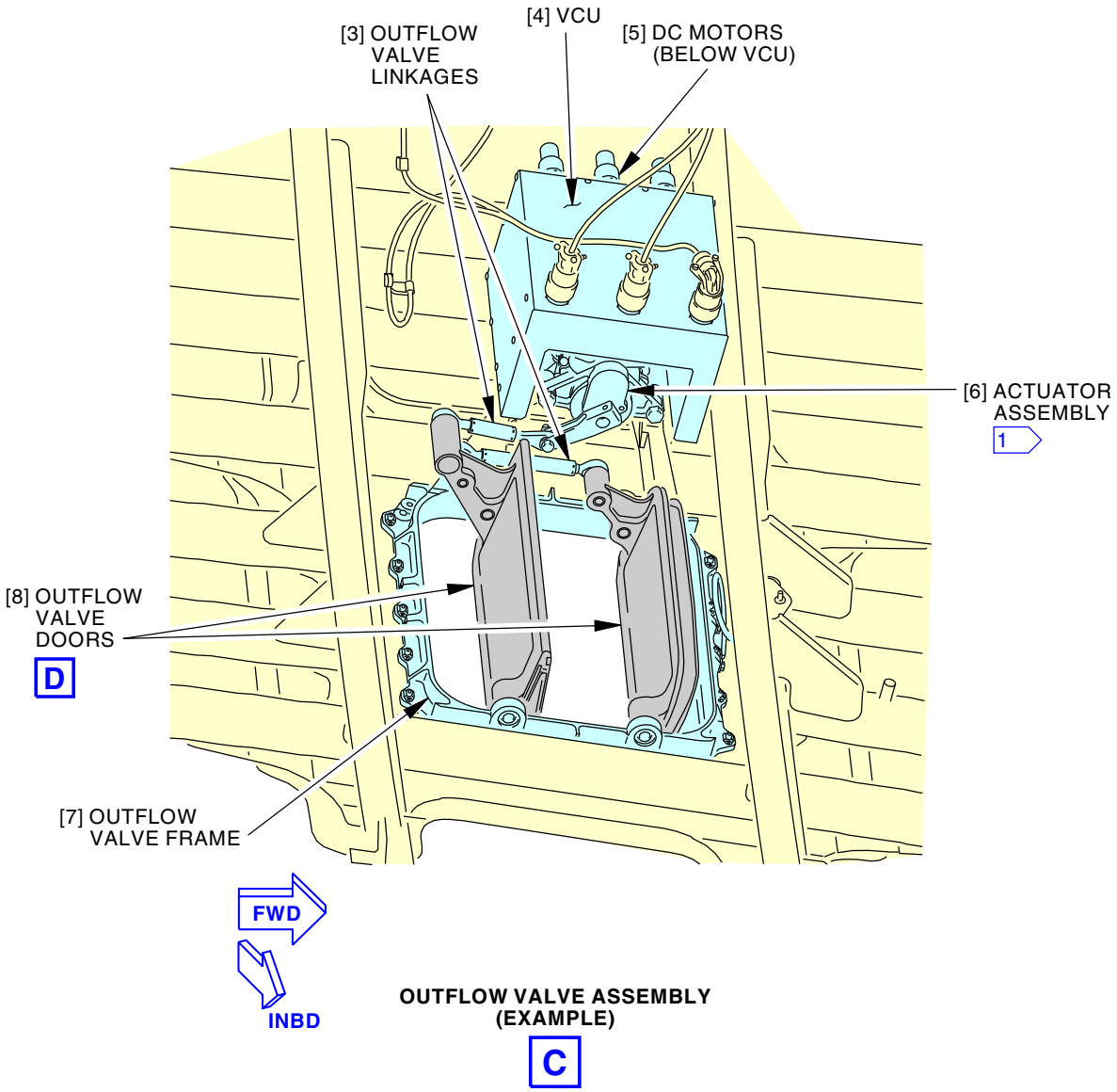

1 ACTUATOR ASSEMBLY INCLUDES THESE COMPONENTS:
· GEARBOX
· RVDT
· DC MOTORS
· VCU

D13536 S0006403597_V3

Outflow Valve Assembly Inspection
Figure 601/21-31-03-990-808-001 (Sheet 3 of 4)

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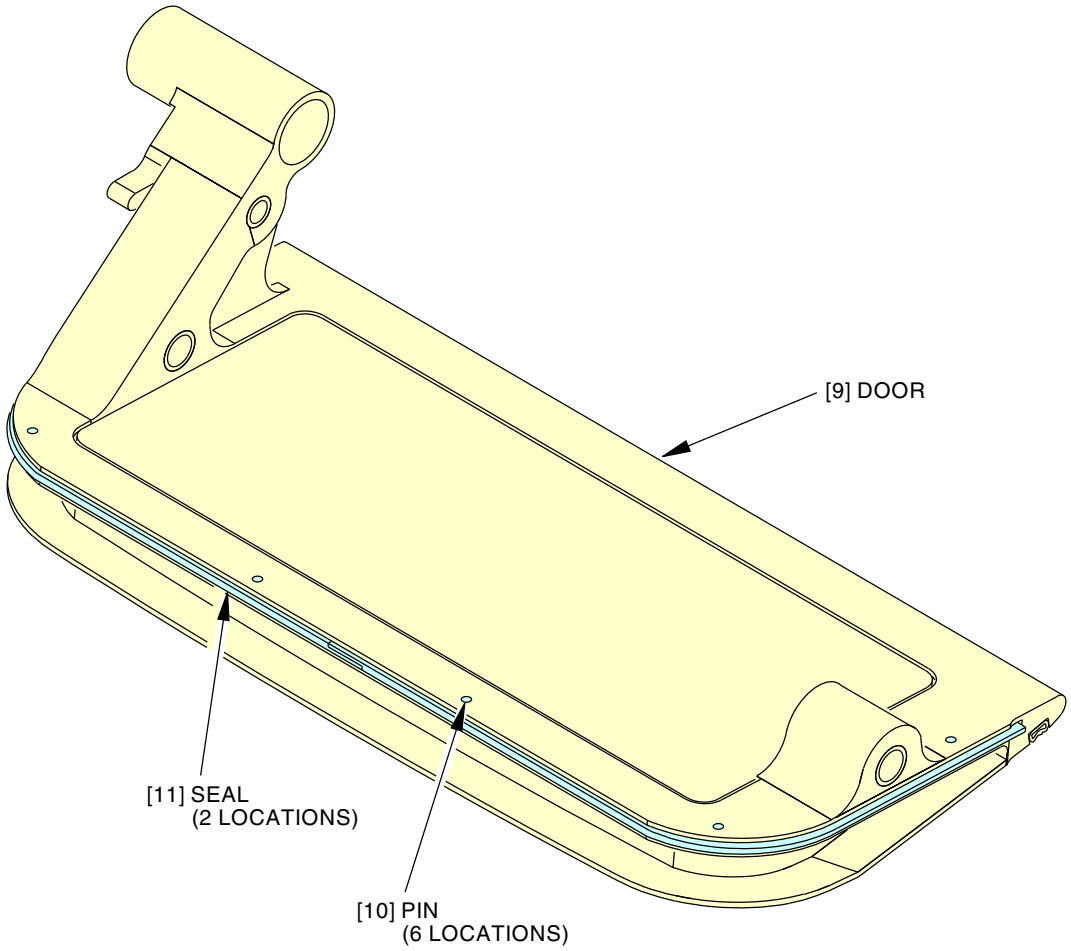

OUTFLOW VALVE DOOR
(EXAMPLE)

D

2094814 S0000443093_V2

Outflow Valve Assembly Inspection
Figure 601/21-31-03-990-808-001 (Sheet 4 of 4)

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CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY - INSPECTION/CHECK

1. General

A. This procedure has the instructions to do the task that follows:

(1) Cabin Pressure Outflow Valve (CPOV) Assembly Inspection.

B. Each outflow valve assembly consists of these components:

(1) Outflow valve

(a) Valve doors

(b) Valve frame

(c) Valve linkages

(2) Valve Controller Assembly (VCA)

(a) Left Electronic Control Unit (ECU)

(b) Right Electronic Control Unit (ECU)

(c) Rotary Actuator Assembly

1) Left DC Auto Motor (brushless)

2) Right DC Auto Motor (brushless)

3) Manual Control Module with DC Motor (not an LRU)

4) Gearbox (not an LRU)

5) Wire harness

TASK 21-31-03-200-803-002

2. Cabin Pressure Outflow Valve (CPOV) Assembly Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-31-03-000-812-002	Cabin Pressure Outflow Valve (CPOV) Assembly Removal (P/B 401)
21-31-03-100-809-002	Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning (P/B 701)
21-31-03-400-811-002	Cabin Pressure Outflow Valve (CPOV) Assembly Installation (P/B 401)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

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C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Procedure

SUBTASK 21-31-03-010-085-002

(1) Remove conditioned air from the airplane (TASK 21-00-00-800-802).

SUBTASK 21-31-03-010-070-002

(2) For the forward outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(c) Get access to the forward outflow valve assembly as follows:

NOTE: The forward outflow valve assembly is under the floor panel which is below the Left Power Management Panel, P110 in the main equipment center.

1) Remove the screws [2] that attach the floor panel [1] to the structure.

2) Remove the floor panel [1].

SUBTASK 21-31-03-010-071-002

(3) For the aft outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(c) Do this task: Open the Door, TASK 52-36-00-860-801.

(d) Remove the left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-000-801).

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SUBTASK 21-31-03-100-001-002

(4) Do this task: Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning, TASK 21-31-03-100-809-002.

SUBTASK 21-31-03-211-001-002

(5) Examine the outflow valve assembly as follows:

(a) Make sure the electrical connectors and all wiring on the outflow valve assembly are not damaged and do not have contamination.

(b) Make sure there is not too much grease leakage from the rotary actuator assembly.

1) Clean the rotary actuator assembly with a lint-free cloth if you find that it has grease leakage.

(c) Make sure the valve doors and hinges are not loose, damaged or worn.

NOTE: A small amount of CPOV door deformation is acceptable if the door seals and retaining pins are in place and there are no EICAS or maintenance messages for CPOV leakage.

(d) Make sure the valve door seals are in place and are held in by 6 retaining pins on each door.

(e) Make sure the valve door seal is not damaged or worn.

1) Do this step to make sure that the valve door seals are satisfactory for service:

a) A damaged valve door seal is permitted with these conditions:

<1> Less than 2.75 in. (69.85 mm) of the seal length is damaged

<2> Door seals are in the installed position in the door groove

<3> All spring pins are in the installed position

<4> No outflow valve EICAS or maintenance messages are active.

(f) Make sure there are no cracks in the valve frame.

(g) Make sure the shims, spacers, and screws are installed on the valve frame.

1) If the shims, spacers, and screws are removed or missing, install the shims, spacers, and screws on the valve frame.

a) Use a feeler gauge to make sure that there is 0.01 in. (0.25 mm) to 0.02 in. (0.51 mm) clearance between the outflow valve doors and the spacers.

b) If necessary, add or remove the shims below the spacers to get the correct clearance.

c) Install and torque the screws to 20 in-lb (2.3 N·m) - 23 in-lb (2.6 N·m).

(h) Make sure the valve linkages are not damaged or worn, and do not have corrosion on them.

(i) Make sure the captive screws for the DC auto motors are not loose.

1) Tighten the loose captive screws that you find.

(j) Make sure the ECU captive screws are not loose.

1) Tighten the loose ECU captive screws that you find.

(k) Make sure the connector bracket captive screws are not loose.

1) Tighten the loose connector bracket captive screws that you find.

(l) Make sure the VCA mount screws are not loose.

1) Tighten the loose VCA mount screws that you find.

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SUBTASK 21-31-03-020-052-002

(6) Replace the outflow valve assembly if you find that it has damage, wear or corrosion.
These are the tasks:
Cabin Pressure Outflow Valve (CPOV) Assembly Removal, TASK 21-31-03-000-812-002,
Cabin Pressure Outflow Valve (CPOV) Assembly Installation, TASK 21-31-03-400-811-002.

SUBTASK 21-31-03-410-068-002

(7) For the forward outflow valve assembly, do the steps that follow:
(a) Put the floor panel [1] in its position.
(b) Install the screws [2].
(c) Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-410-069-002

(8) For the aft outflow valve assembly, do the steps that follow:
(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.
(b) Do this task: Close the Door, TASK 52-36-00-860-802.
(c) Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-410-080-002

(9) If it is necessary, supply conditioned air to the airplane (TASK 21-00-00-800-801).

END OF TASK

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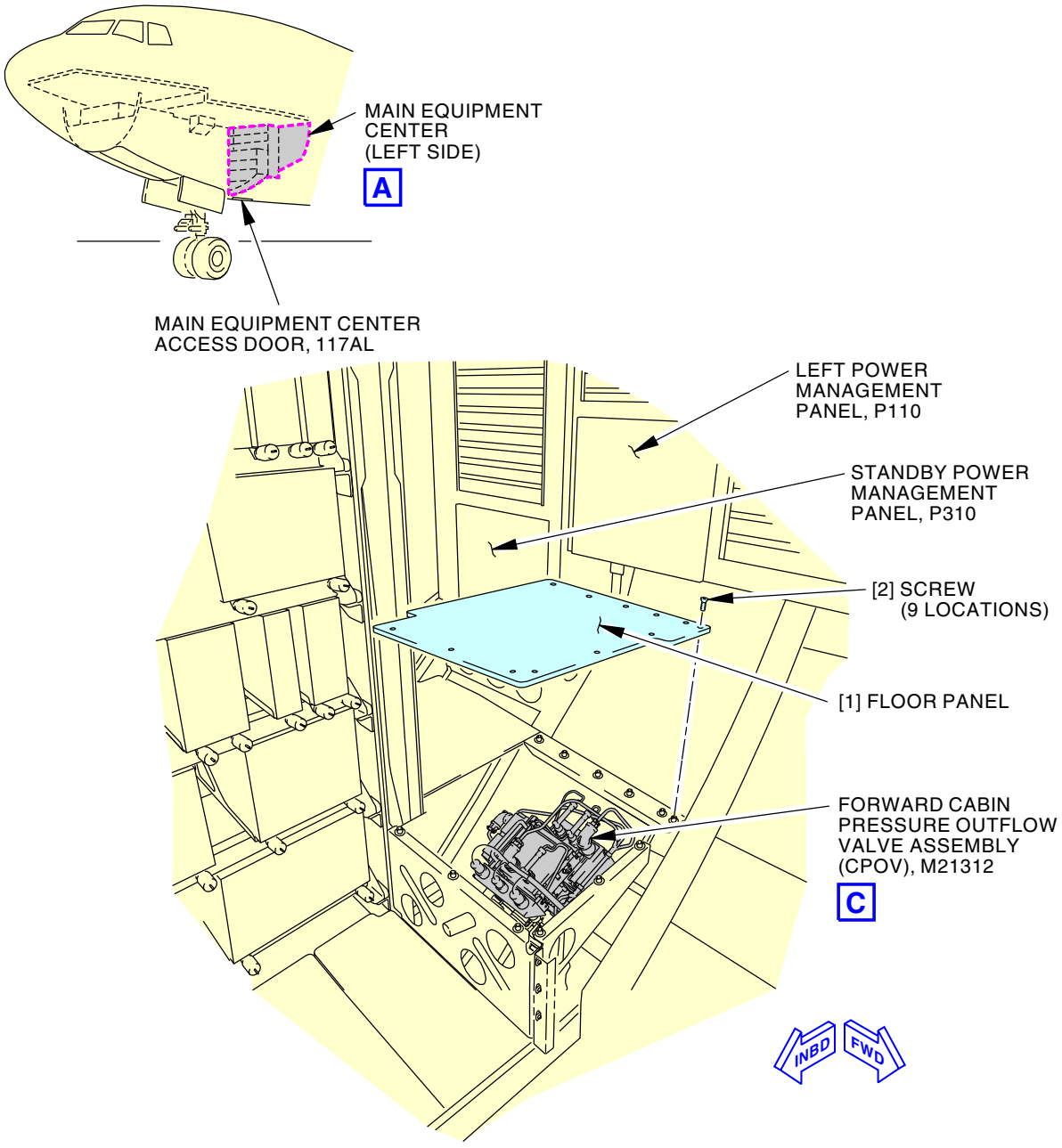

Cabin Pressure Outflow Valve (CPOV) Assembly Inspection
Figure 601/21-31-03-990-812-002 (Sheet 1 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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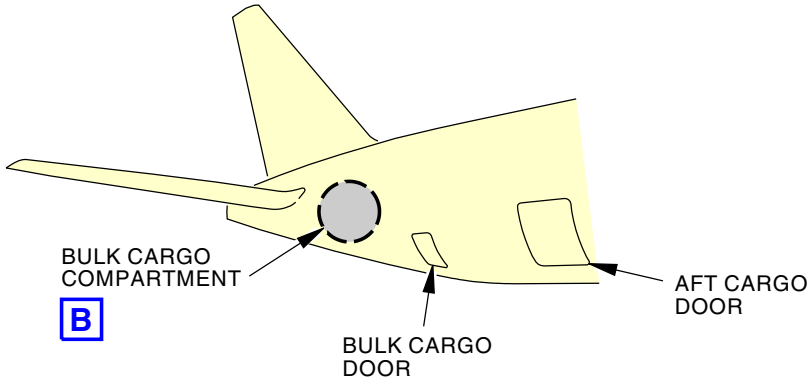

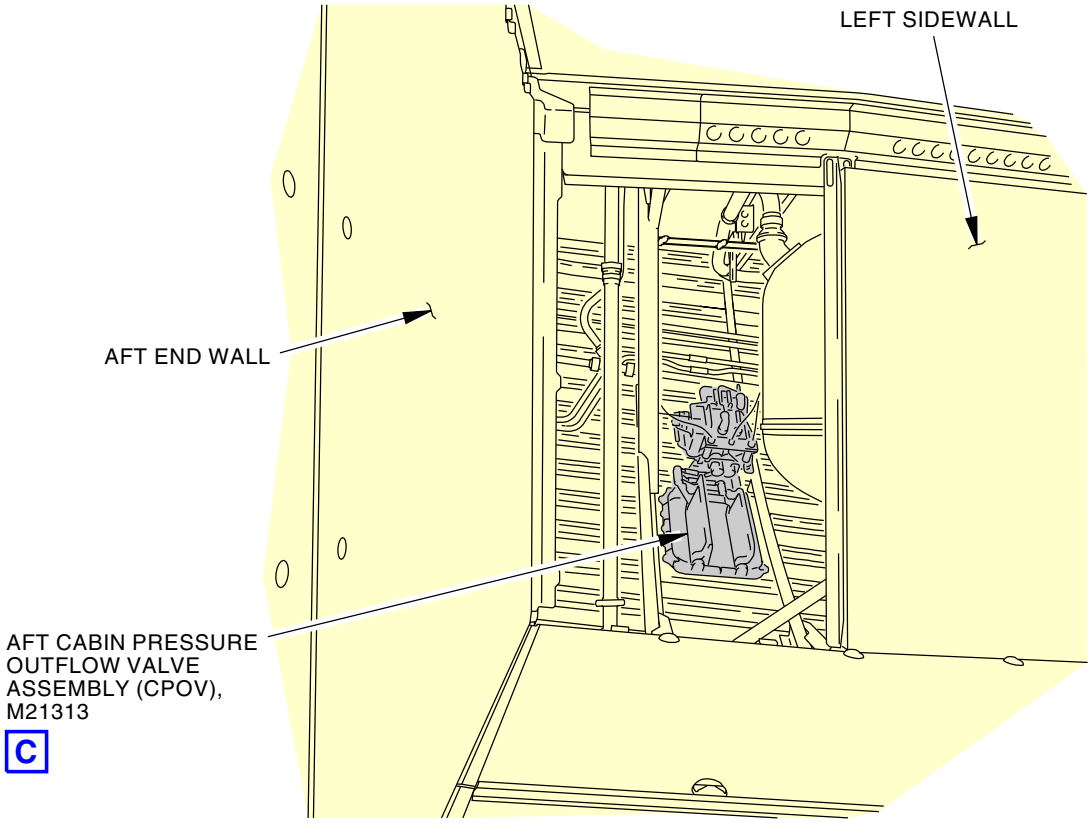

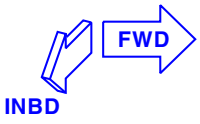

**BULK CARGO COMPARTMENT
(LEFT SIDEWALL)**

B

W68772 S0000127692_V2

**Cabin Pressure Outflow Valve (CPOV) Assembly Inspection
Figure 601/21-31-03-990-812-002 (Sheet 2 of 4)**

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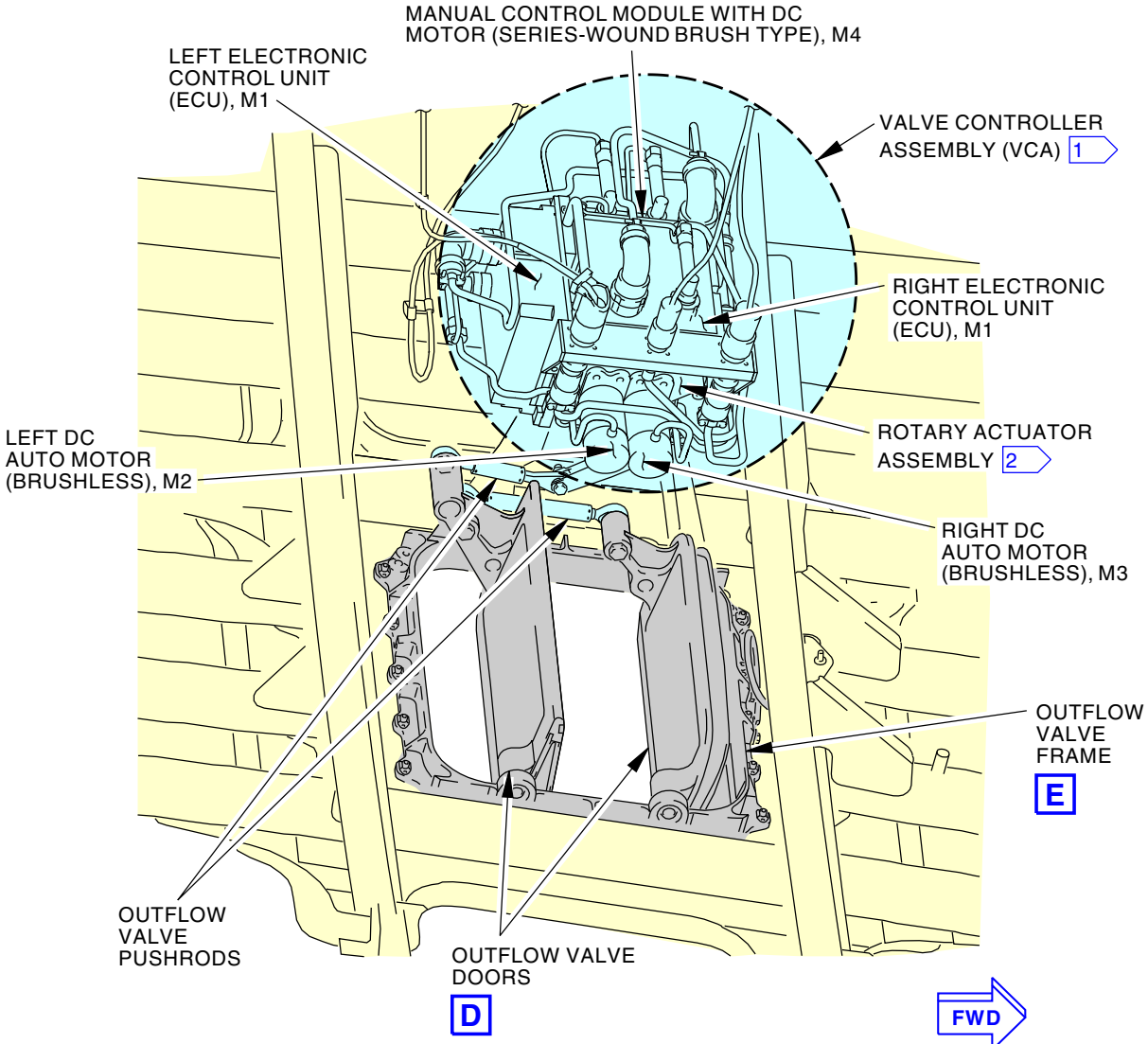

CABIN PRESSURE OUTFLOW VALVE ASSEMBLY (CPOV)

C

NOTE:

AFT CPOV SHOWN. FORWARD CPOV SAME.

1 THE VCA CONSISTS OF TWO ECU'S AND ROTARY ACTUATOR ASSEMBLY.

2 THE ROTARY ACTUATOR ASSEMBLY CONSISTS OF TWO BRUSHLESS DC AUTO MOTORS, GEARBOX, MANUAL CONTROL MODULE WITH DC MOTOR, AND WIRE HARNESS.

2121276 S0000456998_V2

Cabin Pressure Outflow Valve (CPOV) Assembly Inspection
Figure 601/21-31-03-990-812-002 (Sheet 3 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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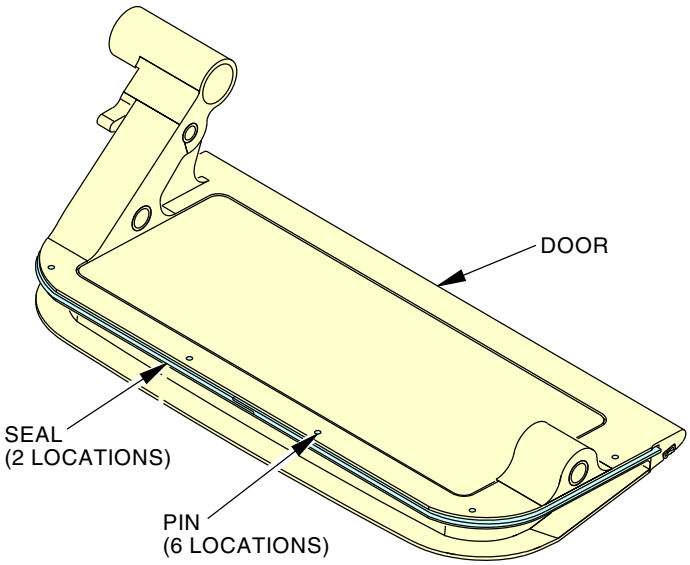
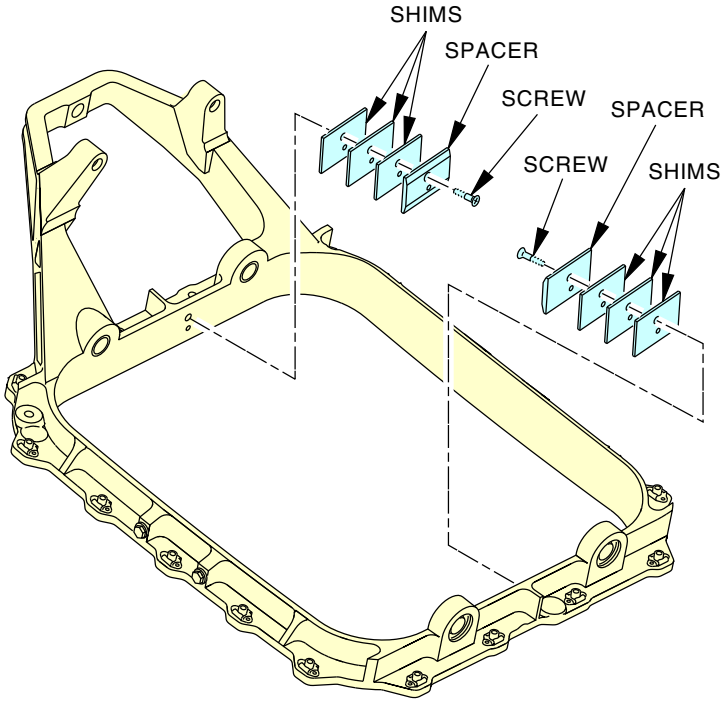


OUTFLOW VALVE DOOR (EXAMPLE)

D



OUTFLOW VALVE FRAME

E

2121281 S0000457000_V2

Cabin Pressure Outflow Valve (CPOV) Assembly Inspection
Figure 601/21-31-03-990-812-002 (Sheet 4 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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OUTFLOW VALVE ASSEMBLY - CLEANING/PAINTING

1. General

A. This procedure has the instructions to do the task that follows:

(1) Outflow valve assembly cleaning.

B. Each Outflow Valve Assembly consists of these components:

(1) Outflow valve

(a) Valve doors

(b) Valve frame

(c) Valve linkages

(2) Actuator assembly

(a) Gearbox assembly

1) Gearbox

2) Rotary Variable Differential Transformers (RVDTs)

(b) Valve Control Unit (VCU)

(c) Two DC motors

TASK 21-31-03-100-804-001

2. Outflow Valve Assembly Cleaning

(Figure 701)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Consumable Materials

Reference	Description	Specification
B00074	Solvent - Degreasing	MIL-PRF-680 (Supersedes P-D-680)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare to Clean the Outflow Valve Assembly

SUBTASK 21-31-03-010-041-001

(1) For the the forward outflow valve assembly, do these steps:

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(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(c) Get access to the forward outflow valve assembly as follows:

NOTE: The forward outflow valve assembly is under the floor panel which is below the Left Power Management Panel, P110 in the main equipment center.

1) Remove the screws [2] that attach the floor panel [1] to the structure.

2) Remove the floor panel [1].

SUBTASK 21-31-03-010-042-001

(2) For the aft outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(c) Do this task: Open the Door, TASK 52-36-00-860-801.

(d) Remove the left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-000-801).

F. Clean the Outflow Valve Assembly

SUBTASK 21-31-03-160-010-001

(1) Use a soft bristle brush and the solvent, B00074 to clean the outflow valve frame, the outflow valve doors, and the outflow valve linkages.

SUBTASK 21-31-03-160-011-001

(2) Clean the external surfaces of the VCU with a clean lint-free cloth.

SUBTASK 21-31-03-160-012-001

(3) Dry the outflow valve assembly with a clean lint-free cloth.

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-410-052-001

(1) For the forward outflow valve assembly, do the steps that follow:

(a) Put the floor panel [1] in its position.

(b) Install the screws [2].

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-410-053-001

(2) For the aft outflow valve assembly, do the steps that follow:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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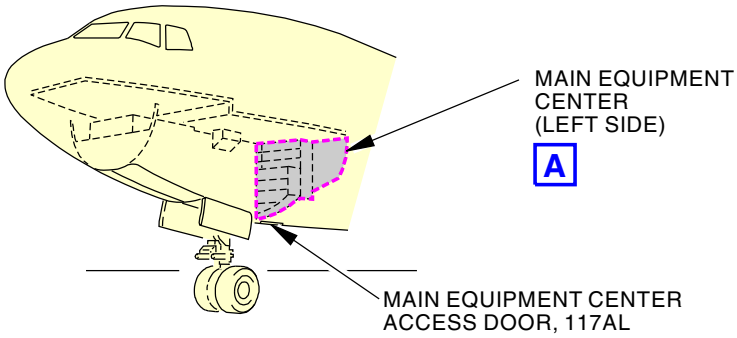

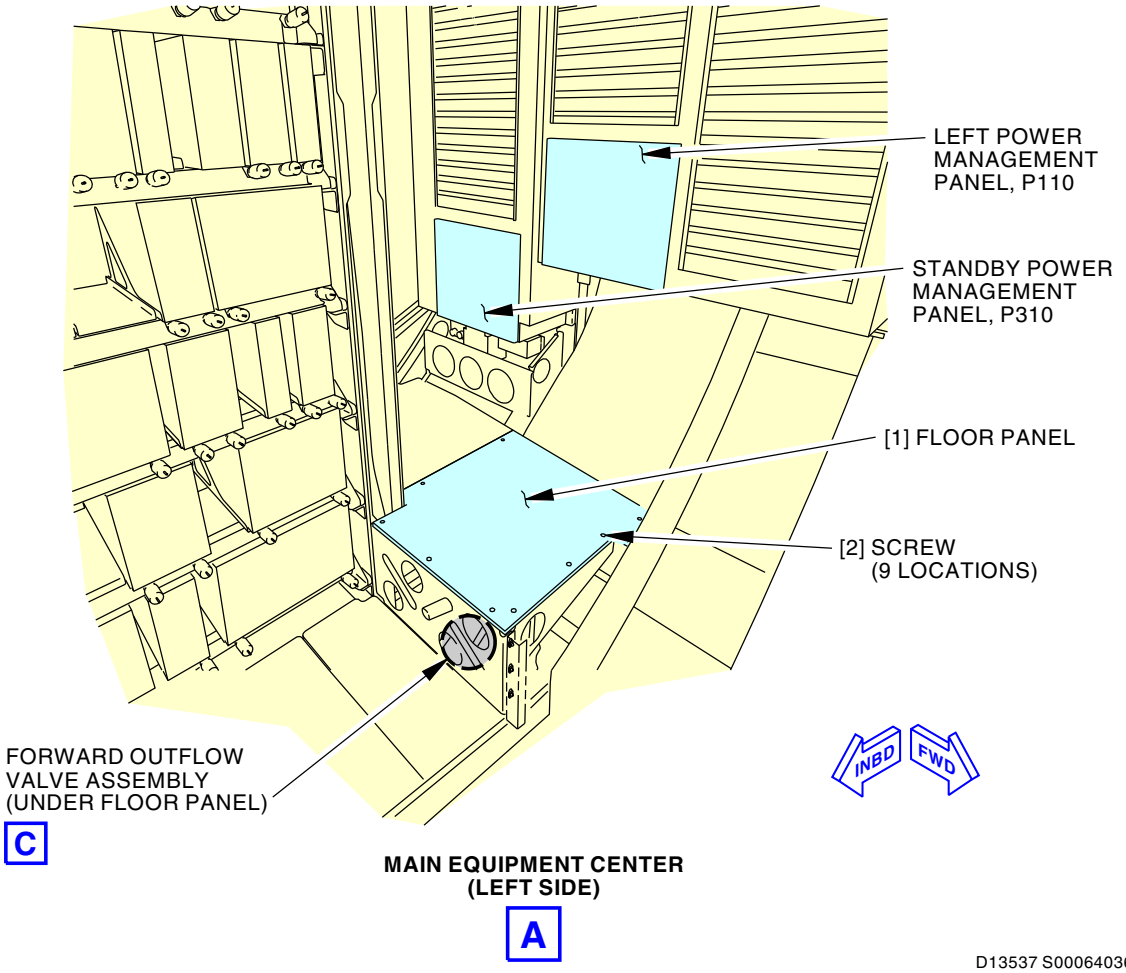

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Outflow Valve Assembly Cleaning
Figure 701/21-31-03-990-810-001 (Sheet 1 of 3)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2214420

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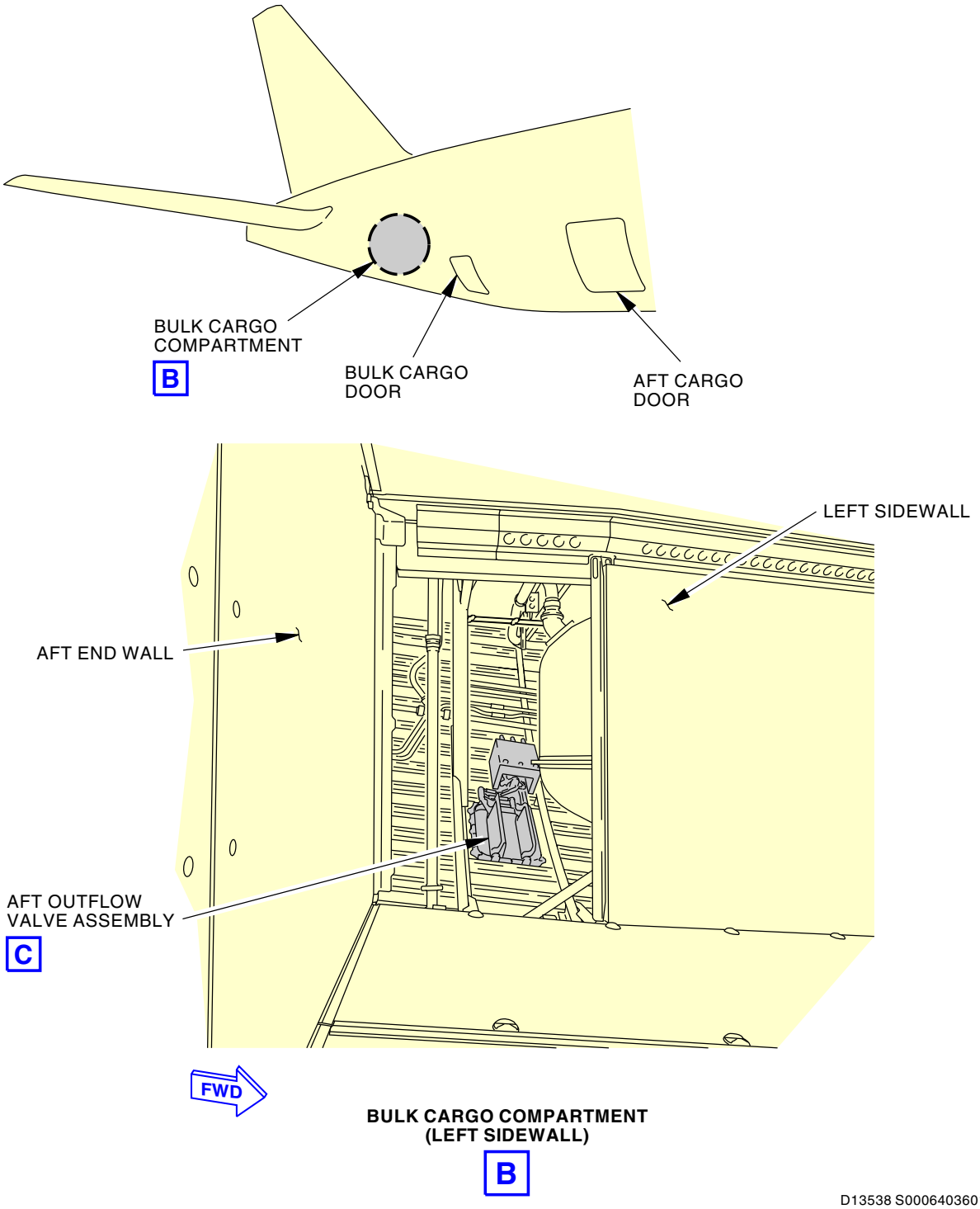

Outflow Valve Assembly Cleaning
Figure 701/21-31-03-990-810-001 (Sheet 2 of 3)

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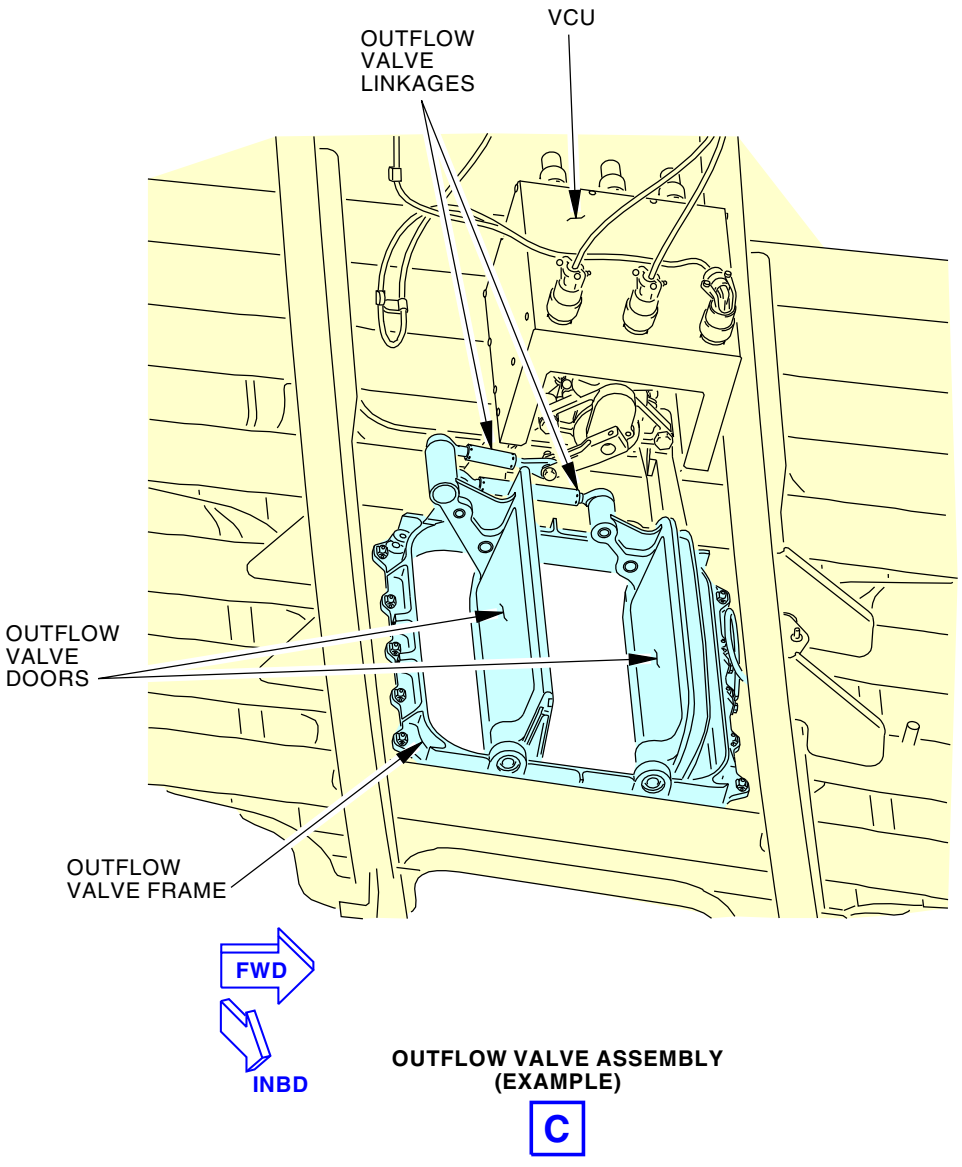

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Outflow Valve Assembly Cleaning
Figure 701/21-31-03-990-810-001 (Sheet 3 of 3)

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CABIN PRESSURE OUTFLOW VALVE (CPOV) ASSEMBLY - CLEANING/PAINTING

1. General

A. This procedure has the instructions to do the task that follows:

(1) Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning.

B. Each cabin pressure outflow valve (CPOV) assembly consists of these components:

(1) Outflow valve

(a) Valve doors

(b) Valve frame

(c) Valve linkages

(2) Valve Controller Assembly (VCA)

(a) Left Electronic Control Unit (ECU)

(b) Right Electronic Control Unit (ECU)

(c) Rotary Actuator Assembly

1) Left DC Auto Motor (brushless)

2) Right DC Auto Motor (brushless)

3) Manual Control Module with DC motor (not an LRU)

4) Gearbox (not an LRU)

5) Wire harness

TASK 21-31-03-100-809-002

2. Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning

(Figure 701)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Consumable Materials

Reference	Description	Specification
B00074	Solvent - Degreasing	MIL-PRF-680 (Supersedes P-D-680)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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E. Prepare to Clean the Outflow Valve Assembly

SUBTASK 21-31-03-010-072-002

(1) For the forward outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(c) Get access to the forward outflow valve assembly as follows:(Figure 701)

NOTE: The forward outflow valve assembly is under the floor panel which is below the Left Power Management Panel, P110 in the main equipment center.

1) Remove the screws [2] that attach the floor panel [1] to the structure.
2) Remove the floor panel [1].

SUBTASK 21-31-03-010-073-002

(2) For the aft outflow valve assembly, do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(c) Do this task: Open the Door, TASK 52-36-00-860-801.

(d) Remove the left sidewall liner at the aft end of the bulk cargo compartment. To remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

F. Clean the Outflow Valve Assembly

SUBTASK 21-31-03-110-001-002

(1) Use a soft bristle brush and the solvent, B00074 to clean the valve frame, the valve doors, and the valve linkages.

SUBTASK 21-31-03-160-017-002

(2) Clean the external surfaces of the VCA with a clean lint-free cloth.

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SUBTASK 21-31-03-160-018-002

(3) Dry the outflow valve assembly with a clean lint-free cloth.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-410-070-002

(1) For the forward outflow valve assembly, do the steps that follow:(Figure 701)

(a) Put the floor panel [1] in its position.

(b) Install the screws [2].

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-410-071-002

(2) For the aft outflow valve assembly, do the steps that follow:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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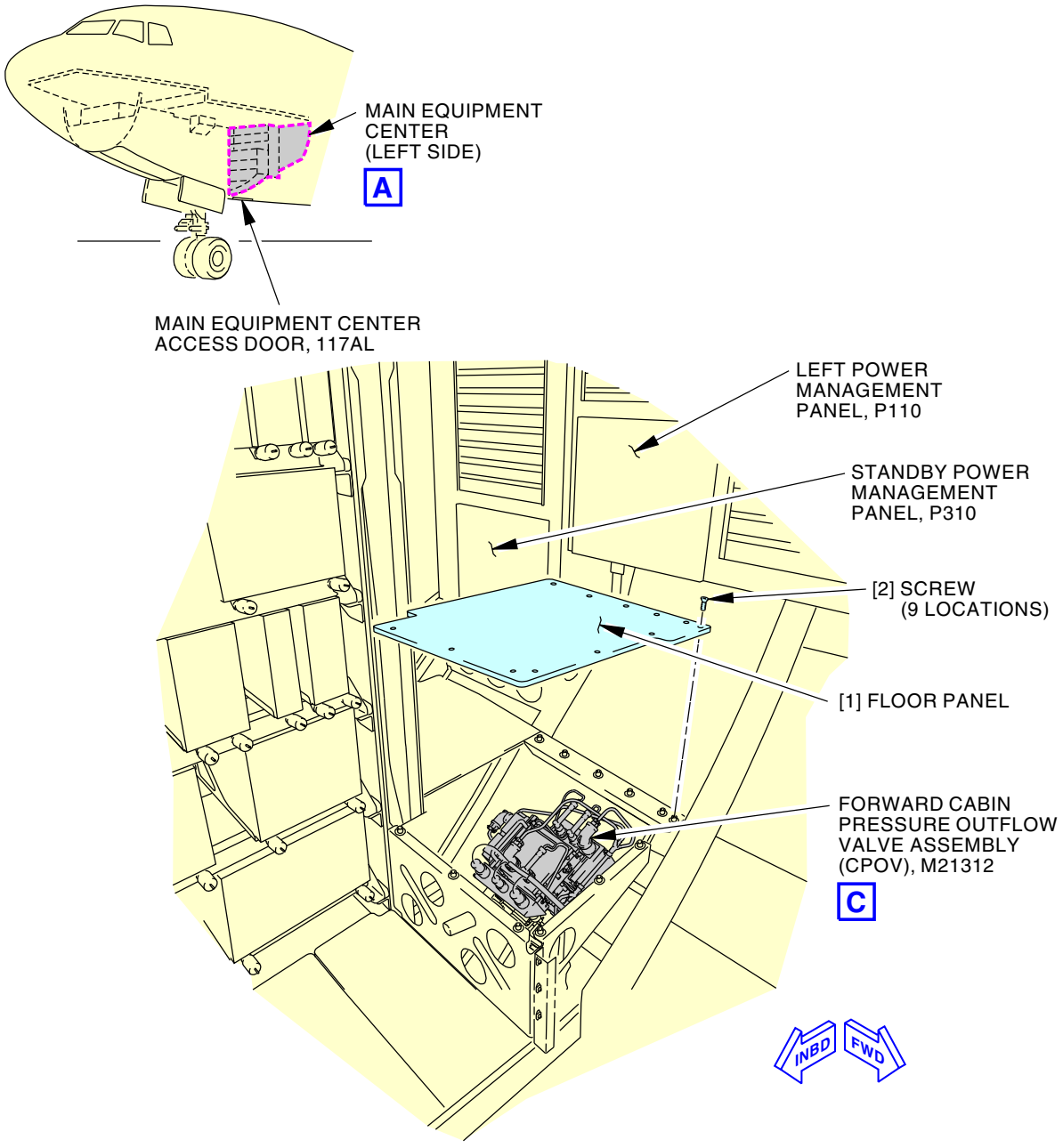

MAIN EQUIPMENT CENTER
(LEFT SIDE)

A

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Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning
Figure 701/21-31-03-990-811-002 (Sheet 1 of 4)

EFFECTIVITY
ARO ALL; AIRPLANES WITH OUTFLOW VALVE P/N 2119160

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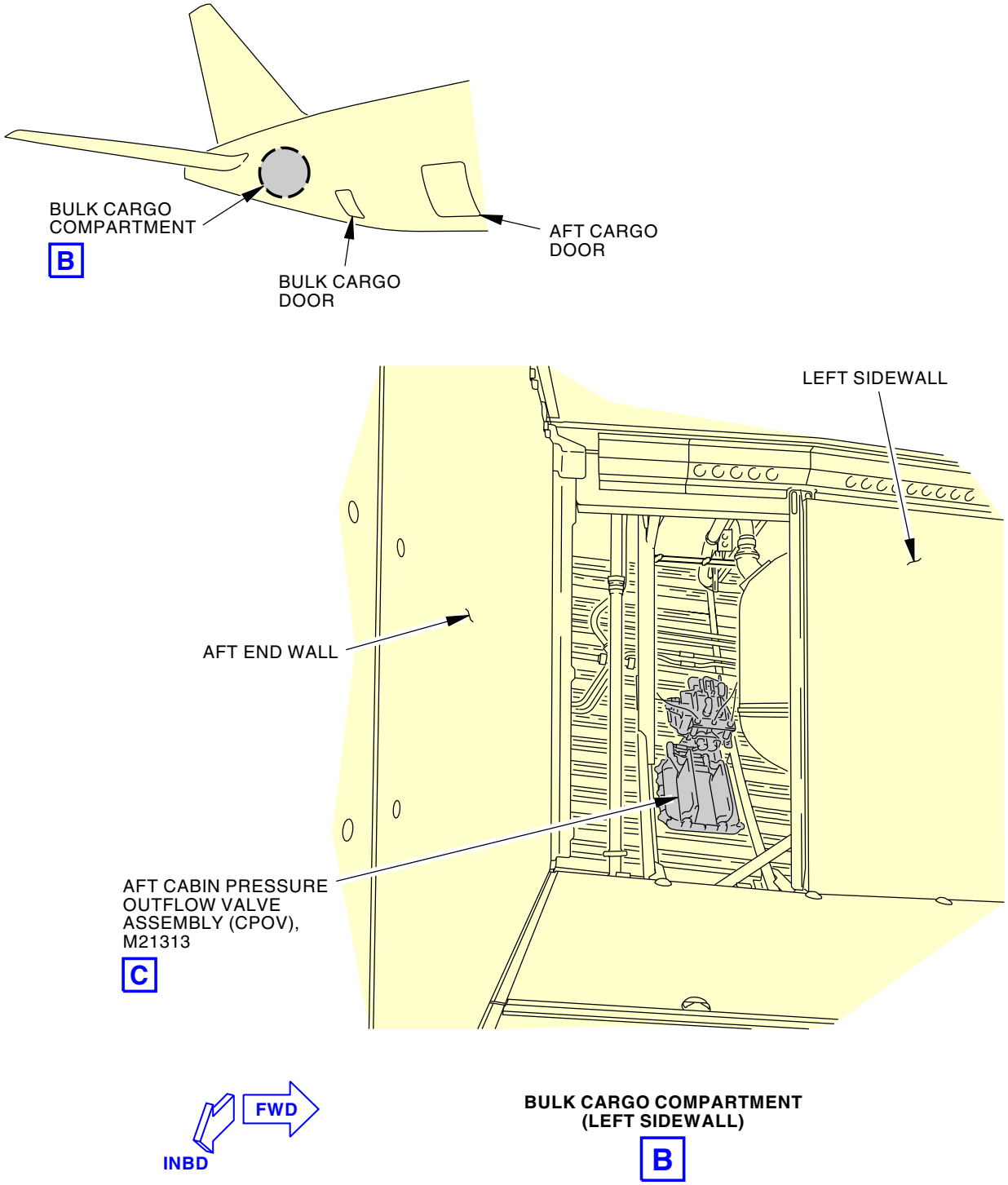

Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning
Figure 701/21-31-03-990-811-002 (Sheet 2 of 4)

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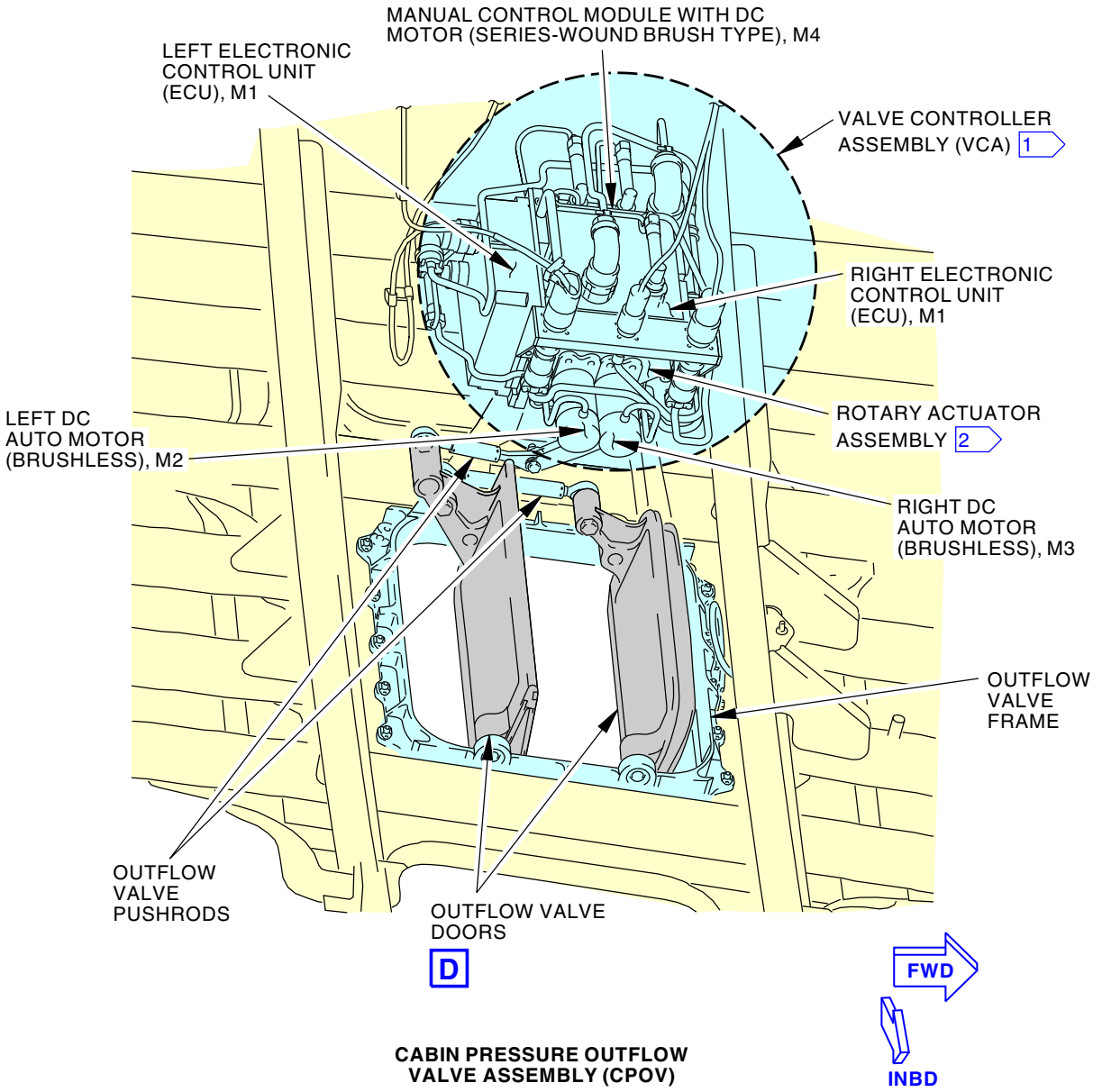

CABIN PRESSURE OUTFLOW VALVE ASSEMBLY (CPOV)

C

NOTE:

AFT CPOV SHOWN. FORWARD CPOV SAME.

1 THE VCA CONSISTS OF TWO ECU'S AND ROTARY ACTUATOR ASSEMBLY.

2 THE ROTARY ACTUATOR ASSEMBLY CONSISTS OF TWO BRUSHLESS DC AUTO MOTORS, GEARBOX, MANUAL CONTROL MODULE WITH DC MOTOR, AND WIRE HARNESS.

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Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning
Figure 701/21-31-03-990-811-002 (Sheet 3 of 4)

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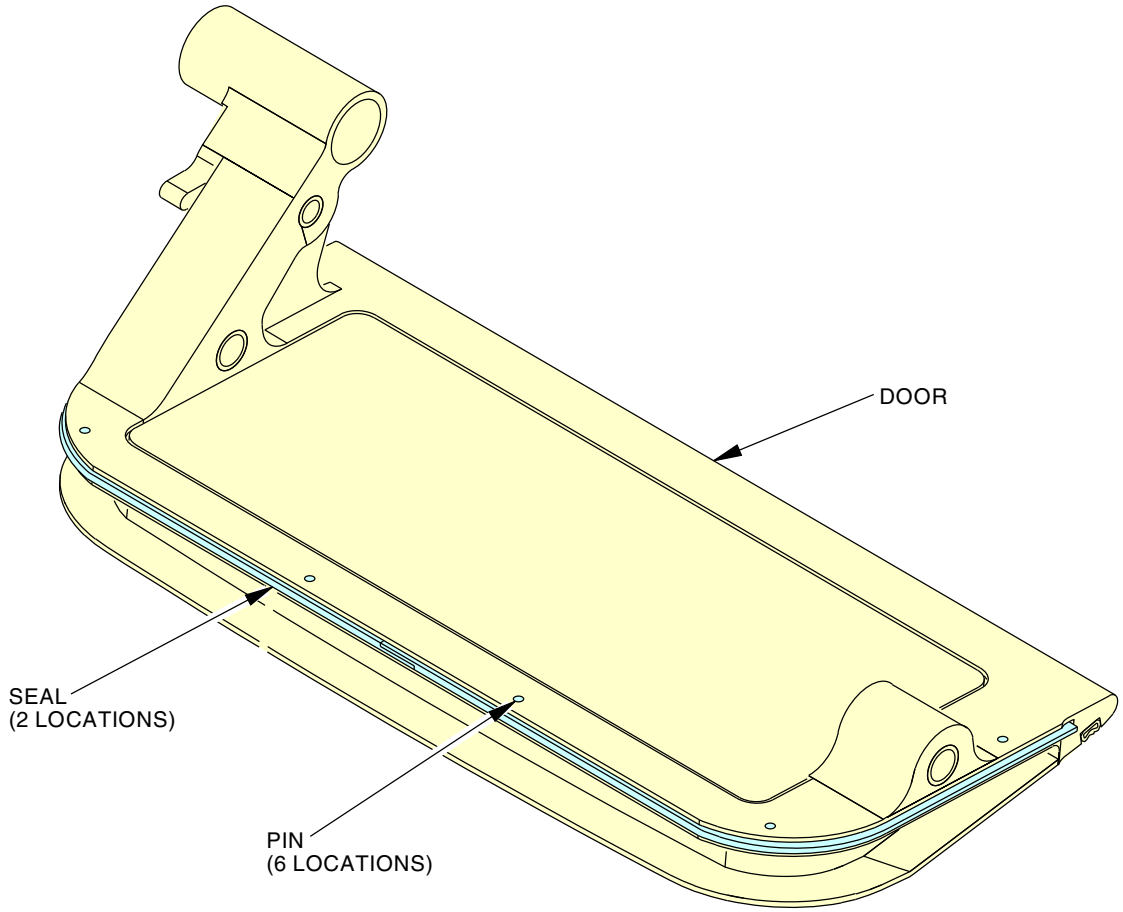

OUTFLOW VALVE DOOR
(EXAMPLE)

D

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Cabin Pressure Outflow Valve (CPOV) Assembly Cleaning
Figure 701/21-31-03-990-811-002 (Sheet 4 of 4)

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OUTFLOW VALVE ASSEMBLY - REPAIRS

1. General

A. This procedure has one task to repair the sound suppression tape on the aft door of the outflow valve.

B. This repair procedure is used to repair sound suppression tape damaged during use of the outflow valve or because of contact with foreign objects.

TASK 21-31-03-300-801

2. Aft Door Assembly Sound Suppression Tape Repair

(Figure 801)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (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)
52-36-00-860-801	Open the Door (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Tools/Equipment

Reference	Description
STD-745	Roller - Hard Rubber
STD-1064	Scraper - Phenolic, Hard Resin

C. Consumable Materials

Reference	Description	Specification
A50051	Sealant - P/S 890 Class B Fuel Tank Sealant	SAE AMS-S-8802 Class B
B00647 [P11-039]	Solvent - Cleaner - Desoclean 45	PMC 9060
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)
G01659	Swab - Cotton Or Rayon, (Disposable)	
G50079	Scraper - Wood or Plastic	
G50226	Tape - 3M Double-coated Urethane Foam Tape 4026	
G50232	Tape - 3M Safety-Walk Slip-Resistant Tape, General Purpose 600 Series	

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
161	Bulk Cargo Compartment, Left

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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F. Prepare for the Repair

SUBTASK 21-31-03-860-063

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

SUBTASK 21-31-03-860-064

(2) Make sure the ADIRU switch on the overhead panel, P5, is in the ON position.

SUBTASK 21-31-03-860-065

(3) Push the applicable FWD or AFT OUTFLOW VALVE - AUTO/MAN switch-lights, on the pilot's overhead panel, P5, to the MAN position.

(a) Make sure that the applicable MAN switch-lights come on.

SUBTASK 21-31-03-710-020

(4) Use the EICAS primary display to determine the FWD or the AFT outflow valves position indications (if available).

SUBTASK 21-31-03-710-021

(5) If the applicable FWD or the AFT outflow valves are not in the open position, then do these steps:

(a) Push and hold the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch, on the pilot's overhead panel, P5, to the OPEN position.

1) Make sure the FWD (AFT) OUTFLOW VALVE position indication on the EICAS primary display (if available) moves toward the open (OP) position.

NOTE: If the EICAS primary display is not available hold the switch to the OPEN position for 30 seconds.

2) Look at the outflow valve to make sure it is in the open position.

3) Release the FWD (AFT) OUTFLOW VALVE - MANUAL OPEN/CLOSE toggle switch.

SUBTASK 21-31-03-860-066

(6) For the forward outflow valve assembly [3], do these steps:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

(c) Remove the screws [2] and the floor panel [1] below the Left Power Management Panel, P110 in the Main Equipment Center.

SUBTASK 21-31-03-860-067

(7) For the aft outflow valve assembly [3], do these steps:

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(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(c) Do this task: Open the Door, TASK 52-36-00-860-801.

(d) Remove the left sidewall liner at the aft end of the bulk cargo compartment (TASK 25-52-06-000-801).

G. Sound Suppression Tape Repair

SUBTASK 21-31-03-140-003

(1) Use a hard resin phenolic scraper, STD-1064, or equivalent to remove the damaged tape and sealant from the leading edge of the aft door of the outflow valve.

SUBTASK 21-31-03-110-002

WARNING

DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE. OBEY THE MATERIAL SAFETY DATA SHEETS (MSDS) FOR SOLVENTS. OBEY LOCAL REGULATIONS FOR THE CORRECT PROCEDURES TO USE OR DISCARD SOLVENTS. SOLVENTS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) Clean the leading edge surface of the door with a clean cotton wiper, G00034, that is wet with Desoclean 45 solvent, B00647 [P11-039], to remove all traces of sealant and adhesive.

(a) Immediately rub the surface dry with a clean cotton wiper, G00034.

SUBTASK 21-31-03-943-001

(3) Do the steps that follow to make a pattern to install the sound suppression tape:

(a) Use a pencil to make a line from 0.91 in. (23.1 mm) to 1.09 in. (27.7 mm) from the leading edge on the outboard face of the aft door.

(b) Put a piece of Scotch Flatback Masking Tape 250, G00270, along the aft side of the line to make a pattern.

SUBTASK 21-31-03-910-032

(4) Cut a piece of 1.5 in. (38.1 mm) wide 3M 4026 Tape, G50226, to a length of 12.97 in. (329.44 mm) to 13.03 in. (330.96 mm).

SUBTASK 21-31-03-400-001

(5) Do the steps that follow to apply the 3M 4026 Tape, G50226, to the leading edge of the aft door:

(a) Remove the paper backing from one side of the 3M 4026 Tape, G50226.

(b) Carefully apply the 3M 4026 Tape, G50226, adjacent to the tape you applied as a pattern.

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(c) Make sure that the 3M 4026 Tape, G50226, is flush with the edges of the door.

(d) Wrap the 3M 4026 Tape, G50226, over the leading edge of the aft door.

(e) Make sure that there are no loose corners or bubbles in the 3M 4026 Tape, G50226.

(f) Use a hard rubber roller, STD-745, on the 3M 4026 Tape, G50226, to make sure that there is a good bond.

SUBTASK 21-31-03-350-005

(6) Remove all of the Scotch Flatback Masking Tape 250, G00270, you used to make a pattern.

SUBTASK 21-31-03-350-002

WARNING

DO NOT GET THE SEALANT ON YOUR SKIN OR IN YOUR EYES. PUT ON PROTECTIVE CLOTHING, GOGGLES AND A FACE MASK. USE IN A WELL VENTILATED AREA. DO NOT BREATHE THE GAS. IF YOU GET THE SEALANT ON YOUR SKIN OR IN YOUR EYES, WIPE IT AWAY. GET MEDICAL AID IF YOUR SKIN OR EYES BECOME IRRITATED.

(7) Mix approximately 1 ounce of P/S 890 Class B sealant, A50051 as specified in the manufacturer's instructions.

SUBTASK 21-31-03-390-011

(8) Do the steps that follow to apply the sealant:

(a) Apply a small bead of the P/S 890 Class B sealant, A50051 along the inboard edge of the foam tape.

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(b) Use a scraper, G50079 or swab, G01659, that is wet with Desoclean 45 solvent, B00647 [P11-039] to make a smooth surface on the sealant bead.

(c) Let the sealant dry until it is not tacky, as specified in the manufacturer's instructions.

SUBTASK 21-31-03-910-033

(9) Cut a piece of 2.0 inch wide 3M Safety-Walk Tape, G50232, to a length of 12.97 in. (329.44 mm) to 13.03 in. (330.96 mm).

SUBTASK 21-31-03-350-003

(10) Do the steps that follow to apply the 3M Safety-Walk Tape, G50232, to the leading edge of the aft door:

(a) Remove the paper backing from the 3M Safety-Walk Tape, G50232.

(b) Remove the paper backing from the other side of the 3M 4026 Tape, G50226.

(c) Carefully align the 3M Safety-Walk Tape, G50232 with the outboard edge of the 3M 4026 Tape, G50226.

(d) Make sure that the 3M Safety-Walk Tape, G50232 is flush with the edges of the door.

(e) Wrap the 3M Safety-Walk Tape, G50232 over the leading edge of the aft door so that it covers the foam tape.

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(f) Make sure that there are no loose corners or bubbles in the 3M Safety-Walk Tape, G50232.

(g) Use a hard rubber roller, STD-745 on the 3M Safety-Walk Tape, G50232 to make sure that there is a good bond.

SUBTASK 21-31-03-350-004

WARNING DO NOT GET THE SEALANT ON YOUR SKIN OR IN YOUR EYES. PUT ON PROTECTIVE CLOTHING, GOGGLES AND A FACE MASK. USE IN A WELL VENTILATED AREA. DO NOT BREATHE THE GAS. IF YOU GET THE SEALANT ON YOUR SKIN OR IN YOUR EYES, WIPE IT AWAY. GET MEDICAL AID IF YOUR SKIN OR EYES BECOME IRRITATED.

(11) Mix approximately 2 ounces of P/S 890 Class B sealant, A50051, as specified in the manufacturer's instructions.

SUBTASK 21-31-03-390-012

(12) Do the steps that follow to apply the sealant:

WARNING DO NOT GET THE SEALANT ON YOUR SKIN OR IN YOUR EYES. PUT ON PROTECTIVE CLOTHING, GOGGLES AND A FACE MASK. USE IN A WELL VENTILATED AREA. DO NOT BREATHE THE GAS. IF YOU GET THE SEALANT ON YOUR SKIN OR IN YOUR EYES, WIPE IT AWAY. GET MEDICAL AID IF YOUR SKIN OR EYES BECOME IRRITATED.

(a) Apply a small bead of the P/S 890 Class B sealant, A50051 along the inboard and the outboard edges of the tape.

WARNING DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE. OBEY THE MATERIAL SAFETY DATA SHEETS (MSDS) FOR SOLVENTS. OBEY LOCAL REGULATIONS FOR THE CORRECT PROCEDURES TO USE OR DISCARD SOLVENTS. SOLVENTS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(b) Use a scraper, G50079 or swab, G01659 that is wet with Desoclean 45 solvent, B00647 [P11-039] to make a smooth surface on the sealant bead.

(c) Make sure that the tape and the sealant do not protrude beyond the inboard and outboard edges of the aft door.

(d) Let the sealant dry fully as specified in the manufacturer's instructions.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-03-860-068

(1) If you repaired the forward outflow valve assembly [3], do these steps:

(a) Put the floor panel [1] in its position below the Left Power Management Panel, P110 and install the screws [2].

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	7	C21610	R FWD OFL VLV

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Standby Power Management Panel, P310

Row	Col	Number	Name
G	13	C21609	L FWD OFL VLV

Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-860-069

(2) If you repaired the aft outflow valve assembly [3], do these steps:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	8	C21612	R AFT OFL VLV

Standby Power Management Panel, P310

Row	Col	Number	Name
G	14	C21611	L AFT OFL VLV

(d) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-03-860-070

(3) Make sure the ADIRU switch on the overhead panel, P5, is in the OFF position.

——— END OF TASK ———

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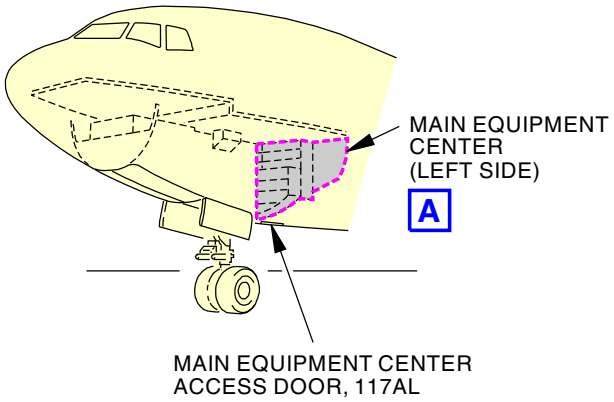

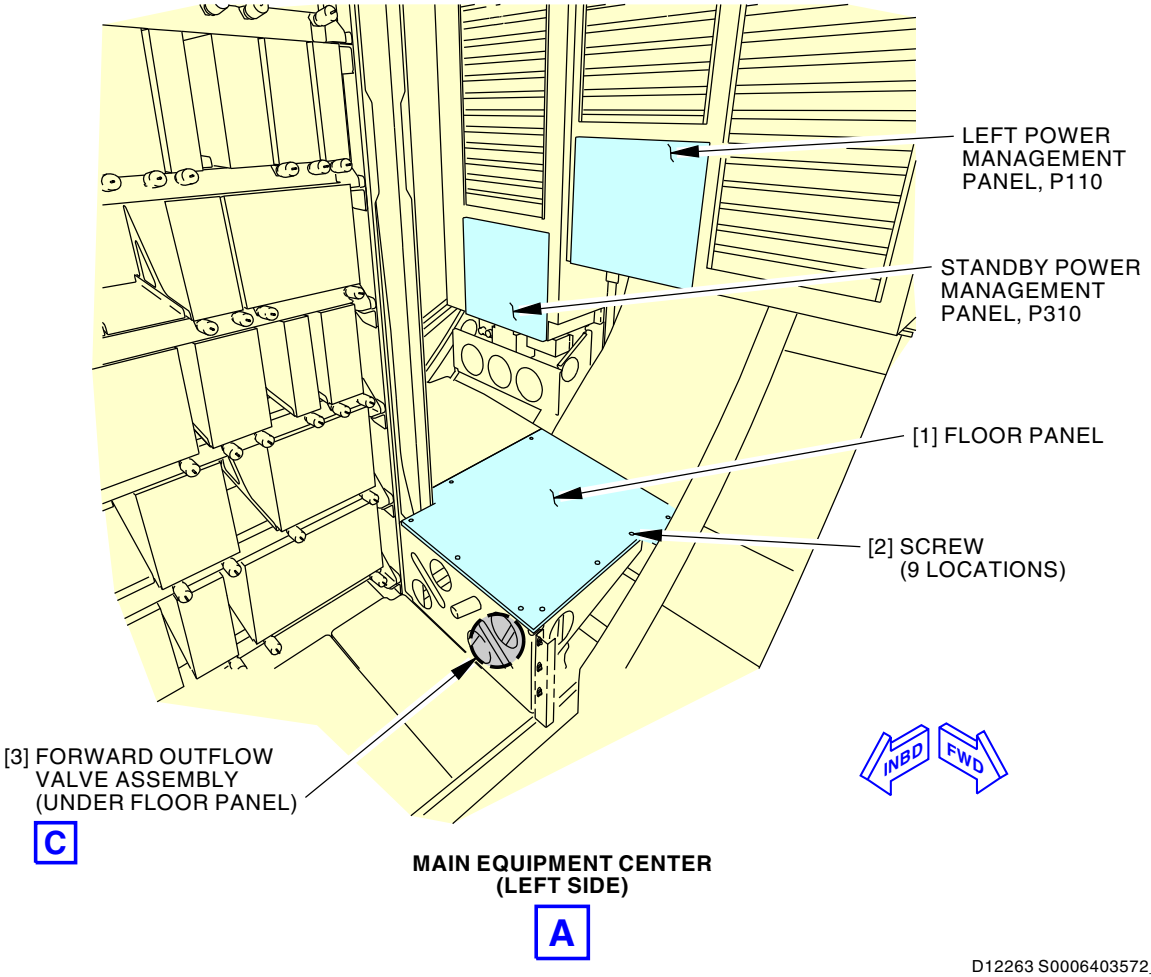

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Aft Door Assembly Sound Suppression Tape Repair
Figure 801/21-31-03-990-823 (Sheet 1 of 3)

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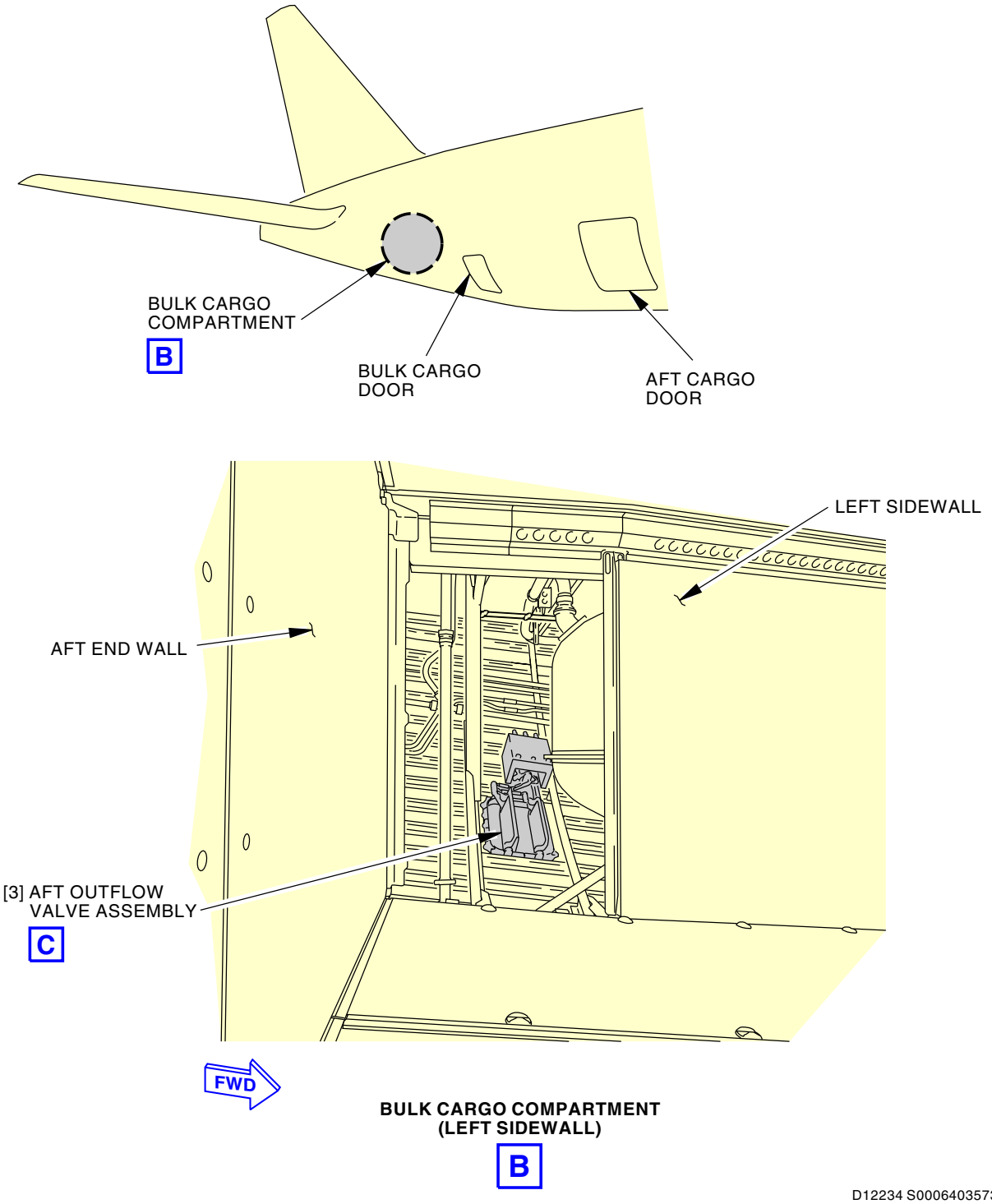

Aft Door Assembly Sound Suppression Tape Repair
Figure 801/21-31-03-990-823 (Sheet 2 of 3)

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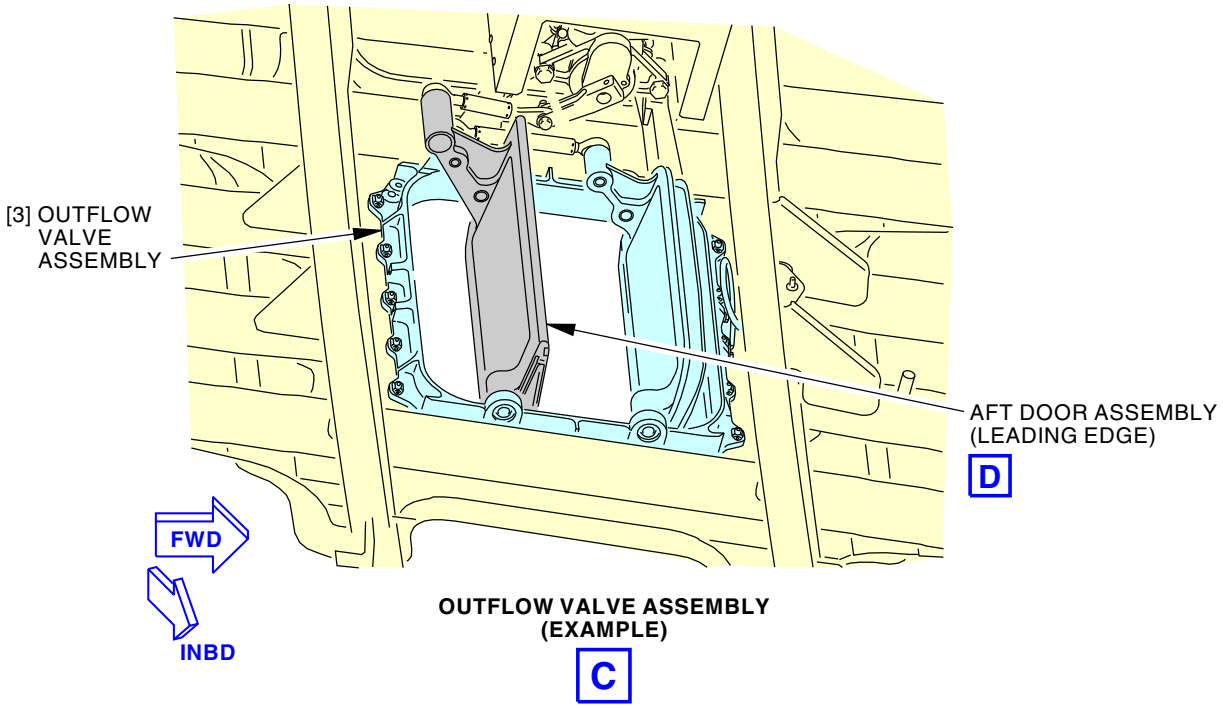
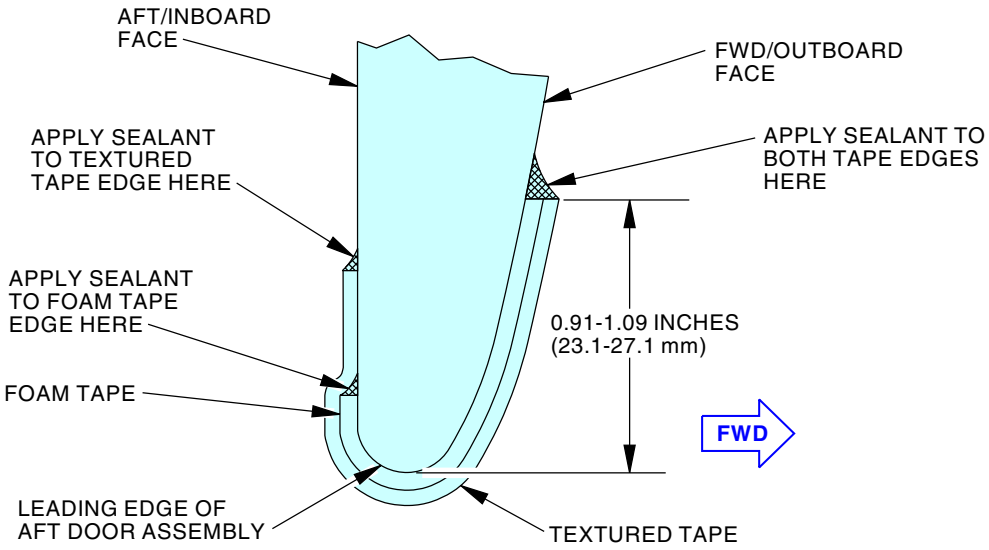


OUTFLOW VALVE ASSEMBLY (EXAMPLE)

C



AFT DOOR ASSEMBLY (LEADING EDGE)

D

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Aft Door Assembly Sound Suppression Tape Repair
Figure 801/21-31-03-990-823 (Sheet 3 of 3)

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REMOTE CABIN PRESSURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Remote cabin pressure sensor removal.

(2) Remote cabin pressure sensor installation.

B. The remote cabin pressure sensor is installed below the Standby Power Management Panel, P310 in the Main Equipment Center.

C. The remote cabin pressure sensor is also referred to as the Remote Sensor Unit (RSU).

TASK 21-31-07-000-801

2. Remote Cabin Pressure Sensor Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)

B. Location Zones

Zone	Area
118	Main Equipment Center, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-31-07-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-31-07-860-001

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

Standby Power Management Panel, P310

Row	Col	Number	Name
H	13	C21651	CAB PRESS REMOTE SNSR

E. Remote Cabin Pressure Sensor Removal

SUBTASK 21-31-07-020-001

CAUTION

DO NOT TOUCH THE REMOTE CABIN PRESSURE SENSOR BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE REMOTE CABIN PRESSURE SENSOR.

(1) Do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

SUBTASK 21-31-07-020-002

(2) Disconnect the electrical connector [3] from the remote cabin pressure sensor [1].

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SUBTASK 21-31-07-020-003

(3) Loosen the four captive fasteners [2] on the remote cabin pressure sensor [1].

SUBTASK 21-31-07-020-004

(4) Remove the remote cabin pressure sensor [1].

——— END OF TASK ———

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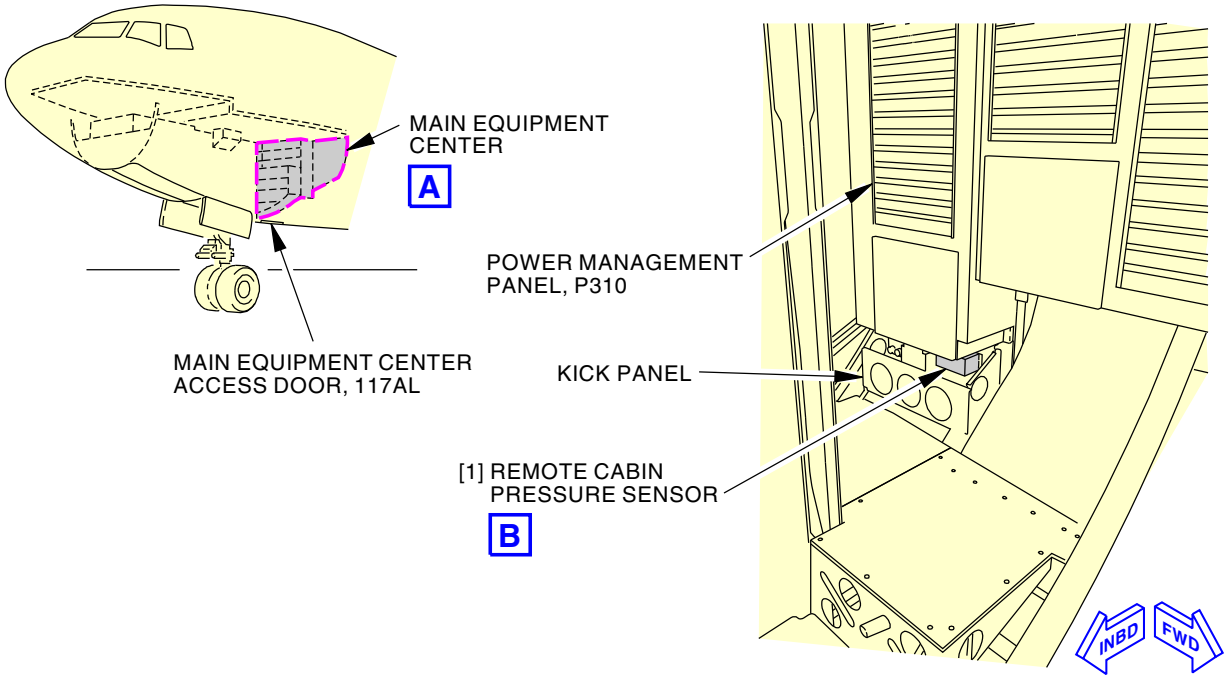
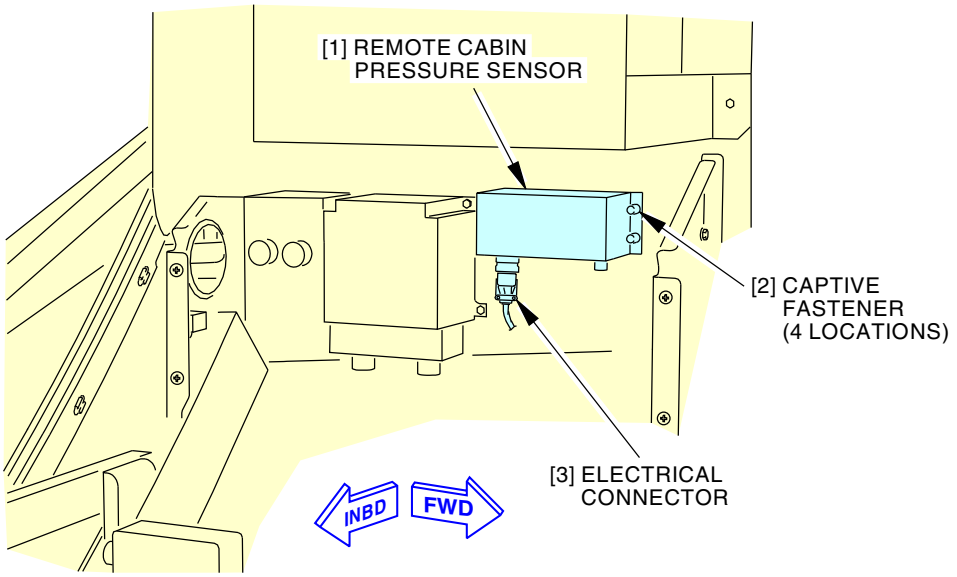


MAIN EQUIPMENT CENTER

A



REMOTE CABIN PRESSURE SENSOR

B

NOTE:

THE KICK PANEL IS NOT SHOWN.

C69082 S0006403606_V3

Remote Cabin Pressure Sensor Installation
Figure 401/21-31-07-990-801

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TASK 21-31-07-400-801

3. Remote Cabin Pressure Sensor Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. 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)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Remote cabin pressure sensor	21-31-07-01-005	ARO ALL

C. Location Zones

Zone	Area
118	Main Equipment Center, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Remote Cabin Pressure Sensor Installation

SUBTASK 21-31-07-020-005

CAUTION

DO NOT TOUCH THE REMOTE CABIN PRESSURE SENSOR BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE REMOTE CABIN PRESSURE SENSOR.

(1) Do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-41-01-400-803.

SUBTASK 21-31-07-820-001

(2) Put the remote cabin pressure sensor [1] in its position.

SUBTASK 21-31-07-420-001

(3) Tighten the four captive fasteners [2] on the remote cabin pressure sensor [1].

SUBTASK 21-31-07-420-002

(4) Connect the electrical connector [3] to the remote cabin pressure sensor [1].

SUBTASK 21-31-07-860-005

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

Standby Power Management Panel, P310

Row	Col	Number	Name
H	13	C21651	CAB PRESS REMOTE SNSR

F. Remote Cabin Pressure Sensor Installation Test

SUBTASK 21-31-07-860-002

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

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SUBTASK 21-31-07-860-003

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	12	C36612	AIR SPLY R PRI
P	13	C36614	AIR SPLY R BACKUP
P	14	C36616	AIR SPLY R SOL

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI
C	2	C36613	AIR SPLY L BACKUP
C	3	C36615	AIR SPLY L SOL

SUBTASK 21-31-07-710-001

(3) Make sure the upper EICAS display shows a cabin altitude and the cabin differential pressure.

SUBTASK 21-31-07-860-006

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

Right Power Management Panel, P210

Row	Col	Number	Name
P	12	C36612	AIR SPLY R PRI
P	13	C36614	AIR SPLY R BACKUP
P	14	C36616	AIR SPLY R SOL

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI
C	2	C36613	AIR SPLY L BACKUP
C	3	C36615	AIR SPLY L SOL

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-07-410-001

(1) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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POSITIVE PRESSURE RELIEF VALVE - MAINTENANCE PRACTICES

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Positive pressure relief valve removal.

(2) Positive pressure relief valve installation.

(3) Positive pressure relief valve - static system leak check.

(4) Positive Pressure Relief Valve Indicator Flag Reset.

C. Two positive pressure relief valves are installed in the forward cargo compartment behind the left sidewall liners. The positive pressure relief valves will be called the relief valves throughout this procedure. The removal and installation procedures are the same for each relief valve.

TASK 21-32-01-000-801

2. Positive Pressure Relief Valve Removal

(Figure 201)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-805	Open the Door Manually (P/B 201)

B. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
821	Forward Large Cargo Door

C. Prepare for the Removal

SUBTASK 21-32-01-010-001

(1) Do this task: Open the Door Manually, TASK 52-34-00-860-805.

SUBTASK 21-32-01-010-002

(2) Remove the applicable sidewall liner on the left side of the forward cargo compartment, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

D. Positive Pressure Relief Valve Removal

SUBTASK 21-32-01-020-001

(1) Disconnect the remote ambient sense hose from the relief valve [1].

SUBTASK 21-32-01-020-002

(2) Remove the reducer [5] and the o-ring [4] from the primary metering section cap.

SUBTASK 21-32-01-420-001

(3) Put a cap on the remote ambient sense hose and the port on the primary metering section cap to keep out unwanted material.

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SUBTASK 21-32-01-020-003

(4) Remove the bolts [3] and bolts [6] from the outer surface of the airplane skin while someone else holds the relief valve [1].

NOTE: Bolts [3] installed at upper and lower positions (4 positions) have smaller length than bolts [6] installed in FWD and AFT positions (4 positions). They have 1 dash of difference. Identify removed bolts if necessary to make installation easier.

SUBTASK 21-32-01-020-004

(5) Remove the relief valve [1].

SUBTASK 21-32-01-020-005

(6) Remove and discard the gasket [2].

——— END OF TASK ———

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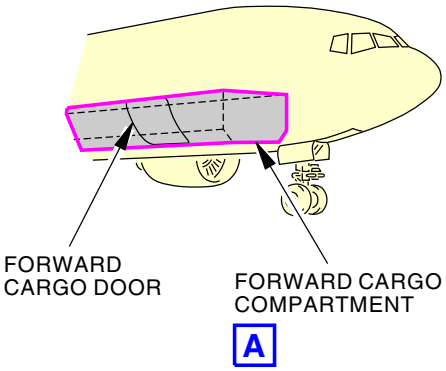

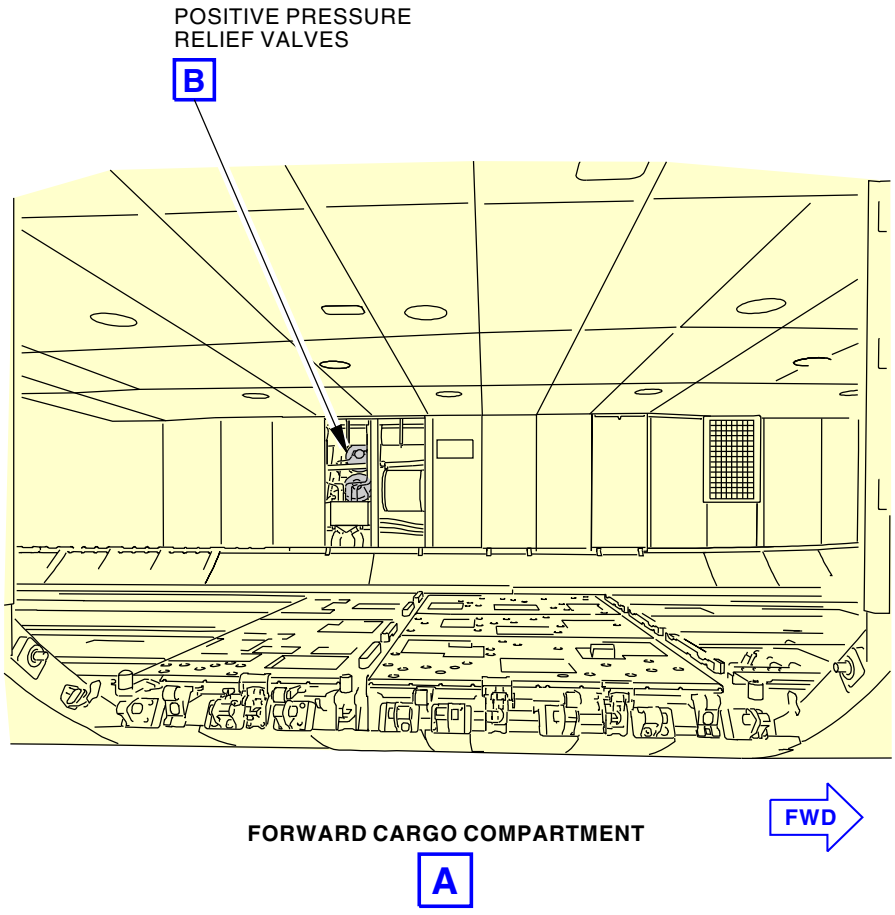

C33679 S0006403612_V2

Positive Pressure Relief Valve Installation
Figure 201/21-32-01-990-802 (Sheet 1 of 4)

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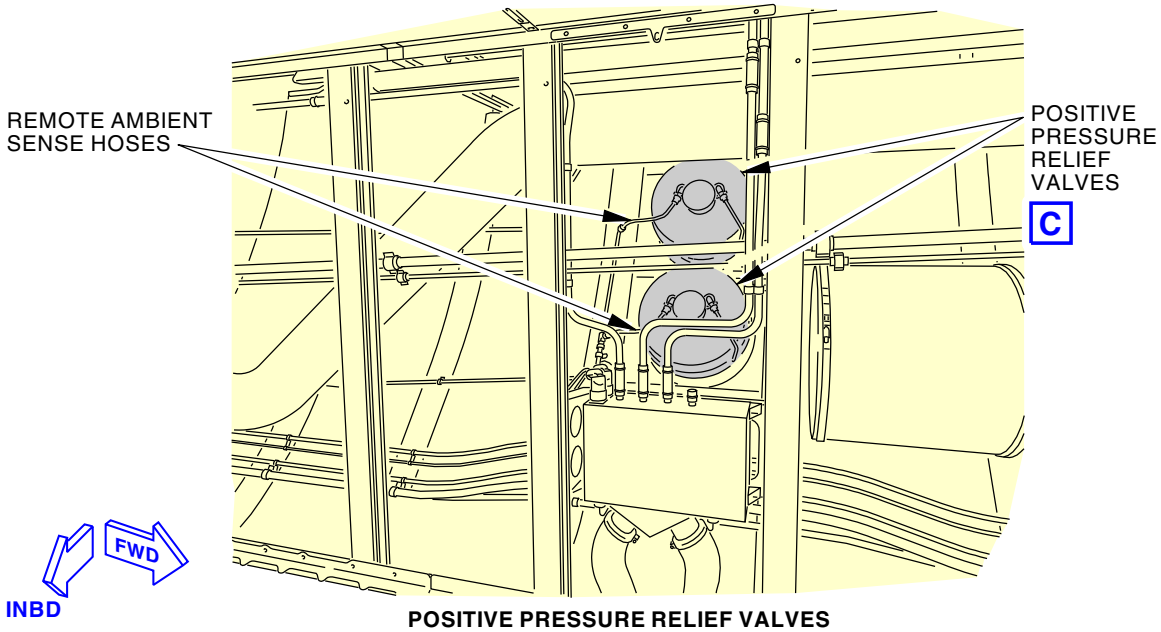
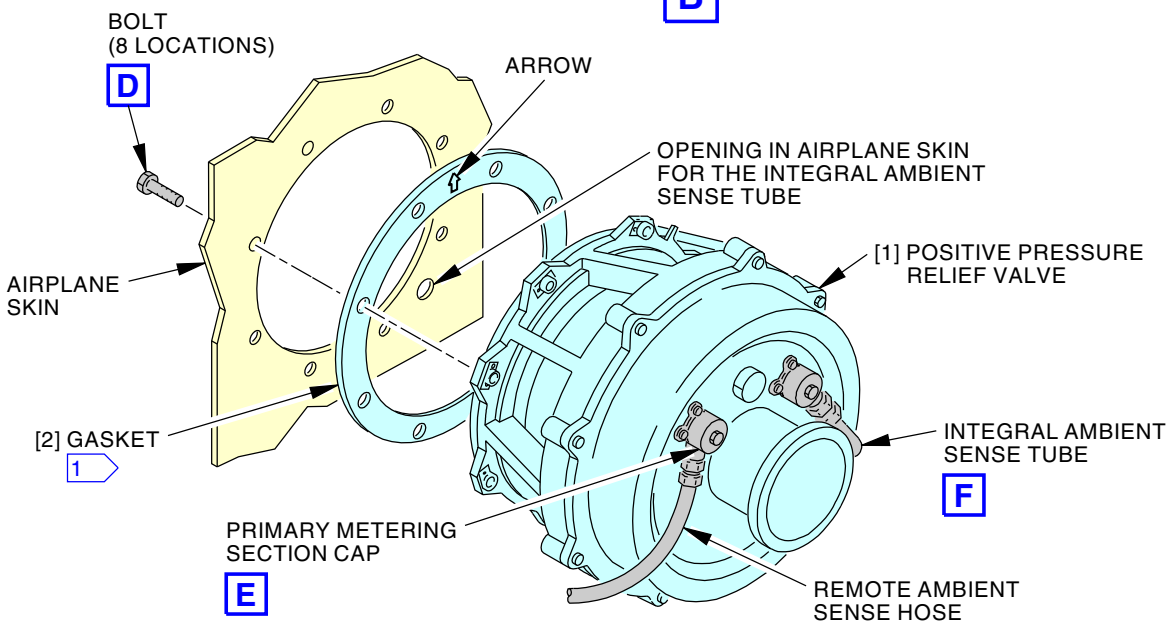


POSITIVE PRESSURE RELIEF VALVES

B



POSITIVE PRESSURE RELIEF VALVE

C

1 MAKE SURE THE CONTOURED SIDE OF THE GASKET IS AGAINST THE AIRPLANE SKIN

C33698 S0006403613_V2

Positive Pressure Relief Valve Installation
Figure 201/21-32-01-990-802 (Sheet 2 of 4)

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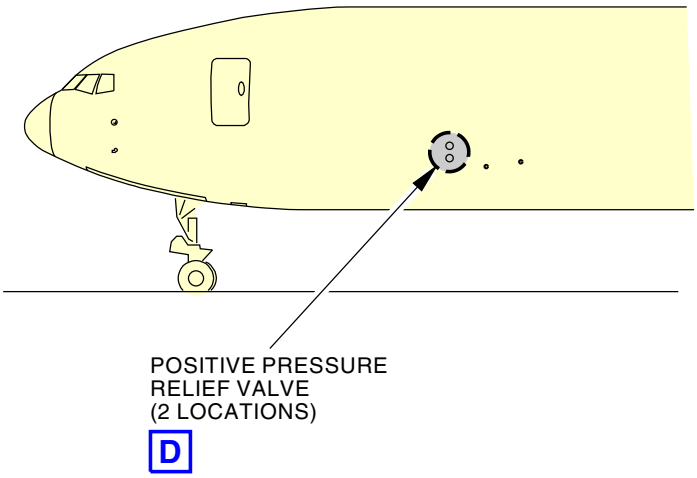

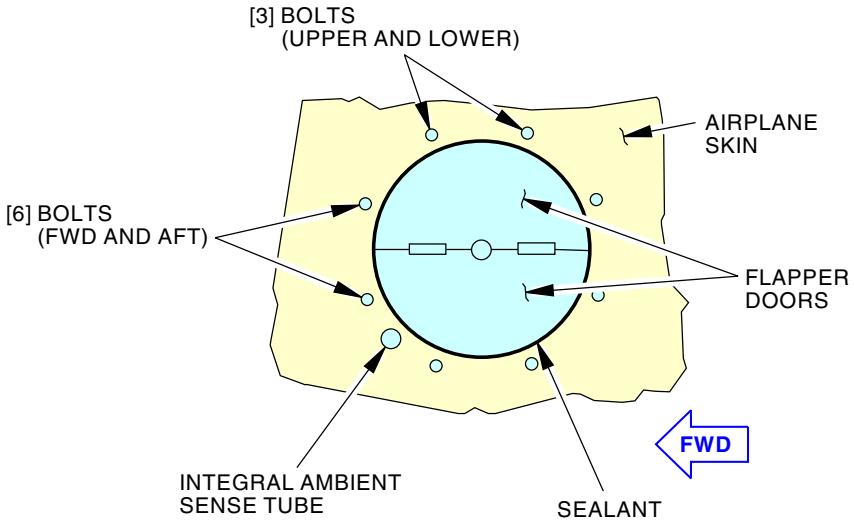

POSITIVE PRESSURE RELIEF VALVE

D

E70192 S0006403614_V2

Positive Pressure Relief Valve Installation
Figure 201/21-32-01-990-802 (Sheet 3 of 4)

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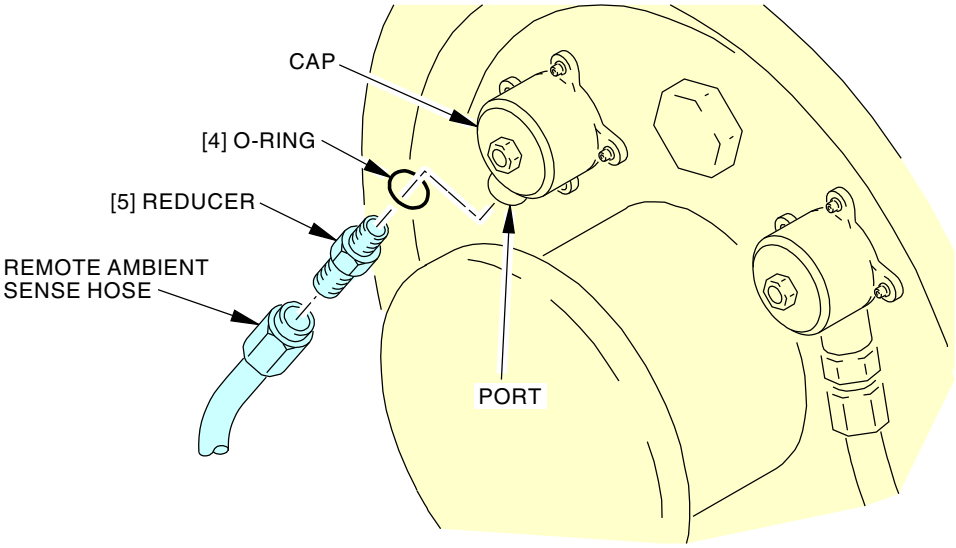
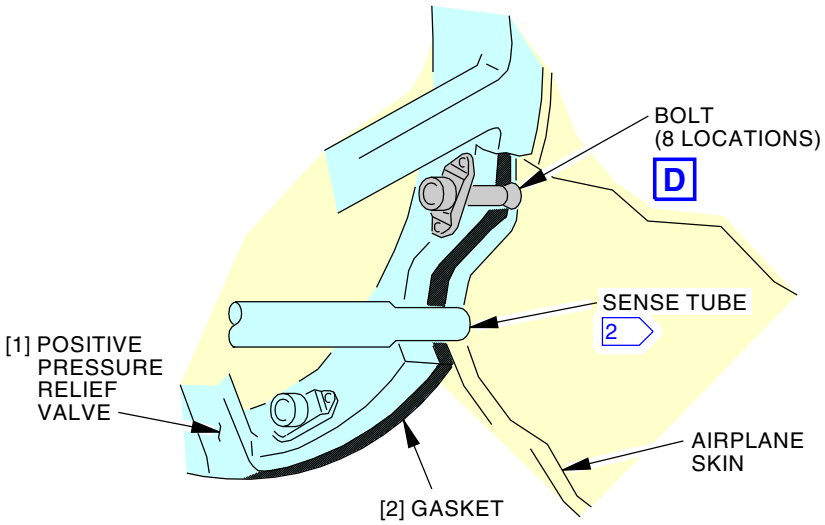


PRIMARY METERING SECTION CAP

E



INTEGRAL AMBIENT SENSE TUBE

F

2 MAKE SURE THE INTEGRAL AMBIENT SENSE TUBE DOES NOT GO MORE THAN 0.02 INCH OUT FROM THE AIRPLANE SKIN.

E44280 S0006403615_V2

Positive Pressure Relief Valve Installation
Figure 201/21-32-01-990-802 (Sheet 4 of 4)

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TASK 21-32-01-400-801

3. Positive Pressure Relief Valve Installation

(Figure 201)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-34-00-860-806	Close the Door Manually (P/B 201)

B. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
C00033	Coating - Protective Enamel, Flexibility Use	BMS10-60 Type II
C00319	Primer - Urethane Compatible, Corrosion Resistant	BMS10-79 Type II
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-32-01-01-105	ARO ALL
		21-32-01-01-107	ARO ALL
2	Gasket	21-32-01-01-100	ARO ALL
4	O-ring	21-32-01-01-030	ARO ALL

D. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
821	Forward Large Cargo Door

E. Positive Pressure Relief Valve Installation

SUBTASK 21-32-01-110-001

(1) Use solvent, B00184 to remove the sealant that remains on the airplane skin.

SUBTASK 21-32-01-800-001

(2) Rub the wet surfaces with clean, lint-free cotton wiper, G00034.

SUBTASK 21-32-01-430-001

(3) Put the new gasket [2] in the correct position against the airplane skin.

(a) Make sure the holes in the gasket [2] align with the holes in the airplane skin.

(b) Make sure the contoured side of the gasket [2] is against the airplane skin.

(c) Make sure the part marking on the gasket [2] which reads INBD UP is in the correct position.

SUBTASK 21-32-01-420-002

(4) Put the relief valve [1] in the correct position.

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(a) Make sure the integral ambient sense tube and all the bolt holes align with the mating holes in the gasket [2] and the airplane skin.

SUBTASK 21-32-01-420-003

(5) Apply compound, C00528 to all areas of the bolt holes and immediately install the bolts [3] and bolts [6] while someone else holds the relief valve in its position.

(a) Tighten the bolts [3] and bolts [6] to 35 pound-inches.

NOTE: Pay attention to the length of bolts. Bolts [3] installed at upper and lower positions (4 positions) have smaller length than bolt [6] installed in FWD and AFT positions (4 positions). There is only one difference dash.

SUBTASK 21-32-01-390-001

CAUTION

MAKE SURE THAT THE SEALANT DOES NOT GET ON THE FLAPPER DOORS. SEALANT ON THE FLAPPER DOORS, IT CAN CAUSE A MALFUNCTION OF THE RELIEF VALVE.

(6) Apply the sealant, A02315 in the clearance between the relief valve [1] and the cutout on the outside of the airplane skin.

(a) If it is necessary, open the flapper doors with a plastic tool.

SUBTASK 21-32-01-110-002

(7) If the integral ambient sense tube extends more than 0.02 inch from the outer surface of the airplane skin, do these steps:

CAUTION

BE CAREFUL NOT TO CAUSE DAMAGE TO THE AIRPLANE SKIN. DO NOT GET PARTICLES INTO THE INTEGRAL AMBIENT SENSE TUBE. IF PARTICLES GET IN THE SENSE TUBE, THEY CAN CAUSE THE RELIEF VALVE TO MALFUNCTION.

(a) Grind off the end of the sense tube until the end of the sense tube is no more than 0.02 inch away from the outer surface of the airplane skin.

(b) Put a chamfer on the end of the sense tube.

(c) Clean the outer surface of the sense tube.

(d) Apply one layer of primer, C00319 to the surface of the sense tube that was cut.

(e) Apply one layer of coating, C00033 to the surface of the sense tube that was cut.

SUBTASK 21-32-01-390-002

CAUTION

MAKE SURE THE SEALANT DOES NOT GET INTO THE INTEGRAL AMBIENT SENSE TUBE. IF THE SEALANT GETS IN THE SENSE TUBE IT CAN CAUSE THE RELIEF VALVE TO MALFUNCTION.

(8) Apply sealant, A02315 between the integral ambient sense tube and the outer surface of the airplane skin.

SUBTASK 21-32-01-030-001

(9) Remove the cap from the port in primary metering section cap.

SUBTASK 21-32-01-430-002

(10) Install the o-ring [4] and the reducer [5] to the primary metering section cap.

SUBTASK 21-32-01-030-002

(11) Remove the cap from the remote ambient sense hose.

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SUBTASK 21-32-01-210-003

(12) Make sure that the integral ambient sense tube, remote ambient sense hose and the dump tube are not blocked with debris.

NOTE: The dump tube is found between the relief valve flappers at the center of the relief valve.

SUBTASK 21-32-01-420-004

CAUTION

DO NOT TWIST OR CAUSE KINKS IN THE REMOTE AMBIENT SENSE HOSE WHEN YOU TIGHTEN THE HOSE NUT TO THE REDUCER. DAMAGE CAN OCCUR.

(13) Connect the remote ambient sense hose to the reducer [5] on the primary metering section cap.

SUBTASK 21-32-01-710-001

(14) Do this task: Positive Pressure Relief Valve - Static System Leak Check, TASK 21-32-01-790-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-32-01-410-001

(1) Install the applicable sidewall liner on the left side of the forward cargo compartment, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-32-01-410-002

(2) Do this task: Close the Door Manually, TASK 52-34-00-860-806.

——— END OF TASK ———

TASK 21-32-01-790-801

4. Positive Pressure Relief Valve - Static System Leak Check

(Figure 202)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This procedure has this task:

(a) A leak check of the static system for the positive pressure relief valve.

(2) This check will determine if there is leakage in the static pressure tubes from the remote static pressure port to the positive pressure relief valve connections.

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.

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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

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
821	Forward Large Cargo Door

D. Static System Leak Check

SUBTASK 21-32-01-210-004

(1) Make sure the static pressure port is free of blockage or contamination.

SUBTASK 21-32-01-480-003

(2) Connect the static test adapter, COM-1921 to the static pressure port.

SUBTASK 21-32-01-480-004

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

SUBTASK 21-32-01-780-001

(4) Apply a vacuum (negative pressure) between 586.07 millibars to 599.87 millibars (approximately 8.5 psig to 8.6 psig) to the static system.

SUBTASK 21-32-01-790-001

(5) Isolate the vacuum.

SUBTASK 21-32-01-970-001

(6) Write down the initial pressure.

SUBTASK 21-32-01-790-002

(7) Stop for 1 minute.

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SUBTASK 21-32-01-970-002

(8) Write down the final pressure.

SUBTASK 21-32-01-750-001

(9) Make sure that the leakage rate (initial pressure minus final pressure per minute) is not more than 2.07 millibars/minute (0.03 psig/minute).

SUBTASK 21-32-01-790-003

(10) If the leakage rate is more than 2.07 millibars/minute (0.03 psig/minute), then do these steps:

(a) Repair the leak.

(b) Do the static system leak check again.

SUBTASK 21-32-01-860-002

(11) Put the system back to ambient pressure.

SUBTASK 21-32-01-080-004

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

SUBTASK 21-32-01-080-005

(13) Disconnect the static test adapter, COM-1921 from the static pressure port.

——— END OF TASK ———

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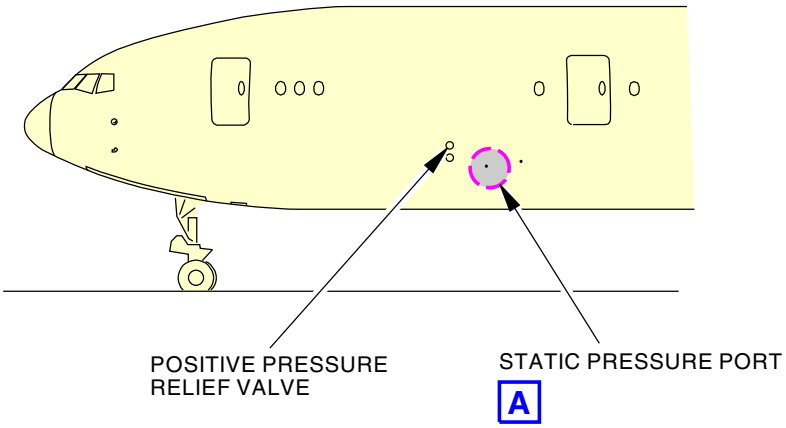

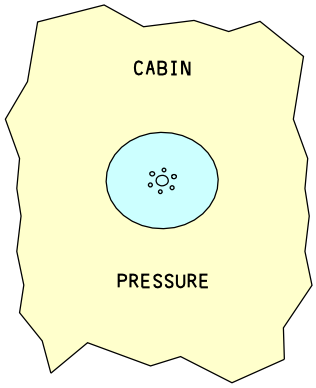

STATIC PRESSURE PORT

A

E48315 S0006403618_V2

Positive Pressure Relief Valve Static System Leak Check
Figure 202/21-32-01-990-803

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TASK 21-32-01-900-801

5. Positive Pressure Relief Valve Indicator Flag Reset

(Figure 203)

A. General

(1) This procedure gives instructions to reset the indicator flag and close the flappers when a positive pressure relief valve has opened.

B. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
821	Forward Large Cargo Door

C. Indicator Flag Reset

SUBTASK 21-32-01-210-005

(1) Locate the pressure relief valve that is open (Figure 203).

NOTE: You can see the orange indicator flag if the valve is open.

SUBTASK 21-32-01-980-001

(2) Pull the flapper open.

SUBTASK 21-32-01-980-002

(3) Push the indicator flag into the valve.

SUBTASK 21-32-01-980-003

(4) Close the flapper.

END OF TASK

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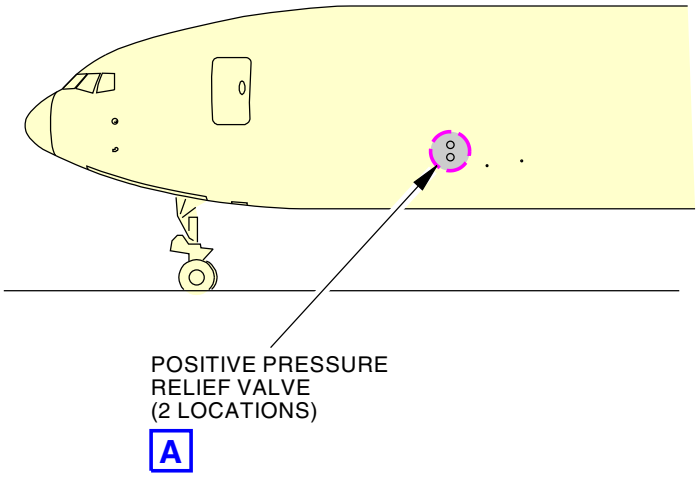

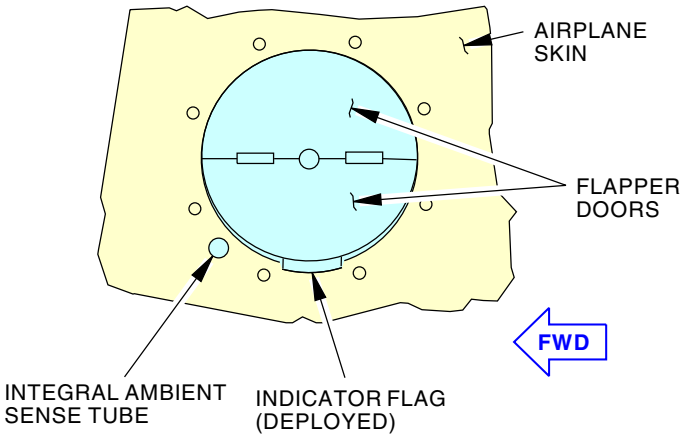

POSITIVE PRESSURE RELIEF VALVE

A

2092155 S0000441694_V2

Positive Pressure Relief Valve Indicator Flag Reset
Figure 203/21-32-01-990-804

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POSITIVE PRESSURE RELIEF VALVE - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has one task:

(1) A system test of the positive pressure relief valves.

C. This task is accomplished with the positive pressure relief valves installed on the aircraft. This task will make sure that the positive pressure relief valves can operate correctly at specific differential pressures which occur during flight. To accomplish this task, the differential pressures which occur during flight are simulated with ground test equipment.

TASK 21-32-01-700-801

2. Positive Pressure Relief Valve - System Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This procedure has instructions to do a system test of the positive pressure relief valves. There are two parts to the system test:

(a) A Remote Ambient Sensor Test.

(b) An Integral Ambient Sensor Test.

(2) Two mechanics are required to do this test.

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-13482	Adapter - PPRV Remote Static Port (part of SPL-6692) Part #: 33410M-125-4 Supplier: 38002
SPL-6692	Vacuum Tank - Pressure Relief Valve Tester Part #: A21010-203 Supplier: 81205 Opt Part #: A21010-188 Supplier: 81205 Opt Part #: A21010-189 Supplier: 81205 Opt Part #: A21010-190 Supplier: 81205
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

D. Procedure

NOTE: This test can only be done on one relief valve at a time. Do the test on the upper relief valve, then do the test again on the lower relief valve.

SUBTASK 21-32-01-210-002

(1) Make sure there is no blockage or unwanted materials at these locations on the fuselage skin by the relief valves:

(a) The static pressure port marked CABIN PRESSURE (aft of the relief valves).

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(b) The integral ambient sense tube [4] opening adjacent to each relief valve.

(c) The overboard vent tube [1] opening in the center of each relief valve.

SUBTASK 21-32-01-480-005

(2) Open the flapper doors [3] and install the clip [16] to hold the flapper doors [3] open during the test.

SUBTASK 21-32-01-480-001

(3) Do these steps to connect the pressure relief valve tester, SPL-6692 to the positive pressure relief valve [5]:

(a) Make sure all the valves on the pressure relief valve tester, SPL-6692 are closed.

(b) Connect the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 to the air source quick-disconnect connection on the pressure relief valve tester, SPL-6692.

(c) Adjust the air control valve [10] on the pressure relief valve tester, SPL-6692 until the indication on the pressure gage is 70 ±10 psi (143 ±21 in/Hg).

(d) Adjust the vacuum regulator valve [14] until the differential pressure is approximately 2 psi (4 in/Hg).

1) Turn the vacuum regulator valve [14] counter-clockwise to increase the vacuum (differential pressure).

NOTE: The arrow on the vacuum regulator valve indicates an increase of pressure not vacuum.

SUBTASK 21-32-01-730-001

(4) Do these steps for the Remote Ambient Sensor Test:

(a) Connect the remote static port adapter, COM-13482 to the remote sensor port [6] marked CABIN PRESSURE on the airplane skin.

1) Make sure the plunger of the remote static port adapter, COM-13482 is in the center hole of the remote sensor port [6].

2) Make sure all the holes in the remote sensor port [6] are covered by the remote static port adapter, COM-13482.

(b) Open the remote sensor valve [11] on the pressure relief valve tester, SPL-6692.

(c) Open the valve [19] on the long probe [17].

(d) Insert the long probe [17] through the hole in the clip [16] and hold the end of the long probe [17] in the overboard vent tube [1].

1) Hold the probe tightly against the overboard vent tube [1] during the test.

(e) Adjust the vacuum regulator valve [14] to increase the differential pressure at the rates that follow:

1) When the differential pressure is less than 8.70 psig (17.71 in/Hg), apply the vacuum at a rate not greater than 5.00 psig/min (10.18 inches Hg/min).

2) When the differential pressure reaches 8.70 psig (17.71 in/Hg) - 9.10 psig (18.53 in/Hg), apply the vacuum at a rate not greater than 2.00 psig/min (4.07 inches Hg/min).

(f) Make sure the positive pressure relief valve [5] opens at a differential pressure of 8.95 ±0.15 psig (18.22 ±0.31 in/Hg).

1) Look into the positive pressure relief valve [5], through the open flapper doors [3], to see when the relief valve opens.

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(g) If the positive pressure relief valve [5] opens at a differential pressure more than 9.10 psig (18.53 in/Hg), make sure that there are no leaks at any of the tubing connections on the vacuum tank assembly [12].

(h) Adjust the vacuum regulator valve [14] at a rate not more than 2.0 psig/min (4.07 inches Hg/min) to a differential pressure of approximately 7.0 psig (14.3 in/Hg).

1) Make sure the positive pressure relief valve [5] closes by no less than 7.0 psig (14.3 in/Hg).

a) Look into the positive pressure relief valve [5], through the open flapper doors [3], to see when the positive pressure relief valve [5] closes.

(i) Close the valve [19] on the long probe [17].

(j) Remove the long probe [17] from the hole in the clip [16].

(k) Close the remote sensor valve [11].

(l) Remove the remote static port adapter, COM-13482 from the remote sensor port [6].

SUBTASK 21-32-01-730-002

(5) Do these steps for the Integral Ambient Sensor Test:

(a) Make sure the clip [16] is still installed on the flapper doors [3].

(b) Open the valve [19] on the long probe [17] and short probe [18].

(c) Insert the long probe [17] through the hole in the clip [16]and hold the end of the long probe [17] in the overboard vent tube [1].

(d) Hold the end of the short probe [18] in the integral ambient sense tube [4].

(e) Hold the probes tightly against the integral ambient sense tube [4] and overboard vent tube [1] during the test.

(f) Adjust the vacuum regulator valve [14] to increase the differential pressure at the rates that follow:

1) When the differential pressure is 0 psig (0 in/Hg) - 9.0 psig (18.3 in/Hg), apply the vacuum at a rate not more than 5.00 psig/min (10.18 inches Hg/min).

2) When the differential pressure is 9.0 psig (18.32 in/Hg) - 9.62 psig (19.59 in/Hg), apply the vacuum at a rate not more than 2.00 psig/min (4.07 inches Hg/min).

(g) Make sure the positive pressure relief valve [5] opens at a differential pressure of 9.42 ±0.20 psig (19.18 ±0.41 in/Hg).

1) Look into the positive pressure relief valve [5], through the open flapper doors [3], to watch for the positive pressure relief valve [5] to open.

(h) Do these steps if the positive pressure relief valve [5] opens at a differential pressure more than 9.62 psig (19.59 in/Hg):

1) Make sure that the end of the long probe [17] and short probe [18] are held tightly against the integral ambient sense tube [4] and overboard vent tube [1].

2) Make sure that there are no leaks at any of the tubing connections on the vacuum tank assembly [12].

(i) Adjust the vacuum regulator valve [14] at a rate not more than 2.0 psig/min (4.07 inches Hg/min) to a differential pressure of approximately 7.0 psig (14.3 in/Hg).

1) Make sure the positive pressure relief valve [5] closes by no less than 7.0 psig (14.3 in/Hg).

a) Look into the positive pressure relief valve [5], through the open flapper doors [3], to see when the relief valve closes.

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SUBTASK 21-32-01-860-001

(6) Adjust the vacuum regulator valve [14] fully clockwise and reduce the differential pressure to 0 psig (0 in/Hg), at a rate of 4.0 psig/min (8.14 inches Hg/min) or slower.

SUBTASK 21-32-01-480-002

(7) Remove the short probe [18] and long probe [17] from the positive pressure relief valve [5].

(a) Close the valves [19] on the long probe [17] and short probe [18].

SUBTASK 21-32-01-730-003

(8) Do the above steps for the other positive pressure relief valve [5].

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-32-01-080-003

(1) Disconnect the compressed 60-105 PSIG dry filtered regulated air source, STD-1057 from the pressure relief valve tester, SPL-6692.

SUBTASK 21-32-01-080-001

(2) Remove the clip [16].

SUBTASK 21-32-01-210-001

(3) Make sure the flapper doors [3] are closed.

——— END OF TASK ———

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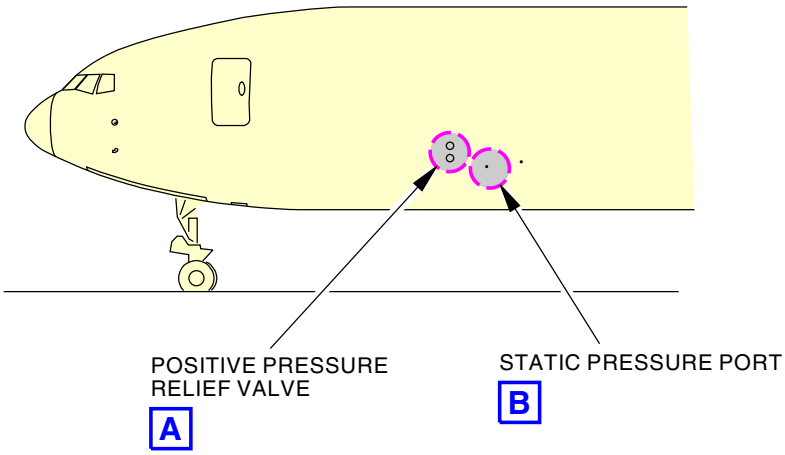

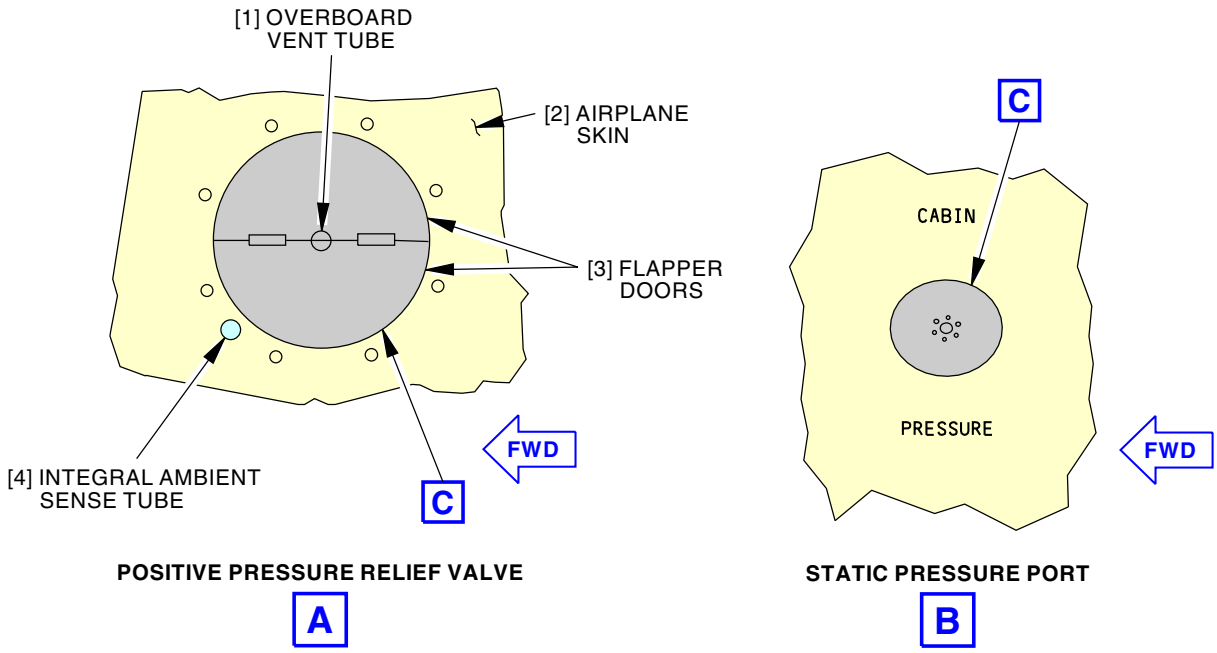

E51451 S0006403621_V3

Positive Pressure Relief Valve Test Setup
Figure 501/21-32-01-990-801 (Sheet 1 of 3)

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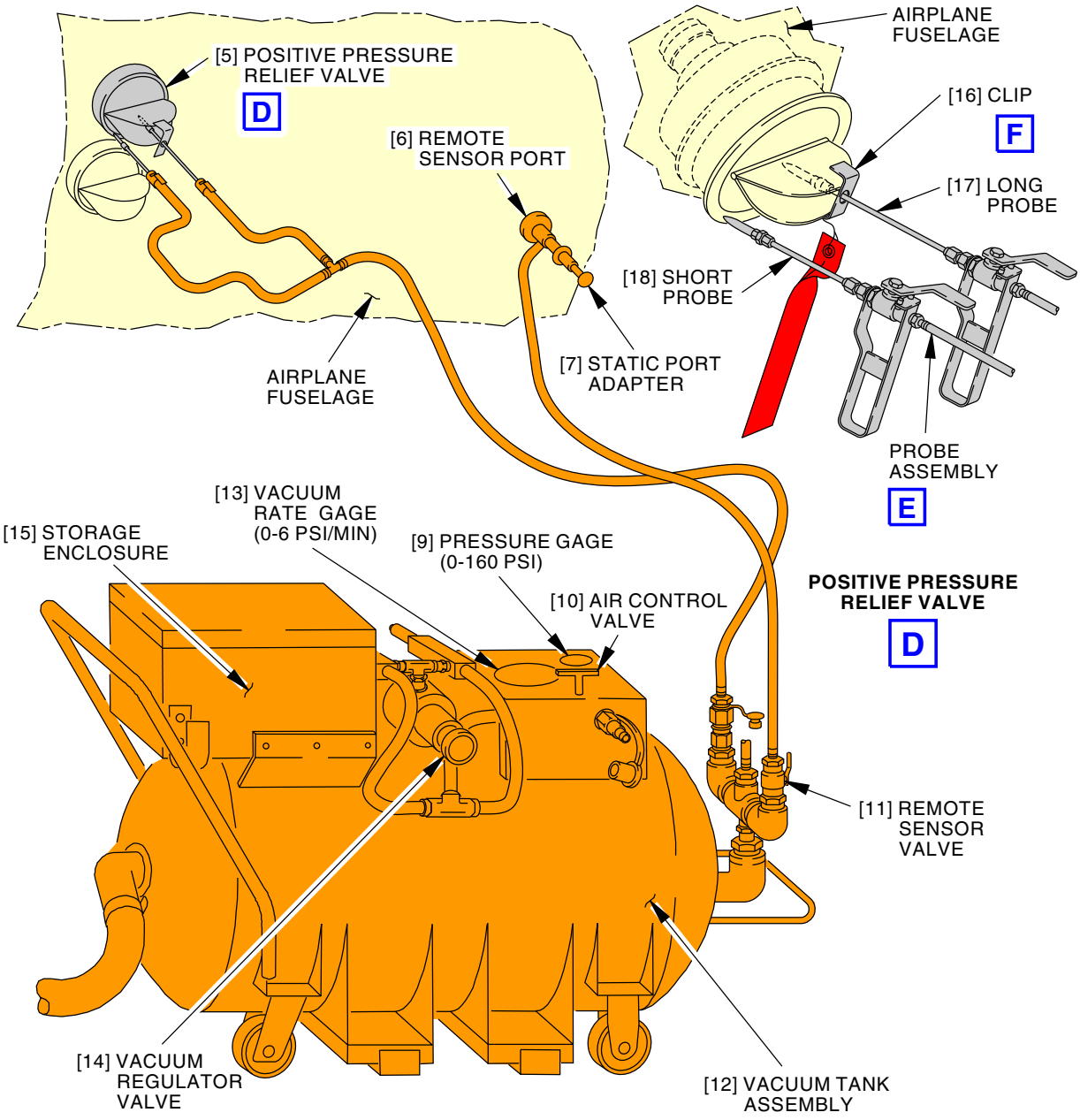

POSITIVE PRESSURE RELIEF VALVE TEST EQUIPMENT SETUP

C

C33978 S0006403622_V6

Positive Pressure Relief Valve Test Setup
Figure 501/21-32-01-990-801 (Sheet 2 of 3)

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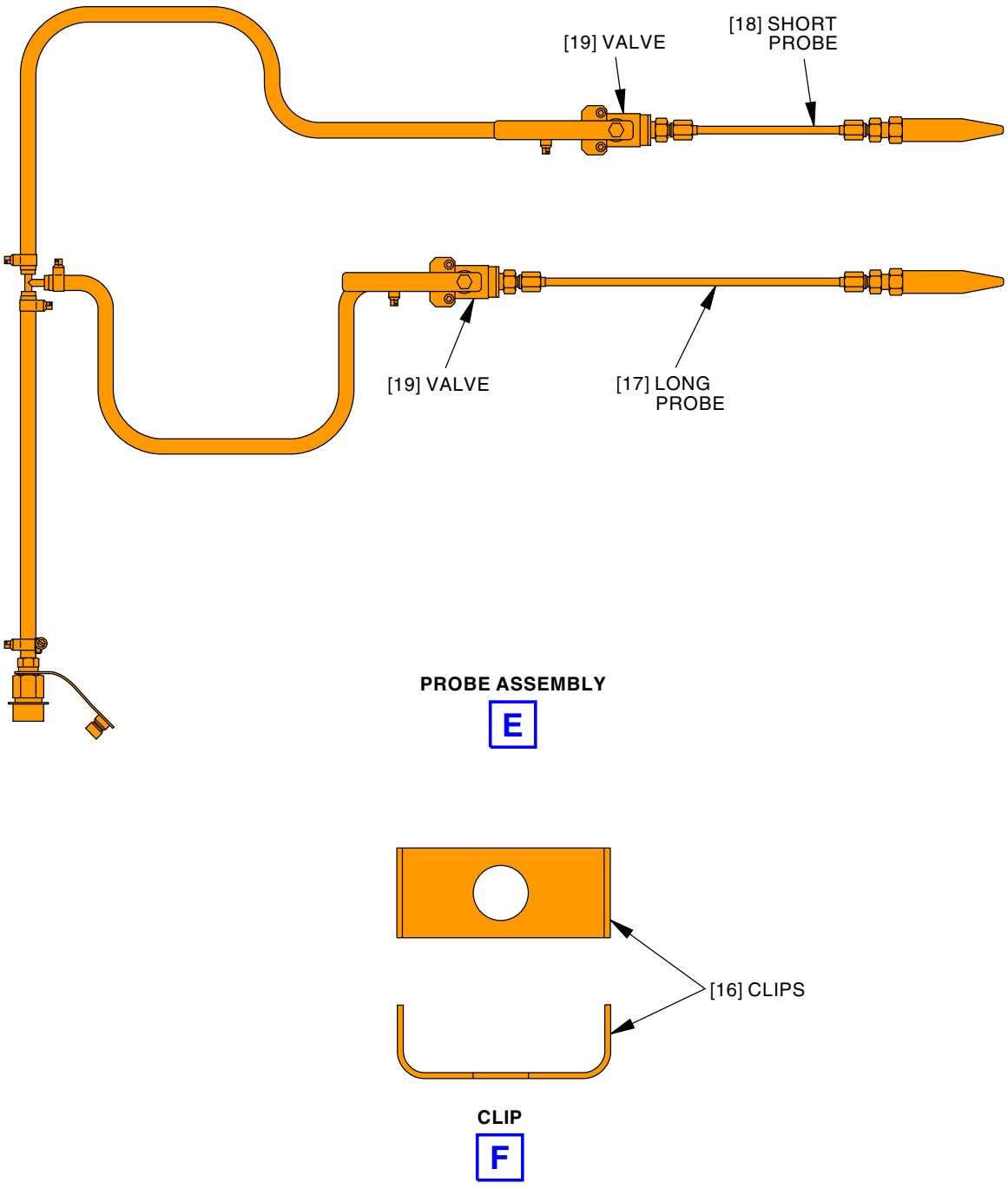

Positive Pressure Relief Valve Test Setup
Figure 501/21-32-01-990-801 (Sheet 3 of 3)

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POSITIVE PRESSURE RELIEF VALVE FILTERS - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Positive pressure relief valve filter removal.

(2) Positive pressure relief valve filter installation.

C. Two positive pressure relief valves are installed in the forward cargo compartment behind the left sidewall liners. The positive pressure relief valves attach to the airplane skin at approximately STA 602.5 between WL 136 and WL 221. One filter is installed on the top side of each positive pressure relief valve.

TASK 21-32-02-000-801

2. Positive Pressure Relief Valve Filter Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
821	Forward Large Cargo Door

C. Prepare for the Removal

SUBTASK 21-32-02-010-001

(1) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-32-02-010-002

(2) Remove the left sidewall liner in the forward cargo compartment to get access to the relief valves. To remove the left sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

D. Positive Pressure Relief Valve Filter Removal

SUBTASK 21-32-02-020-001

(1) Remove the filter cover [2] from the top of the positive pressure relief valve.

SUBTASK 21-32-02-020-002

(2) Remove and discard the filter [1].

END OF TASK

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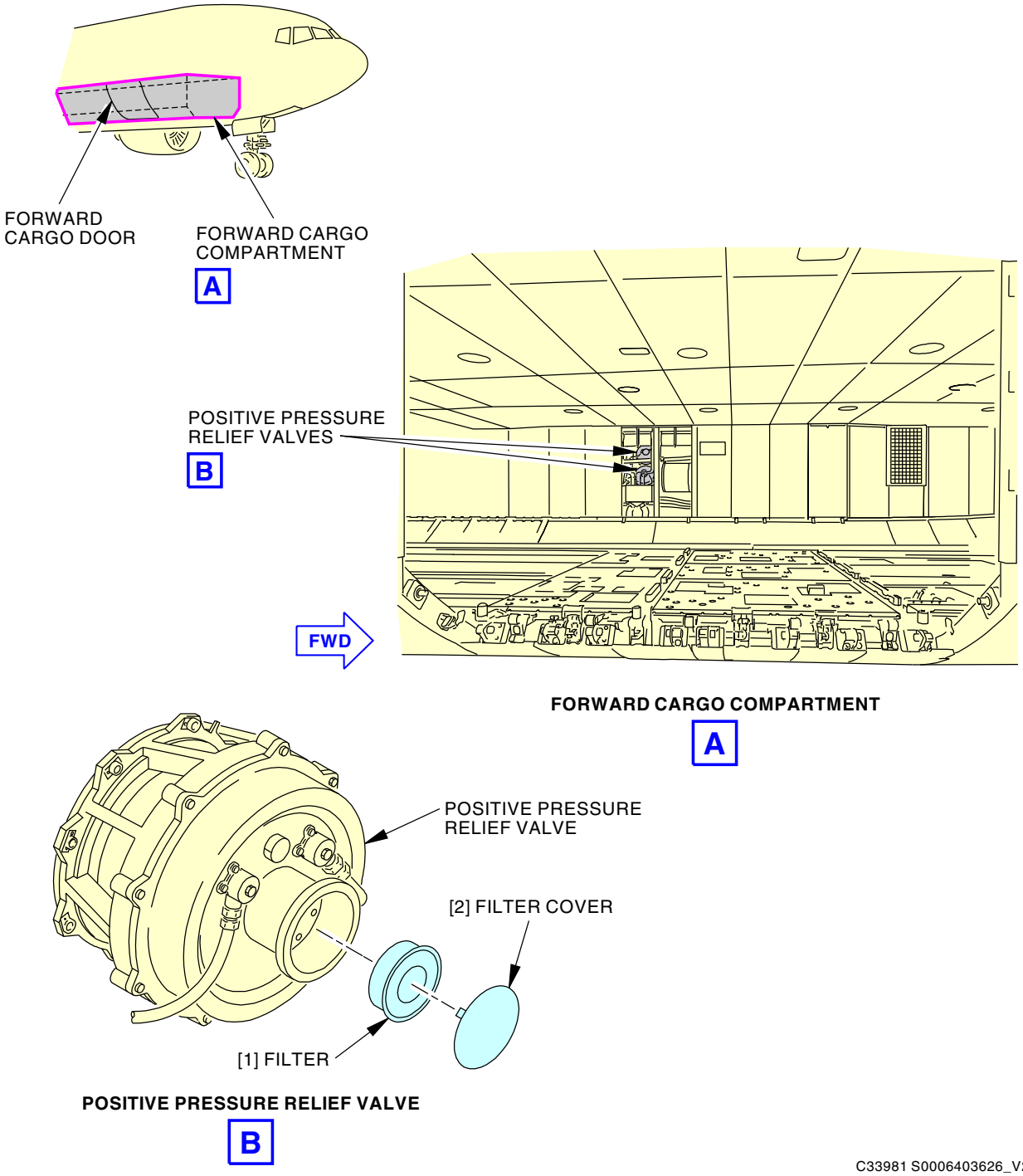

C33981 S0006403626_V2

Positive Pressure Relief Valve Filter Installation
Figure 401/21-32-02-990-801

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TASK 21-32-02-400-801

3. Positive Pressure Relief Valve Filter Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Filter	21-32-01-01-130	ARO ALL

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
821	Forward Large Cargo Door

D. Procedure

SUBTASK 21-32-02-420-001

(1) Install a new filter [1] in the top of the positive pressure relief valve.

SUBTASK 21-32-02-420-002

(2) Install the filter cover [2] until it snaps into position.

E. Put the Airplane Back to its Usual Condition

SUBTASK 21-32-02-410-001

(1) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-32-02-410-002

(2) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

——— END OF TASK ———

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NEGATIVE PRESSURE RELIEF VENT DOOR - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Negative pressure relief vent door removal

(2) Negative pressure relief vent door installation

(3) Negative pressure relief vent door adjustment/test.

TASK 21-32-03-000-801

2. Negative Pressure Relief Vent Door Removal

(Figure 201)

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right

C. Prepare for the Removal

SUBTASK 21-32-03-010-001

(1) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

SUBTASK 21-32-03-010-002

(2) To get access to the left (right) negative pressure relief vent doors, remove the left (right) sidewall liner(s) located approximately mid-way between the forward cargo door opening and the aft end wall in the forward cargo compartment. To remove the sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

D. Negative Pressure Relief Vent Door Removal

SUBTASK 21-32-03-020-001

(1) Do the steps which follow to remove the door and seal assembly [10] from the support brackets:

(a) Remove the nuts [3] and washers [4] from the end of the bolts [7].

(b) Remove the bolts [7], washers [8], and if installed, washers [9].

(c) Remove the door and seal assembly [10].

SUBTASK 21-32-03-020-002

(2) Do the steps which follow to remove the spring assemblies from the door and seal assembly [10]:

(a) Pull the bushings [5] out through the vent frame.

(b) Remove the spring [2] and the spring [6].

(c) Remove the spring retainers [1].

END OF TASK

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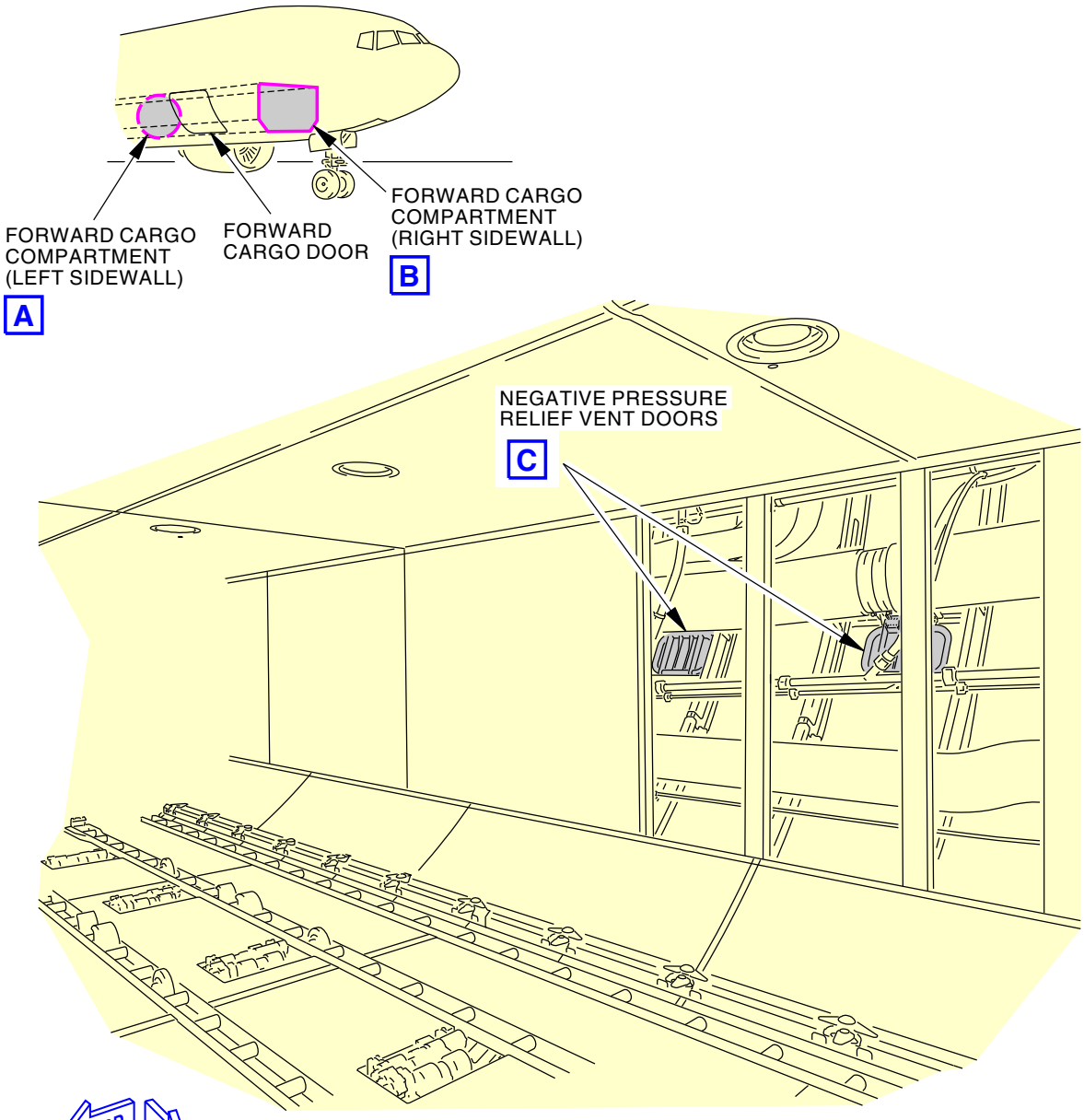

FORWARD CARGO COMPARTMENT (LEFT SIDEWALL)

A

NOTE:

THE NEGATIVE PRESSURE RELIEF VENT DOORS ARE LOCATED APPROXIMATELY MID-WAY BETWEEN THE FORWARD CARGO DOOR OPENING AND THE AFT END WALL IN THE COMPARTMENT.

C34858 S0006403631_V2

Negative Pressure Relief Vent Door Installation
Figure 201/21-32-03-990-801 (Sheet 1 of 3)

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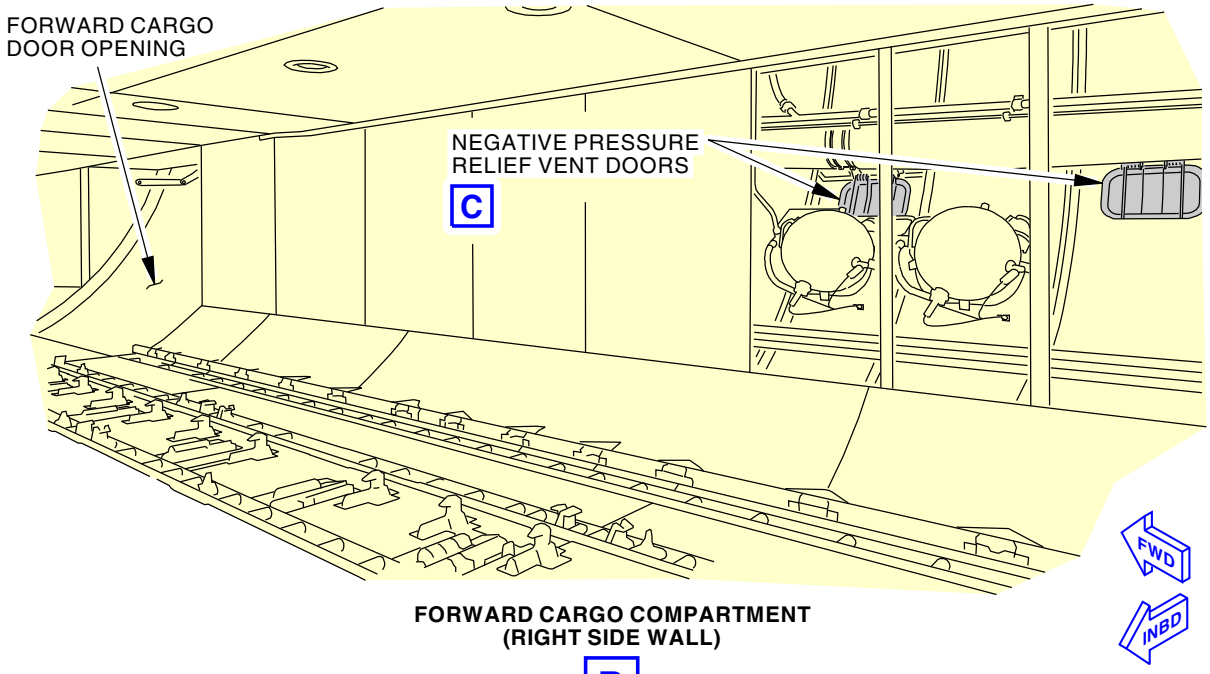
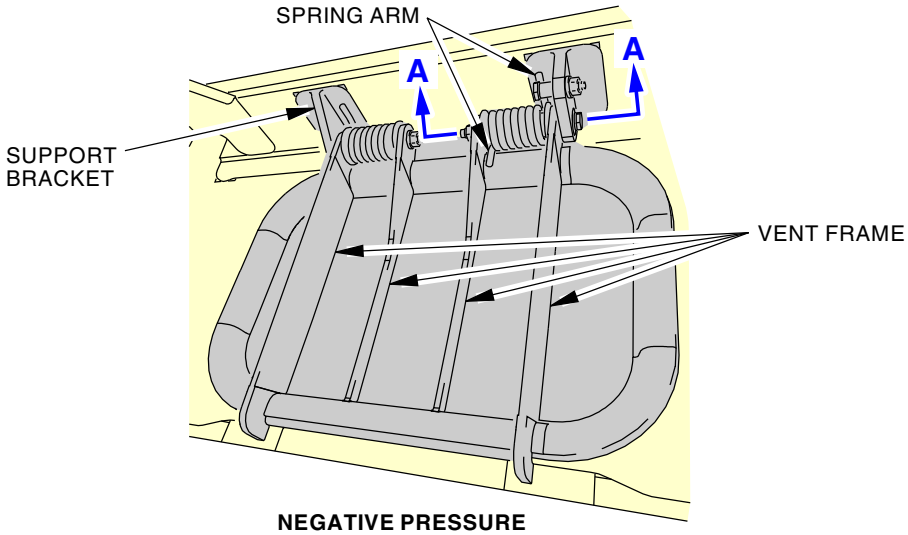


**FORWARD CARGO COMPARTMENT
(RIGHT SIDE WALL)**

B

NOTE:

THE NEGATIVE PRESSURE RELIEF VENT DOORS ARE LOCATED APPROXIMATELY MID-WAY BETWEEN THE FORWARD CARGO DOOR OPENING AND THE AFT END WALL IN THE COMPARTMENT.



**NEGATIVE PRESSURE
RELIEF VENT DOOR**

C

C34993 S0006403632_V2

**Negative Pressure Relief Vent Door Installation
Figure 201/21-32-03-990-801 (Sheet 2 of 3)**

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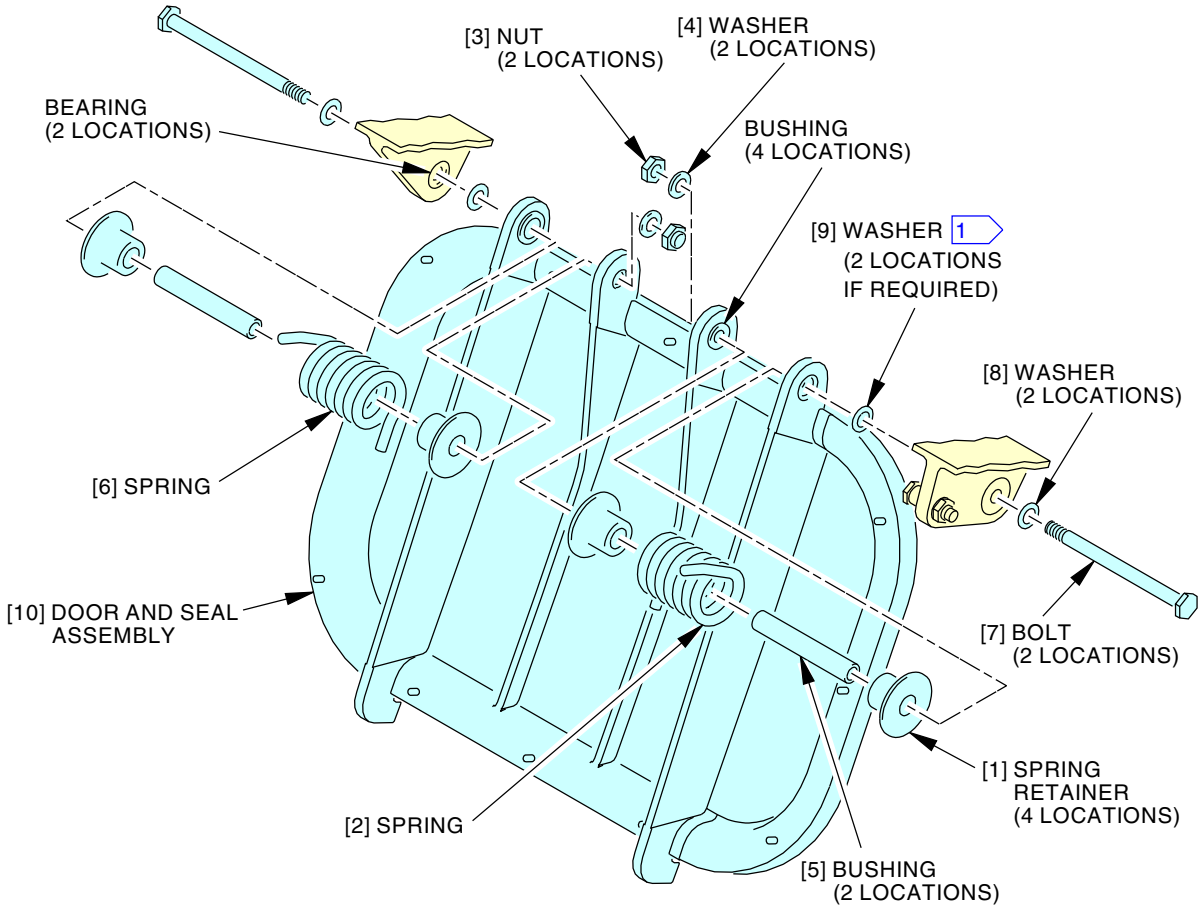
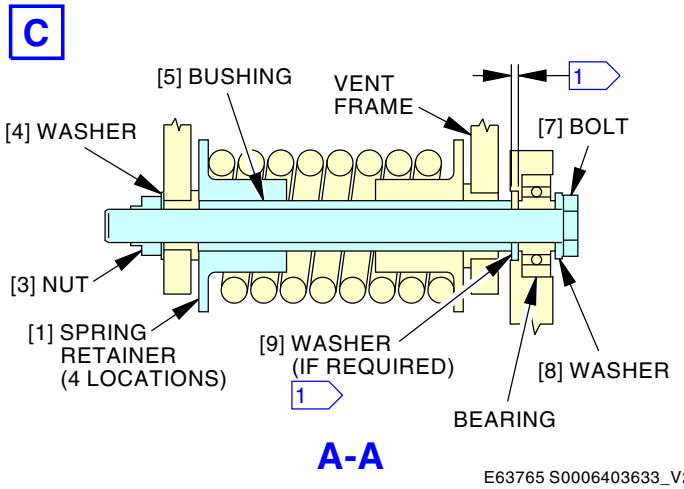


**NEGATIVE PRESSURE RELIEF VENT DOOR
(EXPLODED VIEW)**



1 MEASURE THIS GAP. IF THE GAP IS LARGER THAN THE THICKNESS OF THE WASHER (APPROXIMATELY 0.032 INCH), INSTALL THE WASHER.

E63765 S0006403633_V2

**Negative Pressure Relief Vent Door Installation
Figure 201/21-32-03-990-801 (Sheet 3 of 3)**

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TASK 21-32-03-400-801

3. Negative Pressure Relief Vent Door Installation

(Figure 201)

A. References

Reference	Title
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right

D. Negative Pressure Relief Vent Door Installation

SUBTASK 21-32-03-210-001

(1) Make sure all the bushings are in the vent frames and the bearings are in the support brackets.

SUBTASK 21-32-03-420-001

(2) Do these steps to attach the spring assemblies to the door and seal assembly [10]:

NOTE: Each spring assembly includes one bushing [5], two spring retainers [1], and the applicable spring [2] or spring [6]).

(a) Install the spring retainers [1] on the ends of the spring [2] and spring [6].

(b) Put the spring assemblies between the vent frames.

(c) Lubricate the bushings [5] with the grease, D00633.

(d) Put the bushings [5] through the vent frame and through each of the spring assemblies.

NOTE:

SUBTASK 21-32-03-820-001

(3) Put the door and seal assembly [10] in its position against the airplane skin.

(a) Make sure that you hold the spring assemblies in place while you put the door and seal assembly [10] in its position.

SUBTASK 21-32-03-420-002

(4) Install the door and seal assembly [10] to the support brackets as follows:

(a) Lubricate the bolts [7] with the grease, D00633.

(b) Put the washers [8] on the bolts [7].

(c) Put the bolts [7] through the support brackets and the vent frames.

(d) Wind the springs approximately 1/4 to 1/2 of a turn until one spring arm is against the support bracket and the other spring arm is against the door and seal assembly [10].

(e) Install the washers [4] and the nuts [3] on the end of the bolts [7].

(f) Measure the distance between the bearings and the bushings [5].

1) If the measurement is larger than 0.032 inch, install the washers [9] on the bolts [7] between the bearing and the bushings [5].

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SUBTASK 21-32-03-720-001

(5) Do this task: Negative Pressure Relief Vent Adjustment/Test, TASK 21-32-03-700-801.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-32-03-410-001

(1) To install the sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-32-03-410-002

(2) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

——— END OF TASK ———

TASK 21-32-03-700-801

4. Negative Pressure Relief Vent Adjustment/Test

A. Tools/Equipment

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

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-010 Supplier: 92456 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9

B. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right

C. Procedure

SUBTASK 21-32-03-720-002

(1) On the external surface of the airplane, hold the force gauge, COM-1557 against the relief vent door.

(a) Put the force gauge, COM-1557 at approximately the center of the relief vent door and 1.5 inches above the lower edge of the relief vent door.

SUBTASK 21-32-03-210-002

(2) Make sure the force gauge, COM-1557 is set at zero.

SUBTASK 21-32-03-720-003

(3) Slowly push the force gauge, COM-1557 against the relief vent door.

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(a) Keep the force gauge, COM-1557 at approximately a 90-degree angle to the relief vent door.

SUBTASK 21-32-03-210-003

(4) Make sure the relief vent door starts to open when the force gauge, COM-1557 shows between 11 and 17 pounds.

SUBTASK 21-32-03-210-004

(5) Set the force gauge, COM-1557 at zero.

SUBTASK 21-32-03-720-008

(6) Again put the force gauge, COM-1557 at approximately the center of the relief vent door and 1.5 inches above the lower edge of the relief vent door.

SUBTASK 21-32-03-720-004

(7) Push the force gauge, COM-1557 against the relief vent door until the lower end of the relief vent door opens 2.5 ±0.2 inches.

(a) Measure the distance in a straight line from the lower edge of the skin opening to the lower edge of the relief vent door.

SUBTASK 21-32-03-720-005

(8) Make sure the force gauge, COM-1557 shows between 17 and 23 pounds.

SUBTASK 21-32-03-080-001

(9) Remove the force gauge, COM-1557.

SUBTASK 21-32-03-720-006

WARNING PUSH THE RELIEF VENT DOOR WITH YOUR HAND VERTICAL TO THE SURFACE TO PREVENT HAND INJURY WHILE THE RELIEF VENT TURNS TO THE FULL OPEN POSITION.

(10) With your hand, push the relief vent door until the lower end of the relief vent door opens a minimum of 7.5 inches.

SUBTASK 21-32-03-720-007

(11) Let the relief vent door close.

END OF TASK

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POSITIVE PRESSURE RELIEF VALVE REMOTE SENSE PORT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Positive Pressure Relief Valve Remote Sense Port removal.

(2) Positive Pressure Relief Valve Remote Sense Port installation.

TASK 21-32-11-000-801

2. Positive Pressure Relief Valve Remote Sense Port - Removal

Figure 401

A. General

(1) This task provides the steps to remove the Positive Pressure Relief Valve Remote Sense Port.

B. References

Reference	Title
52-34-00-860-805	Open the Door Manually (P/B 201)
52-36-00-860-801	Open the Door (P/B 201)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
821	Forward Large Cargo Door

D. Prepare for the Removal

SUBTASK 21-32-11-010-001

(1) Do this task: Open the Door Manually, TASK 52-34-00-860-805.

SUBTASK 21-32-11-010-002

(2) Remove the applicable sidewall liner on the left side of the forward cargo compartment, do this task: Open the Door, TASK 52-36-00-860-801.

E. Positive Pressure Relief Valve Remote Sense Port Removal

SUBTASK 21-32-11-020-001

(1) Remove the hose [11] from the positive pressure relief valve remote sense port [1].

(a) Install a cap on the hose [11] to prevent contamination.

SUBTASK 21-32-11-020-002

(2) Remove the adapter adapter [10] from the port [5].

(a) Use a back-up wrench on the port [5] while you remove the adapter [10].

SUBTASK 21-32-11-020-003

(3) Remove and discard the packing [9].

SUBTASK 21-32-11-020-004

(4) Remove the nut [8] and washer [7] from the port [5].

(a) Use a back-up wrench on the port [5] while you remove the nut [8].

SUBTASK 21-32-11-020-005

(5) Remove the port [5] from the fuselage fuselage skin [6].

END OF TASK

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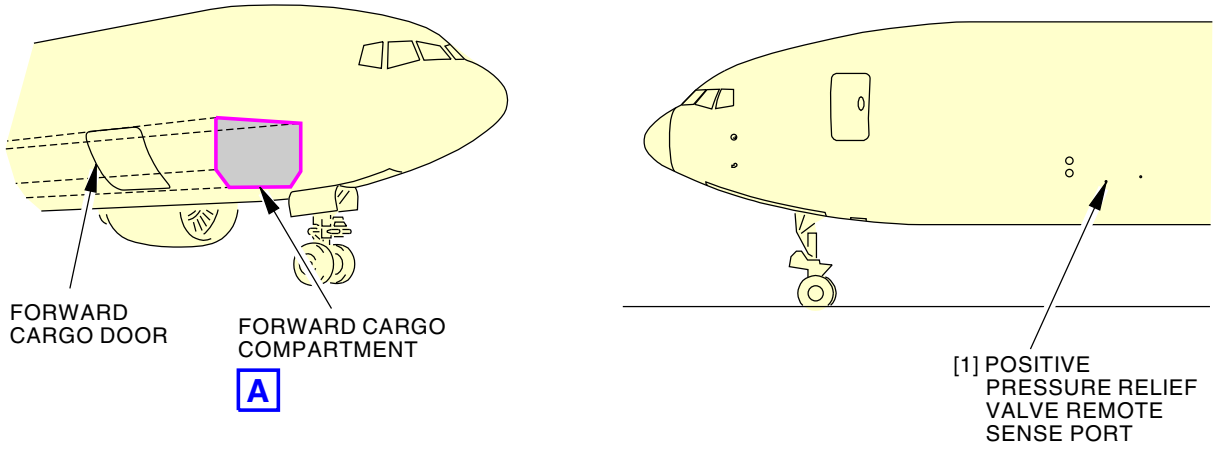

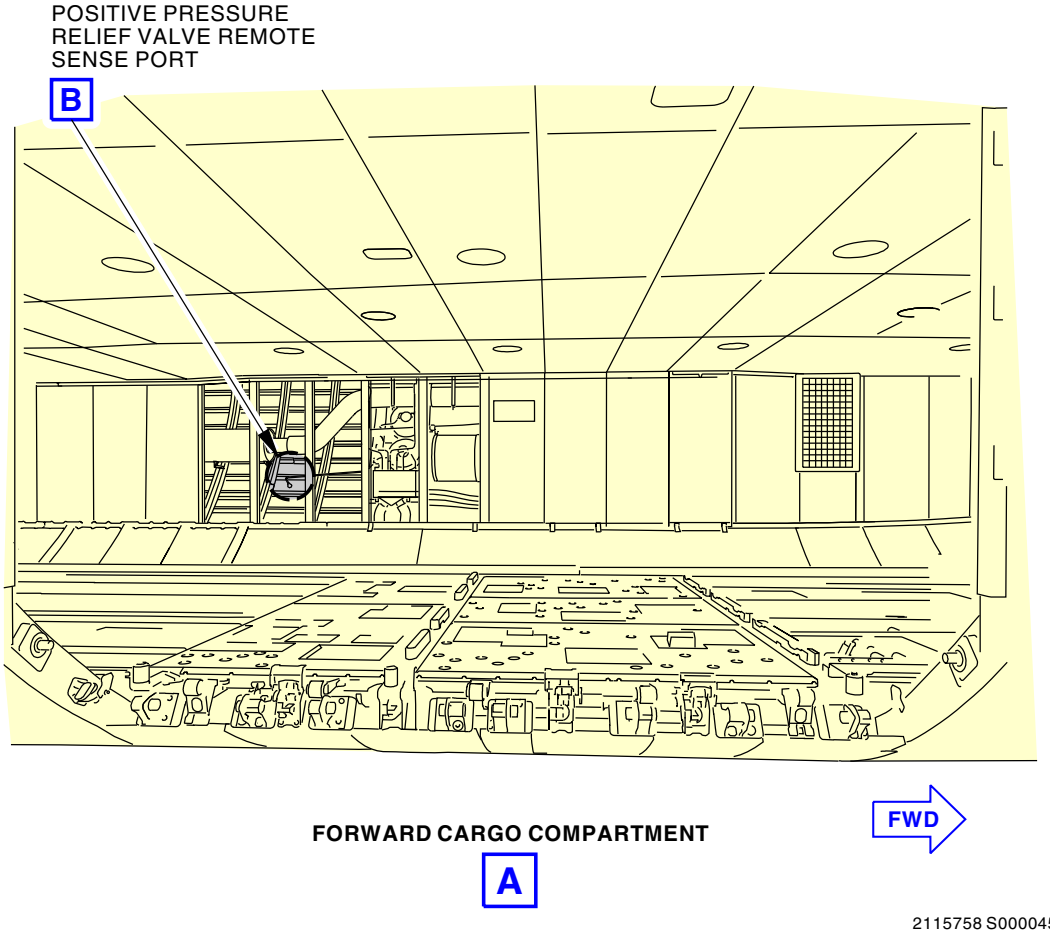

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Positive Pressure Relief Valve Remote Sense Port Installation
Figure 401/21-32-11-990-801 (Sheet 1 of 2)

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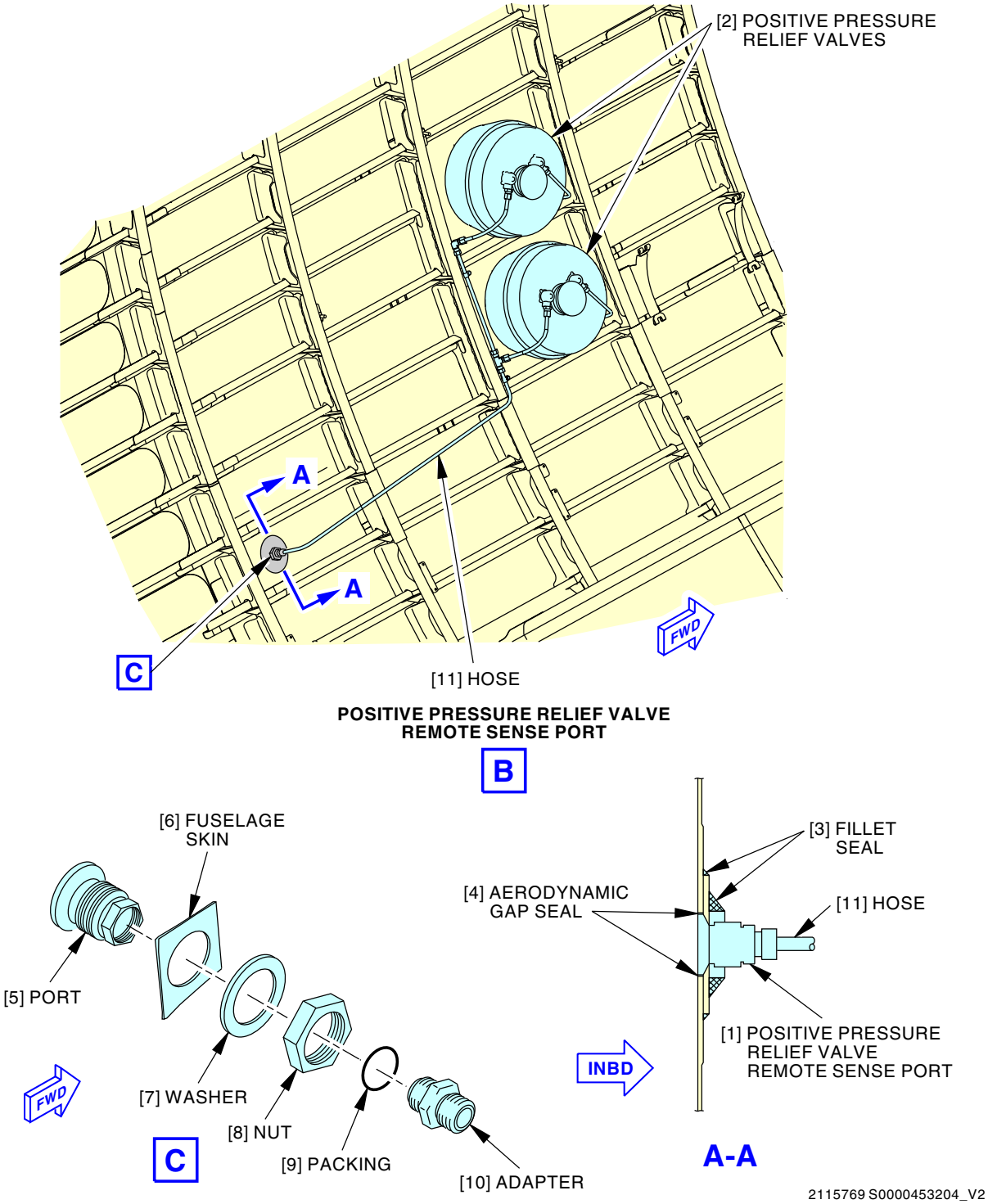

Positive Pressure Relief Valve Remote Sense Port Installation
Figure 401/21-32-11-990-801 (Sheet 2 of 2)

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TASK 21-32-11-400-801

3. Positive Pressure Relief Valve Remote Sense Port - Installation

Figure 401

A. General

(1) This task provides the steps to install the Positive Pressure Relief Valve Remote Sense Port.

B. References

Reference	Title
21-32-01-790-801	Positive Pressure Relief Valve - Static System Leak Check (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
51-10-00-200-802	Examine the Step Height of the Static Ports (P/B 601)
51-21-04-620-801	Alodine 600, 1000, 1200, and 1200S Coating Application (P/B 701)

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
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G50314	Tape - Masking	BAC5034-4 Type VII Class 2

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Port	21-32-01-01-090	ARO ALL
9	Packing	21-32-01-01-055	ARO ALL

E. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
821	Forward Large Cargo Door

F. Prepare for the Installation

SUBTASK 21-32-11-110-001

(1) Use solvent, B00184 to remove the sealant that remains on the airplane skin.

SUBTASK 21-32-11-160-001

(2) Wipe the wet surfaces with clean, lint-free cotton wiper, G00034.

G. Positive Pressure Relief Valve Remote Sense Port Installation

SUBTASK 21-32-11-400-002

(1) Install the port [5] in the fuselage skin [6].

SUBTASK 21-32-11-400-003

(2) Install the washer [7] and nut [8] on to the port [5].

(a) With a back-up wrench on the port [5], torque the nut [8] to 250 in-lb (28 N·m) to 400 in-lb (45 N·m).

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SUBTASK 21-32-11-200-001

(3) Make sure the external surface of the port [5] is flush with the fuselage skin [6], +.004/-.00 inch (+.1016/-.00 mm).

(a) Do this task: Examine the Step Height of the Static Ports, TASK 51-10-00-200-802

SUBTASK 21-32-11-400-004

(4) Install a new packing [9] on to the adapter [10].

SUBTASK 21-32-11-400-005

(5) Install the adapter [10] into the port [5].

SUBTASK 21-32-11-400-006

(6) Install the hose [11].

SUBTASK 21-32-11-110-002

(7) For the surface of the port [5], do this task: Alodine 600, 1000, 1200, and 1200S Coating Application, TASK 51-21-04-620-801.

SUBTASK 21-32-11-390-003

(8) Use masking tape, G50314 to cover the holes in the port [5].

NOTE: The masking tape will help keep sealant out of the holes in the port.

SUBTASK 21-32-11-390-001

(9) Apply sealant, A02315 to the gap between the port [5] and fuselage skin [6] to form a aerodynamic gap seal [4].

SUBTASK 21-32-11-390-002

(10) Apply a fillet seal [3] to the positive pressure relief valve remote sense port [1] with sealant, A02315.

H. Positive Pressure Relief Valve Remote Sense Port Post-Installation Test

SUBTASK 21-32-11-700-001

(1) Do this task: Positive Pressure Relief Valve - Static System Leak Check, TASK 21-32-01-790-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-32-11-410-001

(1) Install the applicable sidewall liner on the left side of the forward cargo compartment, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

——— END OF TASK ———

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CREW REST AREA HEATING SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Operational Test - Flight crew rest heater.

TASK 21-41-00-710-802-001

2. Flight Crew Rest Heater - Operational Test

A. General

(1) This test makes sure that the flight crew rest heater operates correctly.

B. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
223	Area Above Passenger Compartment Ceiling, Left - Section 41

D. Operational Test - Flight Crew Rest Heater

SUBTASK 21-41-00-840-004-001

(1) Do these steps to prepare for the test:

(a) Make sure this circuit breaker is closed:

Make sure that this circuit breaker is closed:

Left Power Management Panel, P110

Row	Col	Number	Name
C	5	C21326	DR 1 CREW REST HTR PWR

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

(c) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

NOTE: Conditioned air must be supplied to the FCR from one of the two cooling packs to operate the heater.

(d) Set the temperature for areas 1 and 2 on the cabin system control panel (CSCP) to a cold position less than 68° F (20° C).

SUBTASK 21-41-00-710-002-001

(2) Do these steps to test the FCR heater:

(a) Turn the HEAT control to the HIGH position.

(b) Feel the airflow from the FCR air outlets.

(c) Turn the HEAT control to the OFF position.

(d) Feel the airflow from the FCR air outlets.

(e) If the airflow is warm when the HEAT control is in the HIGH position and cool when the HEAT control is in the OFF position, then the heater operates correctly.

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SUBTASK 21-41-00-810-002-001

(3) If you find a problem with the FCR heater, then do the procedure in the FIM to correct the problem.

——— END OF TASK ———

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FLIGHT CREW REST HEATER - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Flight crew rest heater - deactivation

(2) Flight crew rest heater - activation.

TASK 21-41-03-040-801

2. Flight Crew Rest (FCR) Heater - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the flight crew rest heater.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Tools/Equipment

Reference	Description
STD-85	Ammeter - Clamp-on
STD-858	Tag - DO NOT OPERATE

D. 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
831	Left No. 1 Passenger Entry Door - Section 41

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Procedure

SUBTASK 21-41-03-860-006

(1) Do these steps to make sure that there is no air flow in the ducts when you remove the FCR heater:

(a) Depressurize the pneumatic system (TASK 36-00-00-860-801).

NOTE: This will make sure that there is no air flow in the ducts when you remove the FCR heater.

(b) Remove conditioned air from the airplane (TASK 21-00-00-800-802).

SUBTASK 21-41-03-860-008

(2) Do not operate a ground conditioned air source which can supply conditioned air to the airplane through the ground conditioned air connector.

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SUBTASK 21-41-03-860-003

(3) On the Pilot's Overhead Panel, P5, do these steps:

(a) Put the UPPER-RECIRC FAN switch, S4, to the OFF position.

1) Install a DO NOT OPERATE tag, STD-858 on the UPPER-RECIRC FAN switch, S4.

(b) Put the LOWER-RECIRC FAN switch, S5, to the OFF position.

1) Install a DO NOT OPERATE tag, STD-858 on the LOWER-RECIRC FAN switch, S5.

SUBTASK 21-41-03-010-004

(4) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-41-03-020-020

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
C	5	C21326	DR 1 CREW REST HTR PWR

SUBTASK 21-41-03-860-009

(6) Open the ceiling access panel aft of the flight compartment door.

G. Flight Crew rest Heater - Tryout

NOTE: This tryout is to make sure that the flight crew rest heater is in a zero energy state.

SUBTASK 21-41-03-860-004

(1) Do these steps for the Flight Crew Rest (FCR) heater:

(a) At the applicable temperature controller, turn the temperature control knob clockwise to HEAT.

(b) At the applicable heater, use a clamp-on ammeter, STD-85, to clamp around a single wire in the wire bundle.

1) Make sure that display shows 0 amps.

(c) Repeat for each wire in the wire bundle.

END OF TASK

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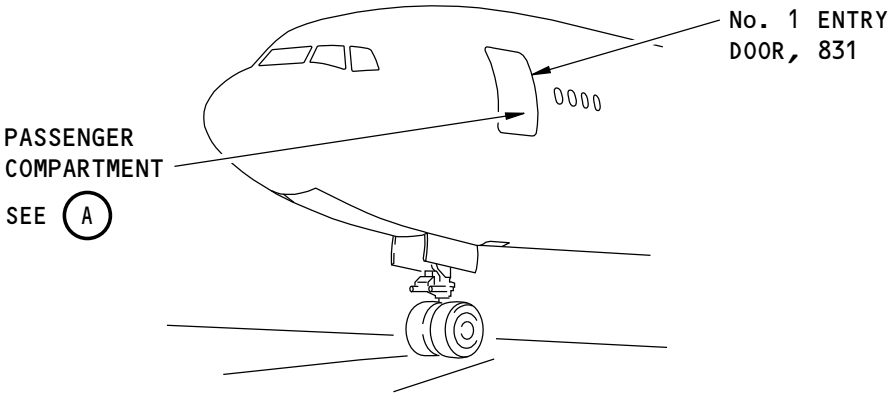

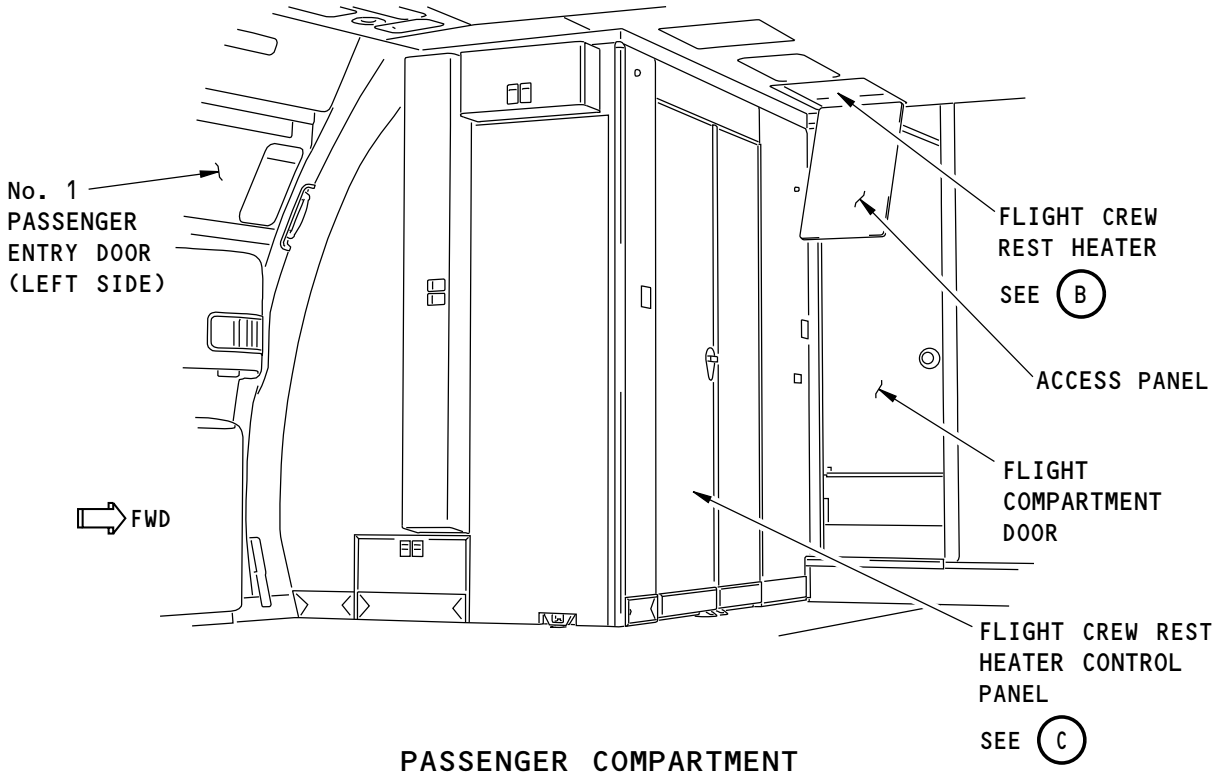

PASSENGER COMPARTMENT

A

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Flight Crew Rest (FCR)
Figure 201/21-41-03-990-803 (Sheet 1 of 2)

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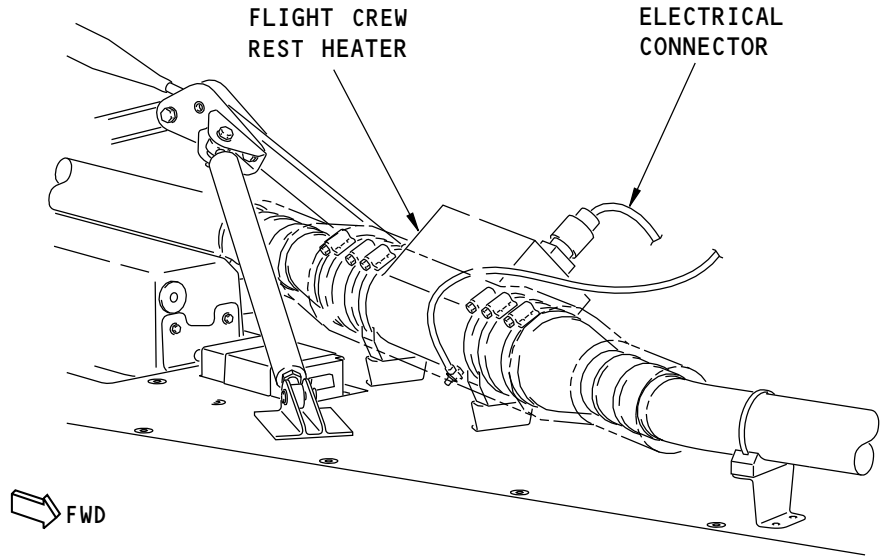
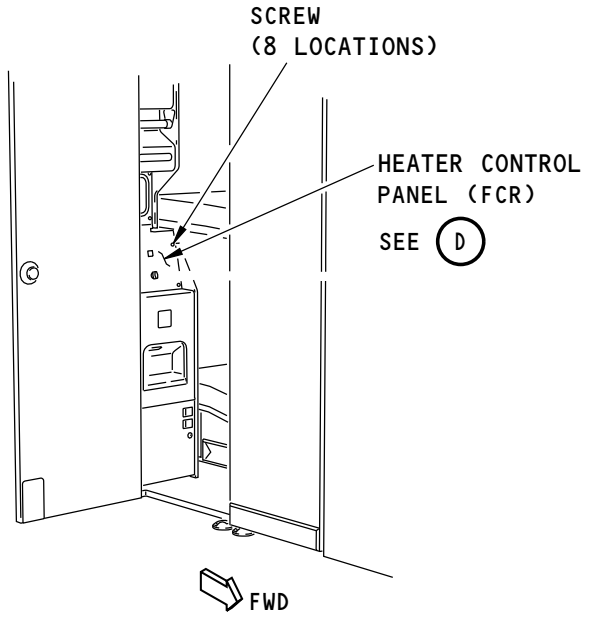
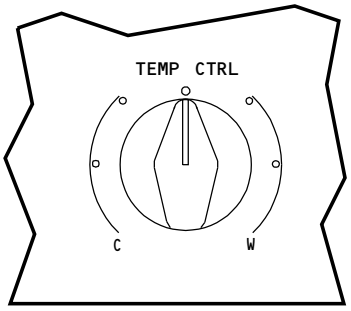


FLIGHT CREW REST HEATER

B





HEATER CONTROL PANEL
(FCR)

D

FLIGHT CREW REST HEATER CONTROL PANEL

C

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Flight Crew Rest (FCR)
Figure 201/21-41-03-990-803 (Sheet 2 of 2)

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TASK 21-41-03-440-801

3. Flight Crew Rest (FCR) Heater - Activation

(Figure 201)

A. General

(1) This task will activate the flight crew rest heater.

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
223	Area Above Passenger Compartment Ceiling, Left - Section 41
224	Area Above Passenger Compartment Ceiling, Right - Section 41
831	Left No. 1 Passenger Entry Door - Section 41

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-41-03-860-011

(1) Close the ceiling access panel aft of the flight compartment door.

SUBTASK 21-41-03-420-020

WARNING

KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
C	5	C21326	DR 1 CREW REST HTR PWR

SUBTASK 21-41-03-410-004

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-41-03-860-005

(4) On the Pilot's Overhead Panel, P5, do these steps:

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(a) Remove the DO NOT OPERATE tag, STD-858 on the UPPER-RECIRC FAN switch, S4.

(b) Remove the DO NOT OPERATE tag, STD-858 on the LOWER-RECIRC FAN switch, S5.

——— END OF TASK ———

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FLIGHT CREW REST HEATER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flight crew rest (FCR) heater

(2) An installation of the FCR heater.

B. The FCR heater can operate when one of the two cooling packs is on. Conditioned air for the FCR compartment comes from the flight deck air distribution duct.

C. The FCR heater is located in the overhead area above the FCR module.

TASK 21-41-03-000-801

2. Flight Crew Rest (FCR) Heater Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
223	Area Above Passenger Compartment Ceiling, Left - Section 41

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-41-03-840-001

(1) Do the steps that follow to prepare for the removal:

(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: This will make sure that there is no air flow in the ducts when you remove the FCR heater.

(b) Do not operate a ground conditioned air source which can supply conditioned air to the airplane through the ground conditioned air connector.

(c) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Left Power Management Panel, P110

Row	Col	Number	Name
C	5	C21326	DR 1 CREW REST HTR PWR

(e) Open the ceiling access panel aft of the flight compartment door.

E. FCR Heater Removal

SUBTASK 21-41-03-020-001

(1) Disconnect the electrical connector [3] from the FCR heater [1].

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SUBTASK 21-41-03-020-002

(2) Remove the insulation [4] from the FCR heater [1].

SUBTASK 21-41-03-020-003

(3) Remove the nut [5] and washer [6] from the heater [1] grounding stud.

SUBTASK 21-41-03-020-004

(4) Disconnect the bonding jumper [7] from the heater [1].

SUBTASK 21-41-03-020-005

(5) Loosen the clamps [2] that hold the sleeves [8] to the FCR heater [1] and slide them away from the heater.

SUBTASK 21-41-03-020-006

(6) Slide the sleeves [8] away from the heater.

SUBTASK 21-41-03-020-007

(7) Remove the clamps [2] that hold the heater [1] to the airplane structure.

SUBTASK 21-41-03-020-008

(8) Remove the FCR heater [1].

——— END OF TASK ———

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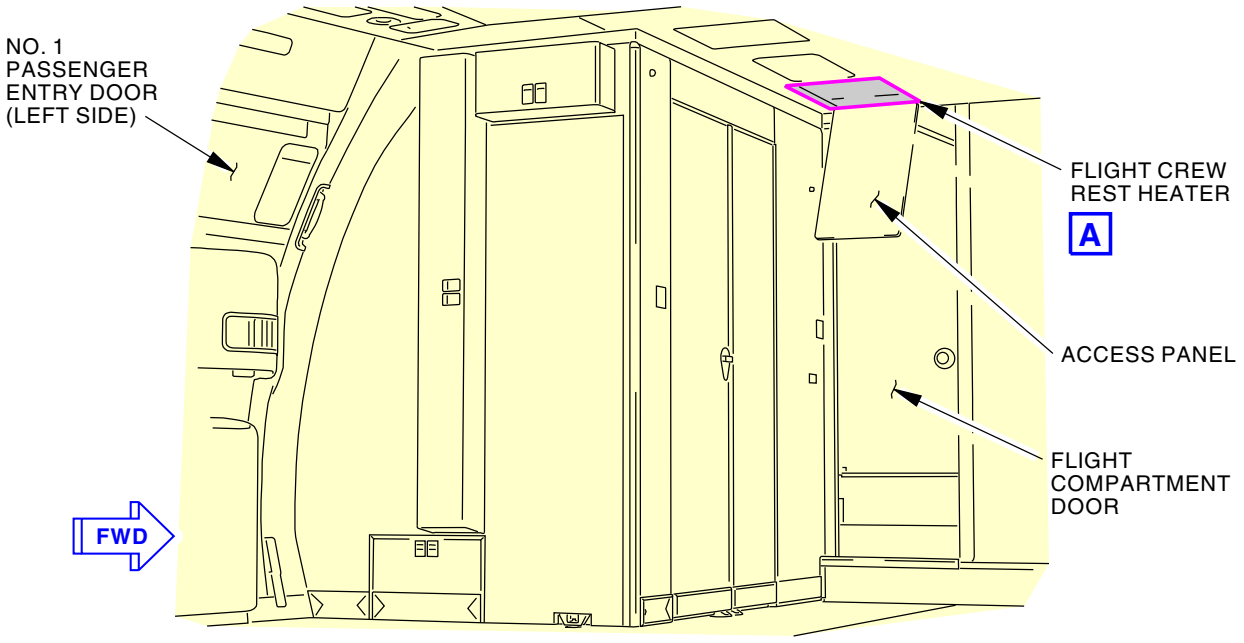
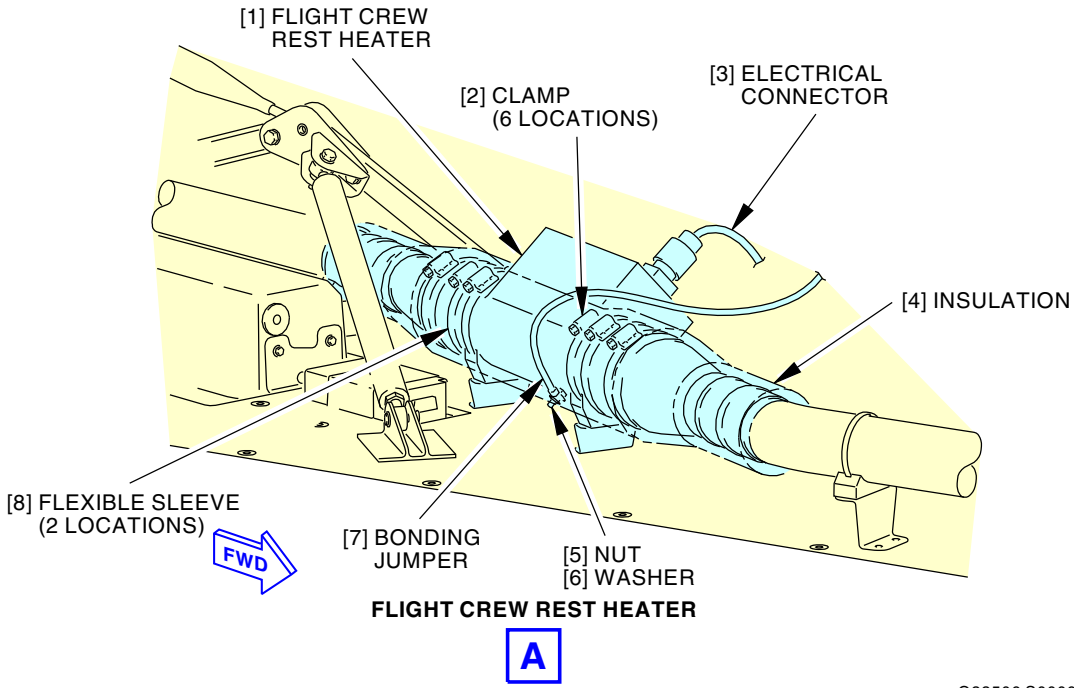


FLIGHT CREW REST



FLIGHT CREW REST HEATER

A

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Flight Crew Rest Heater Installation
Figure 401/21-41-03-990-801

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TASK 21-41-03-400-801

3. Flight Crew Rest (FCR) Heater Installation

(Figure 401)

A. General

(1) Some of the ducts in the air distribution system are wrapped with insulation material. CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

(a) The existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement.

(c) BMS 8-385 Type 6 and BMS 8-300 Type VIII are new, qualified materials optional to BMS 8-385 Type 4.

(d) Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(e) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

(f) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327, tape, G51202, or tape, G50789 to meet the flammability/flame propagation requirement. Wrap tape, G50327, tape, G51202, or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-20-02-990-803	Figure: Air Conditioning System Insulated Duct Repair (Foam Wrapped) (P/B 801)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

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D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Heater	21-41-03-01-050	ARO ALL

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
223	Area Above Passenger Compartment Ceiling, Left - Section 41

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

G. FCR Heater Installation

SUBTASK 21-41-03-420-001

(1) Put the FCR heater [1] into its position between the ducts.

(a) Make sure that the airflow arrow on the heater points in the forward direction.

SUBTASK 21-41-03-420-002

(2) Install the clamps [2] that hold the heater to the airplane structure and tighten them 15 ±2 in-lb (2 ±1 N·m).

SUBTASK 21-41-03-420-003

(3) Slide the sleeves [8] onto the heater [1].

SUBTASK 21-41-03-420-004

(4) Make sure that the sleeves [8] have the same overlap on the heater and on the duct.

SUBTASK 21-41-03-420-005

CAUTION

INSTALL THE CLAMPS EQUALLY BETWEEN THE DUCT BEAD AND THE EDGE OF THE SLEEVE. IF YOU INSTALL THE CLAMP ON THE DUCT BEAD OR SLEEVE EDGE, YOU CAN CAUSE DAMAGE TO THE SLEEVE.

(5) Slide the clamps [2] into position and tighten them 15 ±2 in-lb (2 ±1 N·m).

SUBTASK 21-41-03-020-009

(6) Reconnect the bonding jumper [7] to the heater [1].

SUBTASK 21-41-03-020-010

(7) Install the nut [5] and washer [6] that hold the bonding jumper [7] to the heater [1] grounding stud.

SUBTASK 21-41-03-420-006

(8) Reinstall the insulation [4] onto the FCR heater [1].

(a) If the insulation is replaced, then make sure the replacement insulation material meets the flame propagation requirement of CFR 14 Part 25.856.

NOTE: The existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement.

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SUBTASK 21-41-03-420-007

(9) Install new tape, G50327, tape, G51202, or tape, G50789 on the seams of the insulation [4].

NOTE: Do not overlap the tape onto the duct insulation blanket.

SUBTASK 21-41-03-420-009

(10) If the insulation material is BMS8-300, polyimide foam, then do the following steps to completely cover all exposed surfaces of the foam insulation, G02470 insulation with the tape, G50327, tape, G51202, or tape, G50789 (Figure 21-20-02-990-803).

NOTE: The BMS8-300 polyimide foam insulation material must be covered with the BMS5-157 tape to meet the CFR 14 Part 25.856 flame propagation requirement.

(a) Cut tape, G50327, tape, G51202, or tape, G50789 as required to fit around the air outlets, branches and insulation vent holes.

(b) Apply the tape, G50327, tape, G51202, or tape, G50789 in any configuration as long as complete coverage of the foam insulation, G02470 insulation is obtained and there is a 0.125 in. (3.175 mm) overlap. The tape may be installed spiral wrapped or lengthwise down the duct as desired.

(c) Wrinkles in the tape, G50327, tape, G51202, or tape, G50789 are acceptable if pinched together without voids and the foam insulation, G02470 insulation is not compressed.

(d) The tape, G50327, tape, G51202, or tape, G50789 can be applied to the outer surface of the foam insulation, G02470 insulation prior to installation on the duct if desired.

SUBTASK 21-41-03-420-008

(11) Reconnect the electrical connector [3] to the FCR heater [1].

H. FCR Heater Installation Test

SUBTASK 21-41-03-860-001

(1) Do these steps to prepare for the test:

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

Left Power Management Panel, P110

Row	Col	Number	Name
C	5	C21326	DR 1 CREW REST HTR PWR

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

(c) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

NOTE: Conditioned air must be supplied to the FCR from one of the two cooling packs to operate the heater.

(d) Put the FLT DECK TEMP switch on the P5 forward overhead panel in the C (cold) position.

NOTE: The conditioned air for the FCR is supplied from the duct that supplies the flight deck. The temperature of the conditioned air supplied to the FCR heater is determined by the flight deck temperature setting.

SUBTASK 21-41-03-700-001

(2) Do these steps to test the FCR heater:

(a) Turn the HEAT control to the HIGH position.

(b) Feel the airflow from the FCR air outlets.

(c) Turn the HEAT control to the OFF position.

(d) Feel the airflow from the FCR air outlets.

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(e) If the airflow is warm when the HEAT control is in the HIGH position and cool when the HEAT control is in the OFF position, then the heater operates correctly.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-41-03-410-001

(1) Close the ceiling access panel.

SUBTASK 21-41-03-010-001

(2) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-41-03-010-002

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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FLIGHT CREW REST HEATER CONTROL - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flight crew rest (FCR) heater control

(2) An installation of the FCR heater control.

B. The FCR heater control is used to adjust the temperature of the FCR compartment. The FCR heater control is continuously adjustable to any setting between the OFF and the HIGH position. Conditioned air for the FCR compartment comes from the flight deck air distribution duct. Turning the FCR heater control toward the HIGH position will raise the FCR temperature above the flight deck temperature setting.

C. The FCR heater control is located on the aft wall of the lower bunk in the FCR compartment.

TASK 21-41-04-000-801

2. Flight Crew Rest (FCR) Heater Control Removal

(Figure 401)

A. Location Zones

Zone	Area
117	Main Equipment Center, Left
221	Passenger Compartment, Left - Section 41

B. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

C. Remove the Heater Control

SUBTASK 21-41-04-020-001

(1) Do these steps to remove the FCR heater control:

(a) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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

Left Power Management Panel, P110

Row	Col	Number	Name
C	5	C21326	DR 1 CREW REST HTR PWR

(c) Loosen the set screws [8] that hold the knob [2] on the temperature selector [6] shaft.

NOTE: Do not remove the set screws from the knob.

(d) Remove the knob [2] from the temperature selector [6] shaft.

(e) Remove the screws [1] which hold the heater control panel to the aft wall of the FCR compartment.

(f) Carefully lower the heater control panel.

(g) Disconnect the electrical connector [7] from the temperature selector [6].

(h) Remove the nut [3] that holds the temperature selector [6] to the heater control panel.

(i) Remove the washer [4] from the temperature selector [6].

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(j) Remove the temperature selector [6] from the heater control panel.

——— END OF TASK ———

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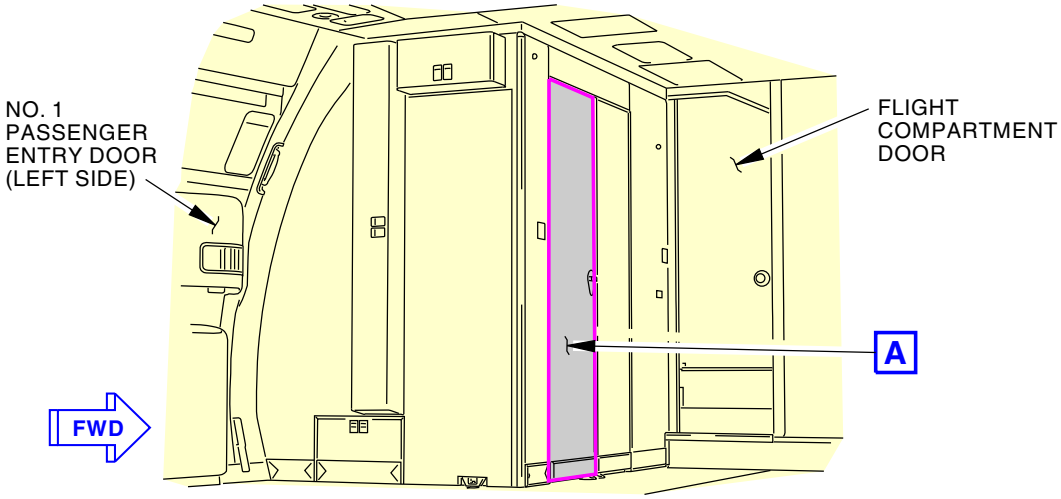
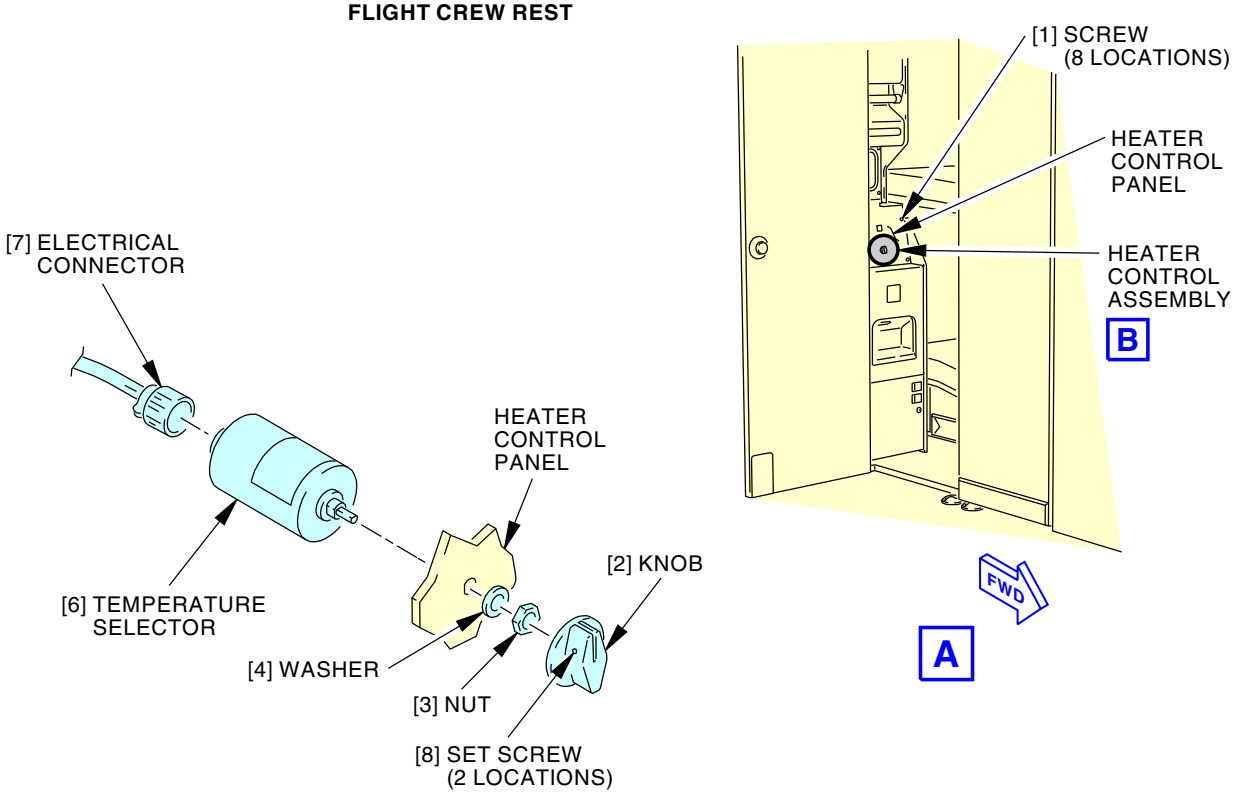


FLIGHT CREW REST



HEATER CONTROL ASSEMBLY

B

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Flight Crew Rest Heater Installation
Figure 401/21-41-04-990-801

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TASK 21-41-04-400-801

3. Flight Crew Rest (FCR) Heater Control Installation

(Figure 401)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Selector	21-41-04-01-015	ARO ALL
		21-45-02-04-060	ARO ALL
		25-29-01-12A-137	ARO ALL

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
221	Passenger Compartment, Left - Section 41

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Install the Heater Control

SUBTASK 21-41-04-420-001

(1) Do these steps to install the heater control:

(a) Put the temperature selector [6] shaft through the hole in the heater control panel.

(b) Put the washer [4] on the temperature selector [6].

(c) Install the nut [3] on the temperature selector [6].

1) Carefully tighten the nut [3] until it touches the washer [4].

(d) Reconnect the electrical connector [7] to the temperature selector [6].

(e) Carefully place the heater control panel into its position.

(f) Install the screws [1] which hold the heater control panel to the aft wall of the FCR compartment.

(g) Install the knob [2] on the temperature selector [6] shaft and tighten the set screws [8].

(h) Turn the HEAT control to the OFF position.

F. FCR Heater Control Installation Test

SUBTASK 21-41-04-700-001

(1) Do these steps to test the FCR heater control.

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

Left Power Management Panel, P110

Row	Col	Number	Name
C	5	C21326	DR 1 CREW REST HTR PWR

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

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(c) Supply conditioned air to the FCR: do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801

NOTE: Conditioned air must be supplied to the FCR from one of the two cooling packs to operate the heater.

(d) Put the FLT DECK TEMP switch on the P5 forward overhead panel in the C (cold) position.

NOTE: The conditioned air for the FCR is supplied from the same duct that supplies the flight deck. The temperature of the conditioned air supplied to the FCR heater is determined by the flight deck temperature setting.

(e) Turn the HEAT control to the HIGH position.

(f) Feel the airflow from the FCR air outlets.

(g) Turn the HEAT control to the OFF position.

(h) Feel the airflow from the FCR air outlets.

(i) If the airflow is warm when the HEAT control is in the HIGH position and cool when the HEAT control is in the OFF position, then the heater control operates correctly.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-41-04-010-001

(1) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-41-04-010-002

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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FORWARD CARGO HEATING SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Forward cargo heating system - deactivation.

(2) Forward cargo heating system - activation.

TASK 21-43-00-040-801

2. Forward Cargo Heating System - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the forward cargo heating system.

B. Tools/Equipment

Reference	Description
STD-85	Ammeter - Clamp-on

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-43-00-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-43-00-020-001

WARNING

KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	27	C21605	EQPT CLG SPLY FAN 1 CTRL

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Right Power Management Panel, P210

Row	Col	Number	Name
C	24	C21329	FWD CARGO HTR
G	1	C21600	EQPT CLG SPLY FAN 2 CTRL

F. Forward Cargo Heating System - Tryout

NOTE: This tryout is to make sure that the forward cargo heating system is at a zero energy state.

SUBTASK 21-43-00-860-004

(1) Refer to the table for applicable fan and heater location:

Description	Equipment No.	Location
EE Cooling Fan 1	B21581	STA 535, WL 172, L 92
EE Cooling Fan 2	B21582	STA 535, WL 162, L 88
Heater	B21430	STA 539, WL 117, L 25 Or STA 560, WL 113, L 15

SUBTASK 21-43-00-860-005

(2) At the applicable fan/heater, use a clamp-on ammeter, STD-85, to clamp around a single wire in the wire bundle.

(a) Make sure that the display shows 0 amps.

(3) Repeat for each wire in the wire bundle.

(4) Repeat for each fan/heater.

——— END OF TASK ———

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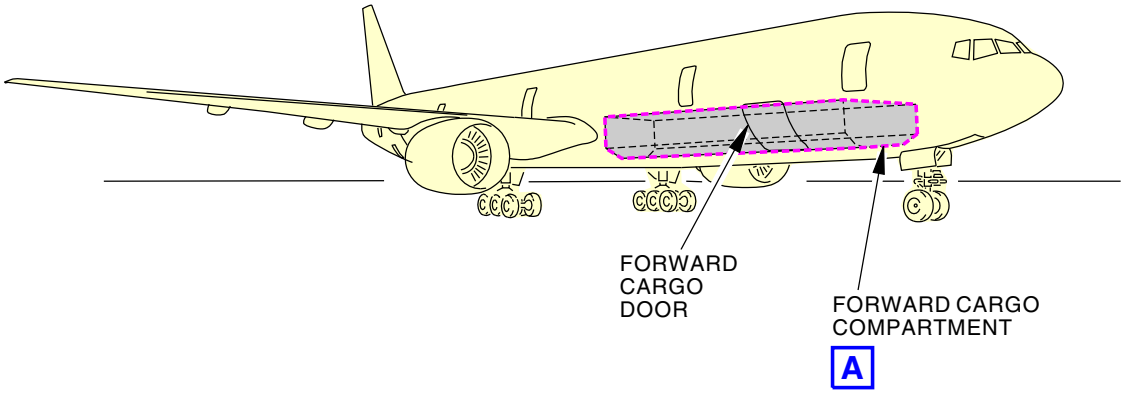

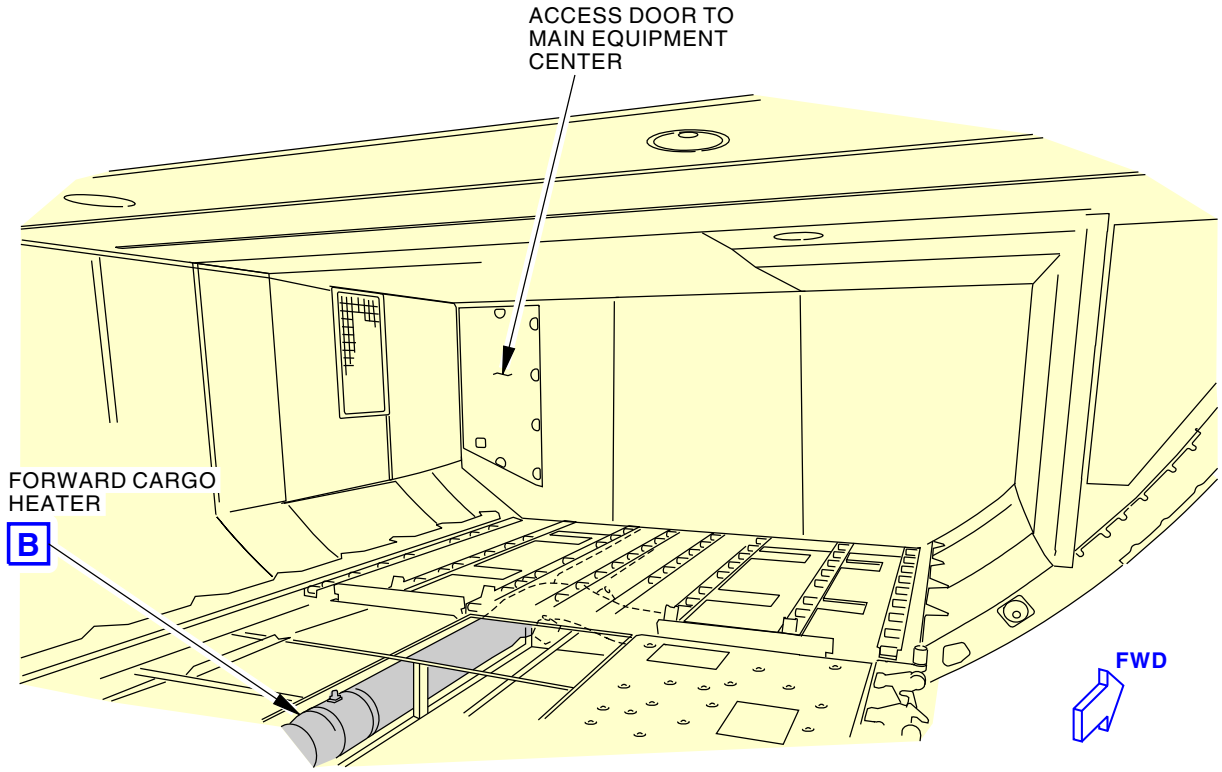

FORWARD CARGO COMPARTMENT

A

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Forward Cargo Heating System
Figure 201/21-43-00-990-801 (Sheet 1 of 2)

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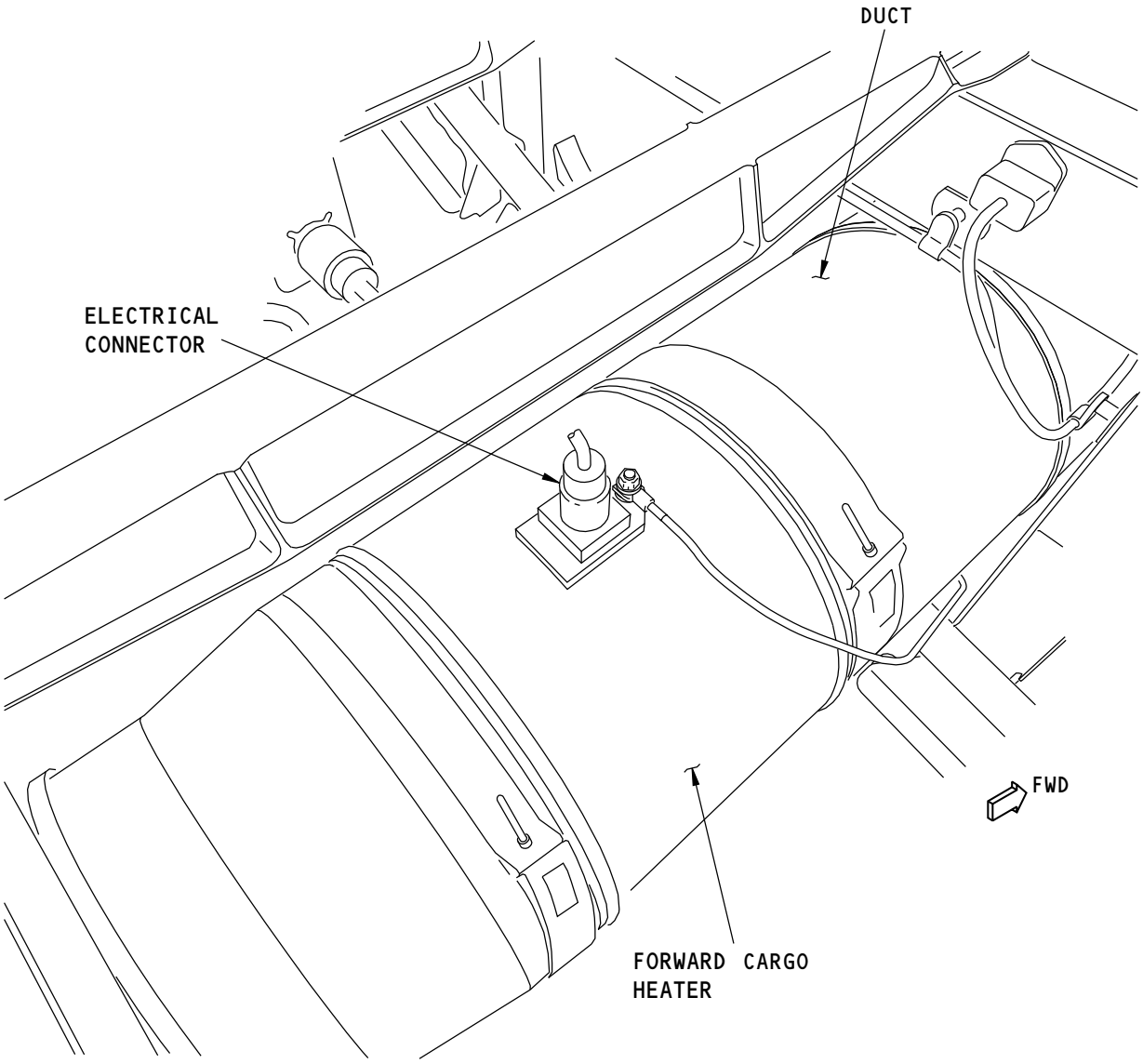

FORWARD CARGO HEATER

B

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Forward Cargo Heating System
Figure 201/21-43-00-990-801 (Sheet 2 of 2)

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TASK 21-43-00-440-801

3. Forward Cargo Heating System - Activation

(Figure 201)

A. General

(1) This task will activate the forward cargo heating system.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right

C. Procedure

SUBTASK 21-43-00-420-001

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	27	C21605	EQPT CLG SPLY FAN 1 CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
C	24	C21329	FWD CARGO HTR
G	1	C21600	EQPT CLG SPLY FAN 2 CTRL

END OF TASK

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FORWARD CARGO HEATING SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Operational Test - Forward Cargo Heating System.

TASK 21-43-00-740-801

2. Forward Cargo Compartment Heating System - System Test

A. General

(1) This test makes sure that the forward cargo compartment heating 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)
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. System Test - Forward Cargo Compartment Heating System

SUBTASK 21-43-00-860-001

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

SUBTASK 21-43-00-740-001

(2) Use a maintenance access terminal (MAT) to do the system test of the forward cargo compartment heating system.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Forward Cargo 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.

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(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 ———

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FORWARD CARGO HEATER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the forward cargo heater

(2) An installation of the forward cargo heater.

B. The forward cargo heater provides supplemental heat to the forward cargo compartment if the forward cargo temperature is less than 40 °F (4.4 °C) and there is airflow to the forward cargo compartment.

C. The forward cargo heater is off if the forward cargo temperature is more than 50 °F (10 °C) or there is no airflow to the forward cargo compartment.

TASK 21-43-01-000-801

2. Forward Cargo Heater Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane before you remove the forward cargo heater. The equipment cooling vent fan must be off to prevent airflow to the forward cargo heater. Removing electrical power will make sure that the electrical/electronic equipment does not overheat when the equipment cooling vent fan is off.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-53-03-000-801	Roller Tray - Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Prepare for the Removal

SUBTASK 21-43-01-010-001

(1) Open the forward cargo door, (TASK 52-34-00-860-801).

SUBTASK 21-43-01-860-001

CAUTION

MAKE SURE YOU REMOVE ELECTRICAL POWER FROM THE AIRPLANE. IF YOU SUPPLY ELECTRICAL POWER TO THE ELECTRICAL/ELECTRONIC EQUIPMENT WHEN THE EQUIPMENT COOLING SYSTEM IS NOT IN OPERATION, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-43-01-010-002

(3) Do the steps that follow to get access to the forward cargo heater [4]:

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(a) Remove the floor panel and the walkway on the left side of the compartment and forward of the cargo door opening, (TASK 25-52-10-000-801).

(b) Remove the roller tray which is above the forward cargo heater, (TASK 25-53-03-000-801).

E. Forward Cargo Heater Removal

SUBTASK 21-43-01-020-001

(1) Disconnect the electrical connector [6] from the forward cargo heater [4].

SUBTASK 21-43-01-020-002

(2) Do the steps that follow to disconnect the bonding jumper [3]:

(a) Remove the nut [2].

(b) Remove the washer [1].

(c) Disconnect the bonding jumper [3].

SUBTASK 21-43-01-020-005

(3) Loosen the couplings [5] and move them away from the forward cargo heater [4].

SUBTASK 21-43-01-020-003

(4) Move the sleeves [6] away from the forward cargo heater [4].

SUBTASK 21-43-01-020-004

(5) Remove the forward cargo heater [4].

END OF TASK

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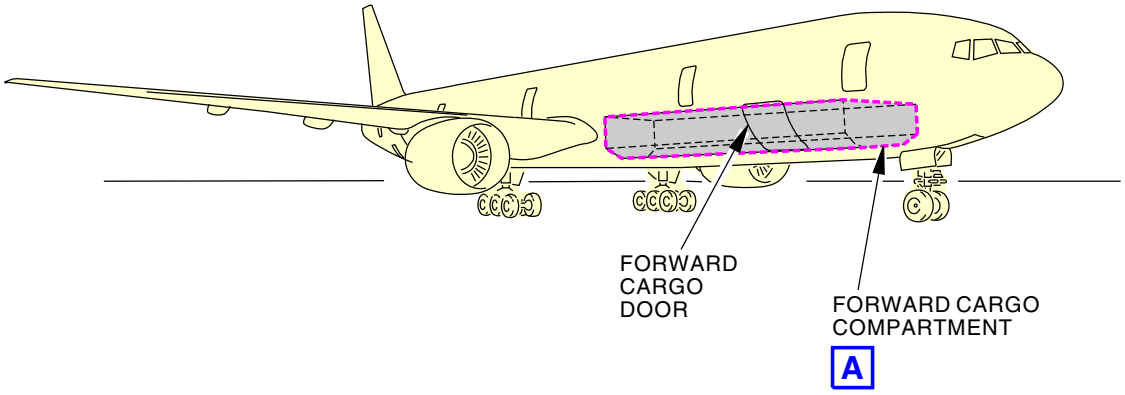

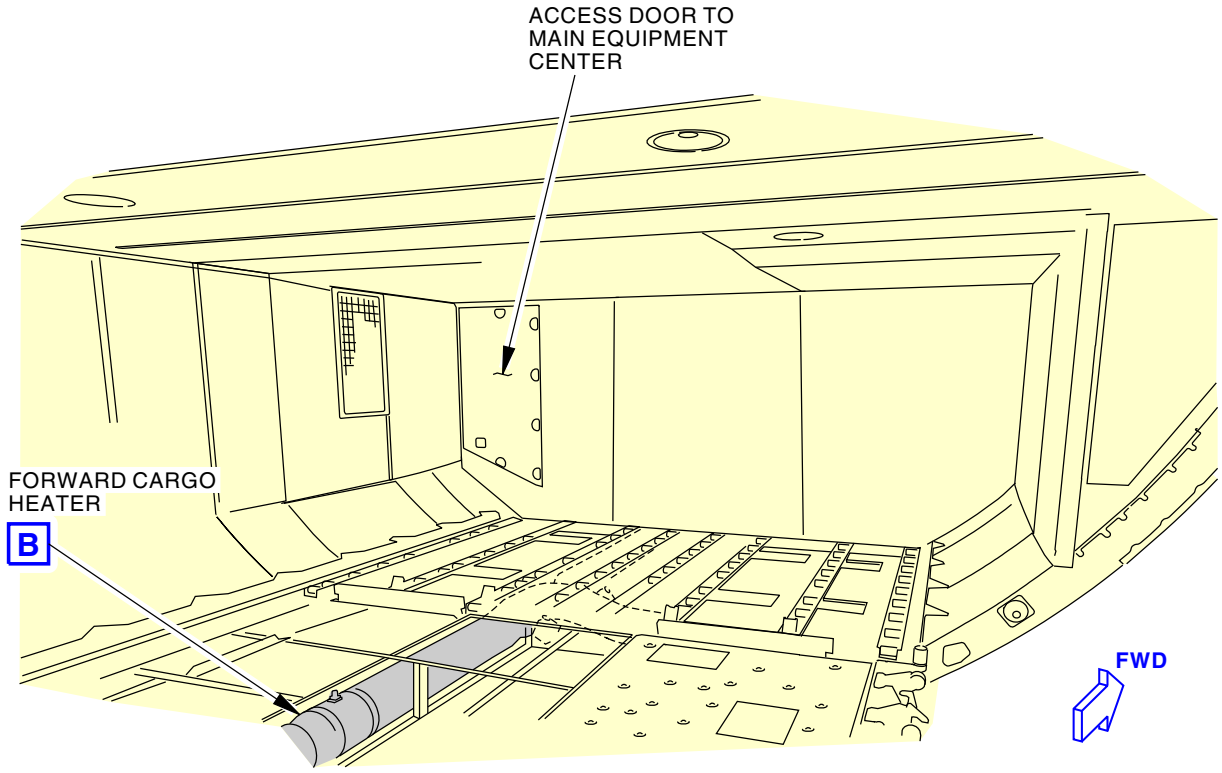

FORWARD CARGO COMPARTMENT

A

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Forward Cargo Heater Installation
Figure 401/21-43-01-990-801 (Sheet 1 of 2)

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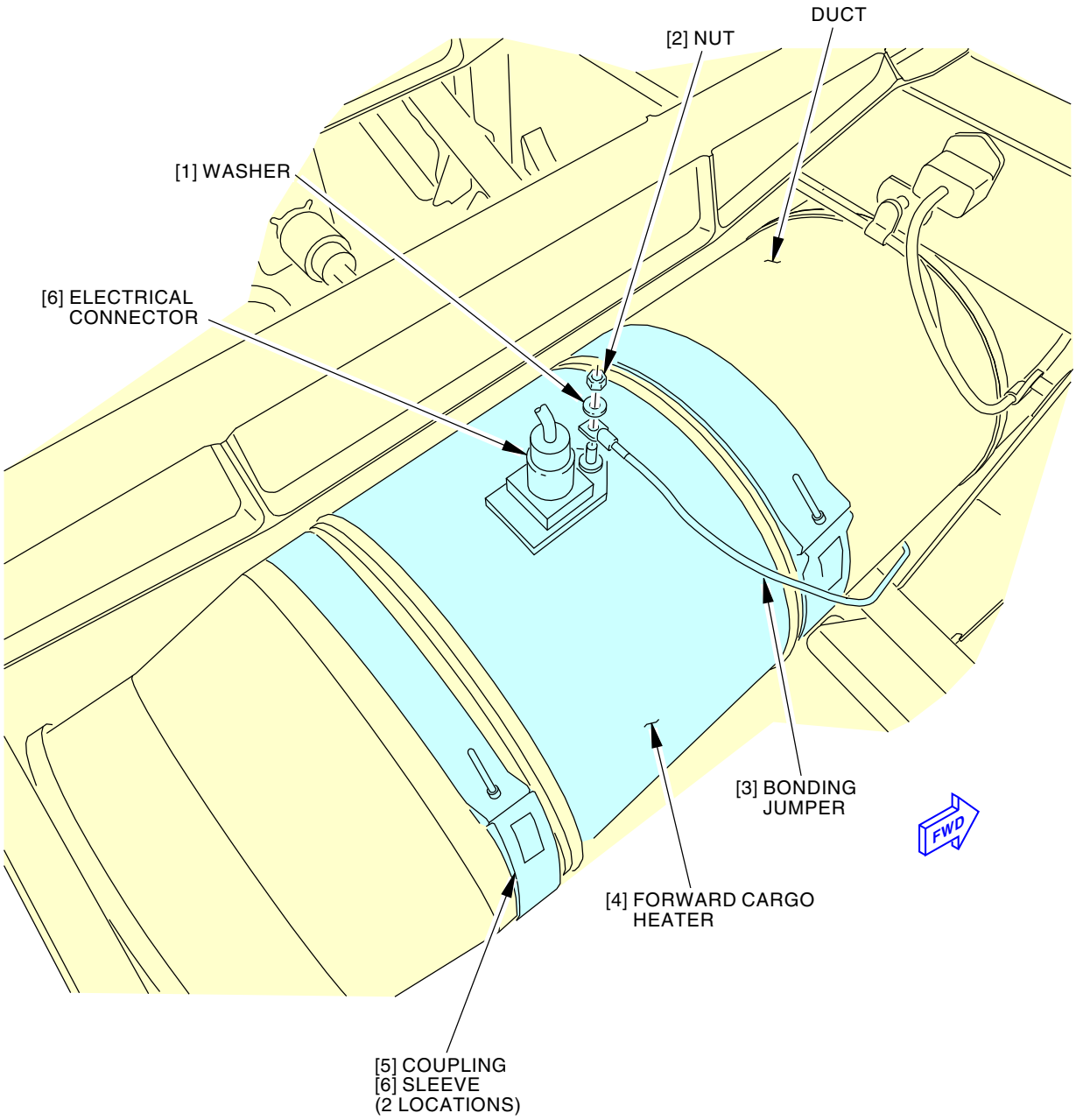

FORWARD CARGO HEATER

B

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Forward Cargo Heater Installation
Figure 401/21-43-01-990-801 (Sheet 2 of 2)

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TASK 21-43-01-400-801

3. Forward Cargo Heater Installation

(Figure 401)

A. References

Reference	Title
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
25-53-03-400-801	Roller Tray - Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Heater	21-43-01-04-090	ARO ALL

C. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Forward Cargo Heater Installation

SUBTASK 21-43-01-420-001

(1) Put the forward cargo heater [4] into its position in the duct.

SUBTASK 21-43-01-420-005

(2) Move the sleeves [6] over the duct connections.

SUBTASK 21-43-01-420-002

(3) Put the couplings [5] over the duct connections and tighten them to 45-55 pound-inches (5.1-6.2 newton-meters).

SUBTASK 21-43-01-420-003

(4) Do these steps to reconnect the bonding jumper [3]:

NOTE: Make sure the bonding jumper, the washer and the nut are clean.

(a) Put the bonding jumper [3] into its position on the forward cargo heater [4].

(b) Install the washer [1].

(c) Install the nut [2].

SUBTASK 21-43-01-420-004

(5) Reconnect the electrical connector [6] to the forward cargo heater [4].

E. Forward Cargo Heater Installation Test

SUBTASK 21-43-01-860-002

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

SUBTASK 21-43-01-860-003

(2) Do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

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SUBTASK 21-43-01-740-001

(3) Use a maintenance access terminal (MAT) to do the installation test of the forward cargo heater, (TASK 45-10-00-740-808):

NOTE: While the MAT test is in operation, the forward cargo heat valve will open. A second person should put their hand approximately six inches away from the couplings on the forward cargo heater to feel for air leakage while the test is in operation. If air leakage is felt, the forward cargo heater and couplings must be adjusted until air leakage is not felt.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Forward Cargo 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.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-43-01-860-004

(1) Do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-43-01-410-001

(2) Reinstall the roller tray, (TASK 25-53-03-400-801).

SUBTASK 21-43-01-010-003

(3) Reinstall the floor panel and the walkway, (TASK 25-52-10-400-801).

SUBTASK 21-43-01-010-004

(4) Close the forward cargo door, (TASK 52-34-00-860-803).

——— END OF TASK ———

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FORWARD CARGO TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the forward cargo temperature sensor.

(2) An installation of the forward cargo temperature sensor.

(3) The forward cargo compartment temperature sensor is a single element thermistor. The resistance across the temperature sensor changes as the temperature of the thermistor changes. The right ECSMC monitors the resistance of the temperature sensor to determine the temperature of the forward cargo compartment.

TASK 21-43-02-000-801

2. Forward Cargo Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left

C. Prepare for the Removal

SUBTASK 21-43-02-840-001

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

Right Power Management Panel, P210

Row	Col	Number	Name
C	24	C21329	FWD CARGO HTR

SUBTASK 21-43-02-010-001

(2) Do these steps to get access to the forward cargo compartment temperature sensor:

(a) 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.

(b) Remove the left sidewall liner at Station 825, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

D. Forward Cargo Temperature Sensor Removal

SUBTASK 21-43-02-020-001

(1) Disconnect the electrical connector [2] from the forward cargo compartment temperature sensor [1].

SUBTASK 21-43-02-020-002

(2) Remove and discard the lockwire from the forward cargo compartment temperature sensor [1].

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SUBTASK 21-43-02-020-003

(3) Turn the forward cargo compartment temperature sensor [1] counterclockwise until you can remove it from the boss.

——— END OF TASK ———

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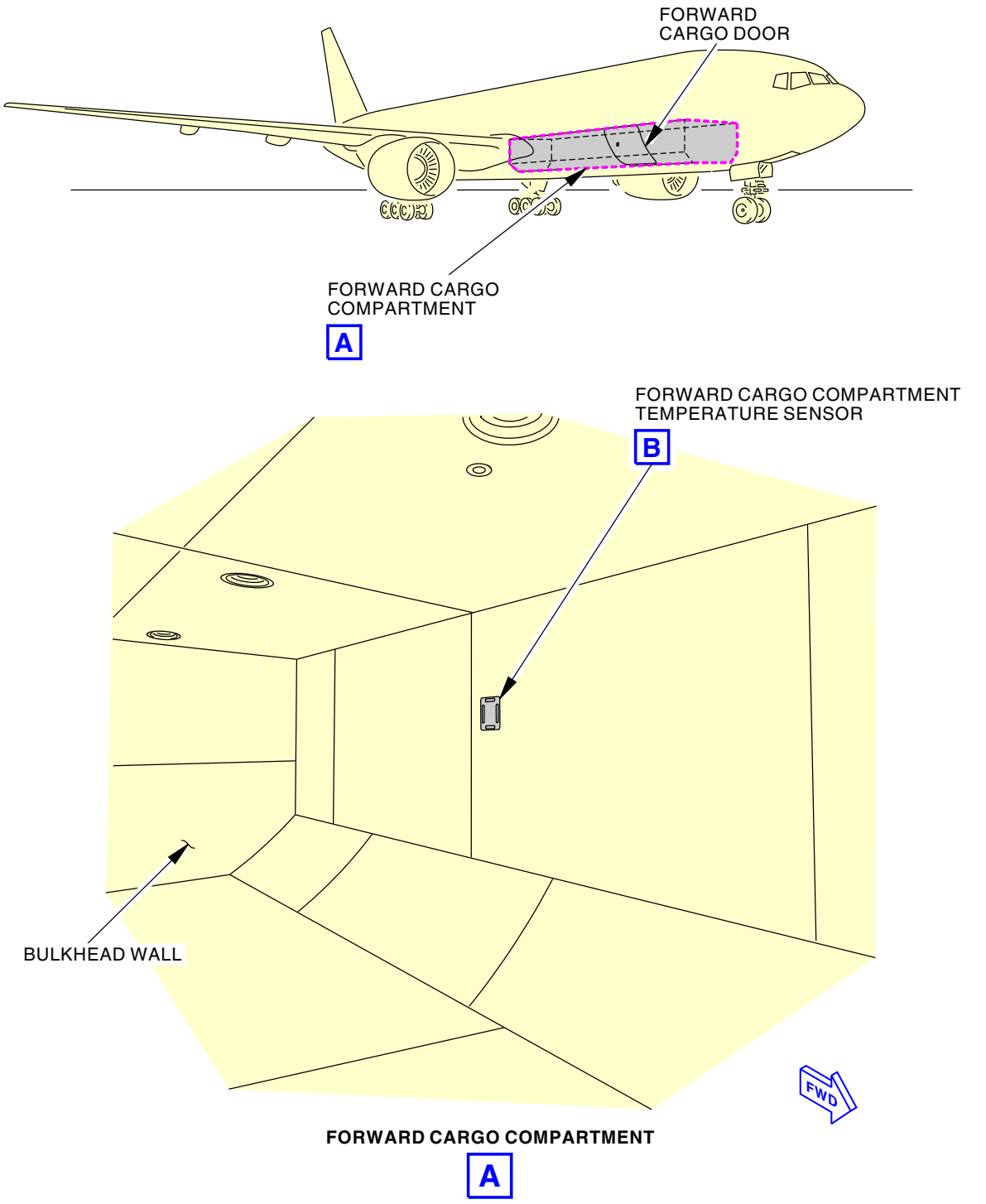

Forward Cargo Compartment Temperature Sensor Installation
Figure 401/21-43-02-990-801 (Sheet 1 of 2)

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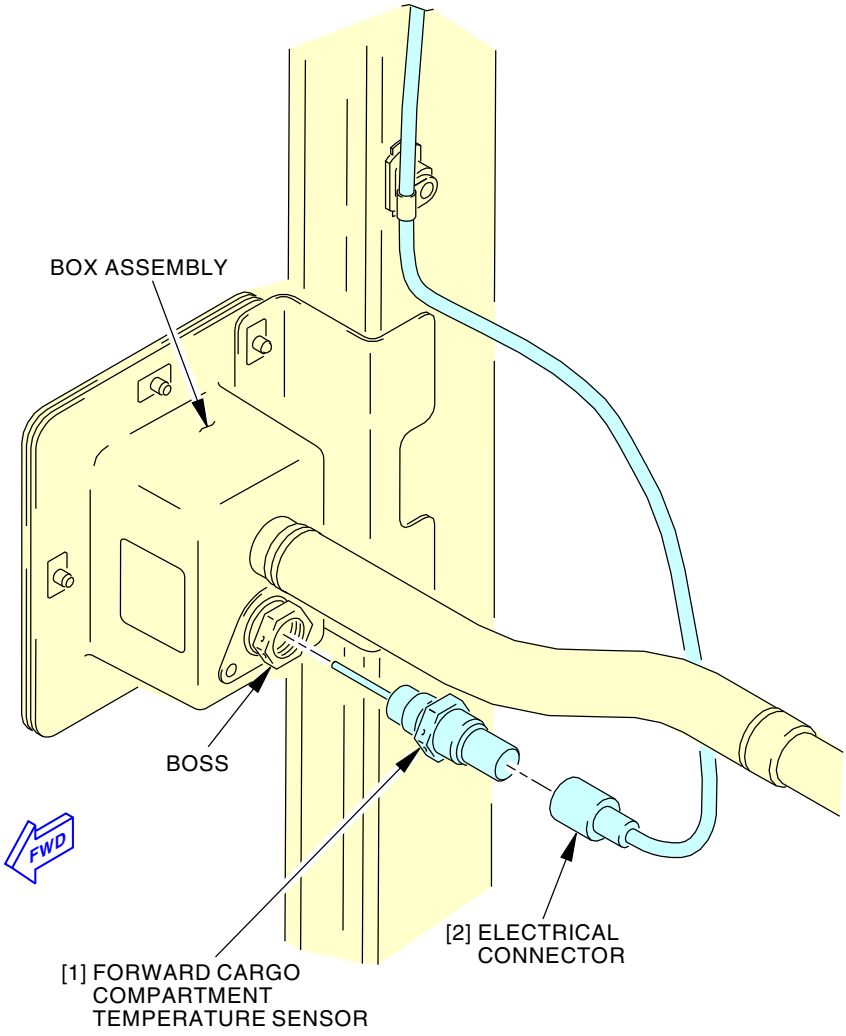

FORWARD CARGO COMPARTMENT TEMPERATURE SENSOR

B

NOTE:

THE SIDEWALL LINER IS NOT SHOWN.

G73715 S0006403763_V2

Forward Cargo Compartment Temperature Sensor Installation
Figure 401/21-43-02-990-801 (Sheet 2 of 2)

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TASK 21-43-02-400-801

3. Forward Cargo Temperature Sensor Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Forward cargo compartment temperature sensor	21-43-02-01-030	ARO ALL
		21-43-02-02-045	ARO ALL

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Forward Cargo Temperature Sensor Installation

SUBTASK 21-43-02-420-001

(1) Put the forward cargo compartment temperature sensor [1] into the boss on the box assembly.

SUBTASK 21-43-02-420-002

(2) Turn the forward cargo compartment temperature sensor [1] clockwise until it is fully in the boss.

SUBTASK 21-43-02-420-003

(3) Tighten the forward cargo compartment temperature sensor [1] to 15 ±5 in-lb (1.69 ±0.57 N·m).

SUBTASK 21-43-02-420-004

(4) Install a new lockwire to the forward cargo compartment temperature sensor [1].

SUBTASK 21-43-02-020-004

(5) Reconnect the electrical connector [2] to the forward cargo compartment temperature sensor [1].

E. Forward Cargo Temperature Sensor Installation Test

SUBTASK 21-43-02-840-002

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

Right Power Management Panel, P210

Row	Col	Number	Name
C	24	C21329	FWD CARGO HTR

SUBTASK 21-43-02-860-001

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

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SUBTASK 21-43-02-740-001

(3) Use a Maintenance Access Terminal (MAT) to make sure a maintenance message for the forward cargo temperature sensor does not show (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS
4) 21 Cabin Temperature Control
5) CONTINUE

(b) Look at the existing faults and make sure a maintenance message for the forward cargo temperature sensor does not show.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-43-02-410-001

(1) Reinstall the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-43-02-410-002

(2) 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.

——— END OF TASK ———

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AFT AND BULK CARGO COMPARTMENT HEATING SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Aft and bulk cargo compartment heating system - deactivation.

(2) Aft and bulk cargo compartment heating system - activation.

TASK 21-44-00-040-801

2. Aft and Bulk Cargo Compartment Heating System - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the aft and bulk cargo compartment heating system.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
153	Area Below Aft Cargo Compartment, Left
154	Area Below Aft Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
164	Area Below Bulk Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Procedure

SUBTASK 21-44-00-860-028

WARNING REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-44-00-210-012

(2) On the CARGO TEMP SELECT MODULE, make sure that the AFT and BULK cargo heat temperature selectors are OFF.

NOTE: The CARGO TEMP SELECT MODULE is located on the pilot's overhead panel, P5.

(a) Install DO NOT OPERATE tags, STD-858 on the selectors.

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SUBTASK 21-44-00-010-003

(3) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-44-00-020-001

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV
G	25	C21615	AFT CGO HT SOV
G	26	C21607	L LAV/GLY FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	2	C21608	R LAV/GLY FAN CTRL
G	3	C21616	BULK CGO HT SOV
G	4	C21620	BULK CGO HT TCV

G. Aft and Bulk Cargo Compartment Heating System - Tryout

NOTE: This tryout is to make sure that the aft and bulk cargo compartment heating system is in a zero energy state.

SUBTASK 21-44-00-860-029

(1) On the EICAS display, go to the Air Supply Maintenance page.

(a) Make sure that the MANIFOLD DUCT PRESS L and R read 0 (PSI).

SUBTASK 21-44-00-860-030

(2) Use a maintenance access terminal (MAT) to do the system test of the aft and bulk cargo compartment heating system.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) (Aft, Bulk) Cargo Heat
7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

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1) CONTINUE

2) START TEST

(c) Make sure that the Aft and Bulk heaters DO NOT come on.

NOTE: A ground observer must be in voice contact with an operator in the flight deck at all times to complete this step.

(d) When the test is completed, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

END OF TASK

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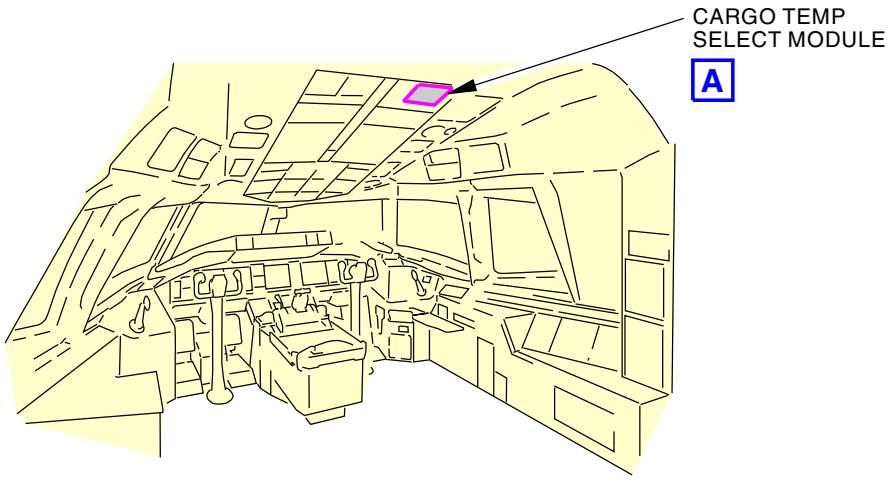
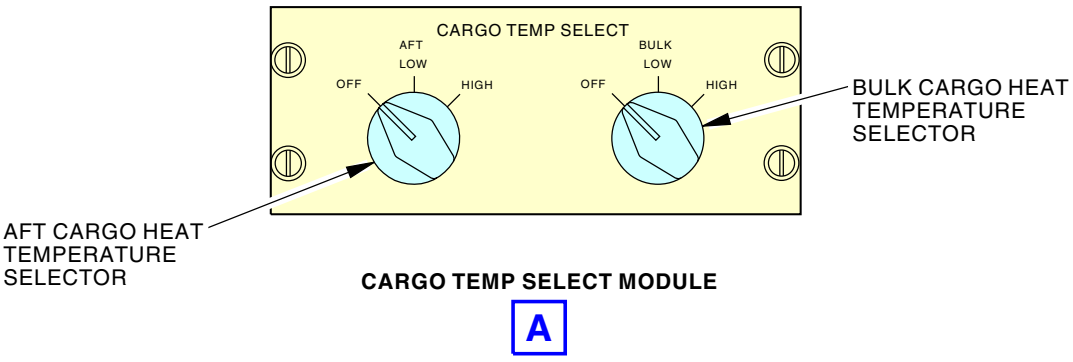


FLIGHT COMPARTMENT



CARGO TEMP SELECT MODULE

A

2417584 S0000557974_V2

Aft and Bulk Cargo Compartment Heating System
Figure 201/21-44-00-990-810

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TASK 21-44-00-440-801

3. Aft and Bulk Cargo Compartment Heating System - Activation

(Figure 201)

A. General

(1) This task will activate the aft and bulk cargo heating system.

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
153	Area Below Aft Cargo Compartment, Left
154	Area Below Aft Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
164	Area Below Bulk Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-44-00-420-001

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV
G	25	C21615	AFT CGO HT SOV
G	26	C21607	L LAV/GLY FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	2	C21608	R LAV/GLY FAN CTRL
G	3	C21616	BULK CGO HT SOV
G	4	C21620	BULK CGO HT TCV

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SUBTASK 21-44-00-010-010

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-44-00-860-033

(3) On the CARGO TEMP SELECT MODULE, remove the DO NOT OPERATE tags, STD-858 from the temperature selectors.

——— END OF TASK ———

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AFT AND BULK CARGO COMPARTMENT HEATING SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) System Test - Aft and Bulk Cargo Compartment Heating System

(2) Operational Test - Aft and Bulk Cargo Compartment Heat Temperature Selectors

(3) Functional Test - Bulk Cargo Compartment Overheat Switch

(4) Functional Test - Aft Cargo Compartment Overheat Switch

C. To do a complete system test of the aft and bulk cargo compartment heating system, you must do each of the above tasks.

TASK 21-44-00-740-801

2. Aft and Bulk Cargo Compartment Heating System - System Test

A. General

(1) This test makes sure that the (aft, bulk) cargo compartment heating system operates correctly.

(2) The same sequence of steps is used for the aft cargo compartment heating system test and the bulk cargo compartment heating 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.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (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. System Test - (Aft, Bulk) Cargo Compartment Heating System

SUBTASK 21-44-00-860-001

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

SUBTASK 21-44-00-860-002

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

(3) Make sure manifold duct pressure is more than 22 psig.

NOTE: If the duct pressure is less than 22 psig, then it is necessary to operate a pack during the test.

SUBTASK 21-44-00-740-001

(4) Use a maintenance access terminal (MAT) to do the system test of the aft and bulk cargo compartment heating system.

(a) Make these selections on the MAT:

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1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) (Aft, Bulk) Cargo 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, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 21-44-00-860-003

(5) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

——— END OF TASK ———

TASK 21-44-00-710-801

3. Aft and Bulk Cargo Compartment Heat Temperature Selector - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This test makes sure that the (AFT, BULK) CARGO TEMP SELECT selector operates correctly.

B. References

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

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 21-44-00-860-005

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

SUBTASK 21-44-00-860-006

(2) Push the L INBD, LWR CTR, or the R INBD button on the Display Select Panel which is found on the Glareshield Panel, P55.

SUBTASK 21-44-00-860-007

(3) Push the AIR button on the Display Select Panel.

NOTE: This shows the AIR synoptic page on the L INBD, LWR CTR, or the R INBD display unit (DU).

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SUBTASK 21-44-00-210-001

(4) Do these steps to make sure the (AFT, BULK) CARGO TEMP SELECT selector on the Maintenance Panel, P61, operates in the OFF position:

(a) Put the (AFT, BULK) CARGO TEMP SELECT selector in the OFF position.

(b) Make sure there is no target temperature shown on the synoptic page for the (AFT, BULK) cargo compartment.

NOTE: The actual temperature is shown in white and the target temperature is shown in magenta.

SUBTASK 21-44-00-210-002

(5) Do these steps to make sure the (AFT, BULK) CARGO TEMP SELECT selector operates in the LOW position:

(a) Put the (AFT, BULK) CARGO TEMP SELECT selector in the LOW position.

(b) Make sure the synoptic page target temperature for the (AFT, BULK) cargo compartment shows 45 °F (7.2 °C).

NOTE: The actual temperature is shown in white and the target temperature is shown in magenta.

SUBTASK 21-44-00-210-003

(6) Do these steps to make sure the (AFT, BULK) CARGO TEMP SELECT selector operates in the HI position:

(a) Put the (AFT, BULK) CARGO TEMP SELECT selector in the HI position.

(b) Make sure the synoptic page target temperature for the (AFT, BULK) cargo compartment shows 70 °F (21.1 °C).

NOTE: The actual temperature is shown in white and the target temperature is shown in magenta.

(c) Put the (AFT, BULK) CARGO TEMP SELECT selector in the OFF position.

——— END OF TASK ———

TASK 21-44-00-710-802

4. Bulk Cargo Compartment Overheat Switch - Functional Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This test makes sure that the bulk cargo compartment overheat switch operates correctly.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (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)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)

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C. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	
G02320	Ice - Crushed	

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
161	Bulk Cargo Compartment, Left
162	Bulk Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
212	Flight Compartment, Right

E. Prepare for the Test

SUBTASK 21-44-00-860-010

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

SUBTASK 21-44-00-840-001

WARNING OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Put the air/ground system in the air mode. To do this, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 21-44-00-840-002

(3) Put the ADIRU switch on the P5 overhead panel to the OFF position.

SUBTASK 21-44-00-840-003

(4) Remove the left sidewall liner to get access to the cargo heat valves. To remove the sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-44-00-840-004

(5) Remove the waste tank service panel to get access to the bulk cargo compartment overheat switch. To remove the service panel, do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801.

SUBTASK 21-44-00-840-006

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	26	C21607	L LAV/GLY FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	2	C21608	R LAV/GLY FAN CTRL

F. Procedure

SUBTASK 21-44-00-840-009

(1) Put the BULK switch on CARGO TEMP SELECT module of the P61 Maintenance Panel to the OFF position.

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SUBTASK 21-44-00-840-010

(2) Make sure that the FWD and the AFT CARGO FIRE switches on the P5 Overhead Panel are in the DISARM position.

NOTE: The switch is in the DISARM position when the light is not on.

SUBTASK 21-44-00-840-011

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	3	C21616	BULK CGO HT SOV
G	4	C21620	BULK CGO HT TCV

SUBTASK 21-44-00-840-012

(4) Remove the screws [1] and the grille [2] which cover the box for the bulk cargo temperature sensor.

SUBTASK 21-44-00-840-013

(5) Put a plastic bag filled with ice, G02320 or apply the MS-242N spray, G02319 in small short bursts to the bulk cargo temperature sensor.

NOTE: The quick freeze spray should be used with care.

NOTE: The spray or ice will simulate a cold cargo compartment.

SUBTASK 21-44-00-840-014

(6) Disconnect the electrical connector, DV21443 from the bulk cargo heat shutoff valve.

SUBTASK 21-44-00-840-015

(7) Disconnect the electrical connector, DV21444 from the bulk cargo heat temperature control valve.

SUBTASK 21-44-00-840-016

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	3	C21616	BULK CGO HT SOV
G	4	C21620	BULK CGO HT TCV

SUBTASK 21-44-00-760-001

(9) Do the voltage checks in the steps that follow to verify that cargo heat is off:

(a) Make sure there is 0 VDC between pins 5 and 6 of connector DV21443.

(b) Make sure there is 0 VDC between pins 5 and 6 of connector DV21444.

SUBTASK 21-44-00-840-017

(10) Put the BULK switch on CARGO TEMP SELECT module of the P61 Maintenance Panel to the HIGH position.

SUBTASK 21-44-00-760-002

(11) Do the voltage checks in the steps that follow to verify that cargo heat is on:

(a) Make sure there is 28 VDC between pins 5 and 6 of connector DV21443.

(b) Make sure there is 28 VDC between pins 5 and 6 of connector DV21444.

SUBTASK 21-44-00-840-018

(12) Use a heat source such as a hot air gun or hot plate, adjustable in increments of 1 °F, to test the bulk cargo overheat switch.

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(a) Set the heat source at 126 to 130 °F (52.2 to 54.5 °C).

NOTE: The overheat switch is designed to close at 125 °F (51.7 °C).

(b) Put the heat source on the bulk cargo overheat switch for five minutes.

NOTE: The overheat switch must be closed for 60 seconds to latch the overheat relay circuit.

SUBTASK 21-44-00-760-003

(13) Do the voltage checks in the steps that follow to verify that cargo heat is off:

(a) Make sure there is 0 VDC between pins 5 and 6 of connector DV21443.

(b) Make sure there is 0 VDC between pins 5 and 6 of connector DV21444.

SUBTASK 21-44-00-840-019

(14) Remove the heat source from the bulk cargo overheat switch.

SUBTASK 21-44-00-840-065

(15) Wait 5 minutes for the overheat switch to cool.

NOTE: The overheat switch will reopen when its temperature falls below 95 °F (35 °C).

SUBTASK 21-44-00-760-004

(16) Do the voltage checks in the steps that follow to verify that the overheat relay circuit is latched (cargo heat remains off):

(a) Make sure there is 0 VDC between pins 5 and 6 of connector DV21443.

(b) Make sure there is 0 VDC between pins 5 and 6 of connector DV21444.

SUBTASK 21-44-00-840-066

(17) Put the BULK switch on CARGO TEMP SELECT module of the P61 Maintenance Panel to the OFF position and then back to the HIGH position.

SUBTASK 21-44-00-760-009

(18) Do the voltage checks in the steps that follow to verify that the overheat relay circuit is unlatched (cargo heat is on):

(a) Make sure there is 28 VDC between pins 5 and 6 of connector DV21443.

(b) Make sure there is 28 VDC between pins 5 and 6 of connector DV21444.

SUBTASK 21-44-00-840-020

(19) Put the BULK switch on CARGO TEMP SELECT module of the P61 Maintenance Panel to the OFF position.

SUBTASK 21-44-00-840-021

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	3	C21616	BULK CGO HT SOV
G	4	C21620	BULK CGO HT TCV

SUBTASK 21-44-00-840-022

(21) Connect the electrical connector, DV21443 to the bulk cargo heat shutoff valve.

SUBTASK 21-44-00-840-023

(22) Connect the electrical connector, DV21444 to the bulk cargo heat temperature control valve.

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SUBTASK 21-44-00-840-024

(23) If it is applicable, remove the plastic bag filled with ice, G02320 from the bulk cargo temperature sensor.

SUBTASK 21-44-00-840-025

(24) Install the screws [1] and the grille [2] which cover the box for the cargo temperature sensors.

SUBTASK 21-44-00-840-026

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	3	C21616	BULK CGO HT SOV
G	4	C21620	BULK CGO HT TCV

G. Put the Airplane Back to its Usual Condition

SUBTASK 21-44-00-840-028

(1) Put the ADIRU switch on the P5 overhead panel to the ON position.

SUBTASK 21-44-00-840-029

WARNING

OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE GROUND MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Put the air/ground system in the ground mode. To do this, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 21-44-00-840-030

(3) Install sidewall liner you removed. To install the sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-44-00-840-031

(4) Install the floor panel you removed. To install the floor panel, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801.

——— END OF TASK ———

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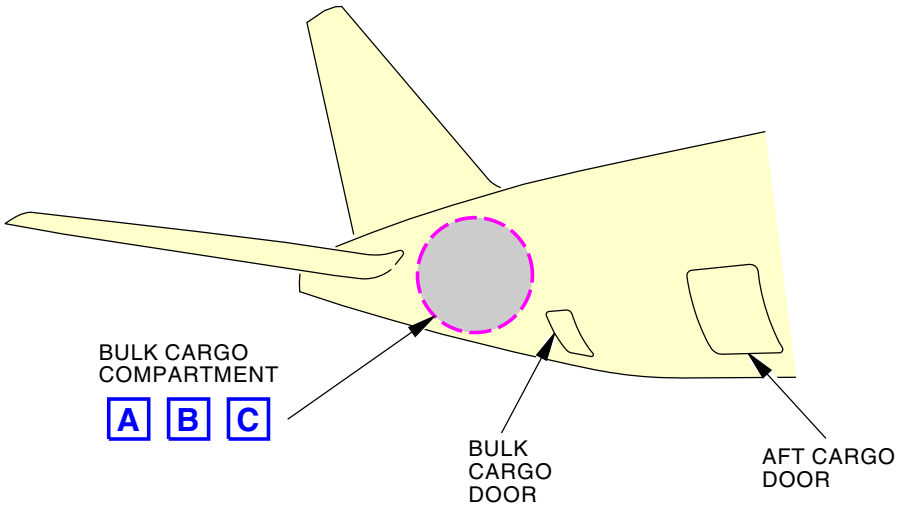

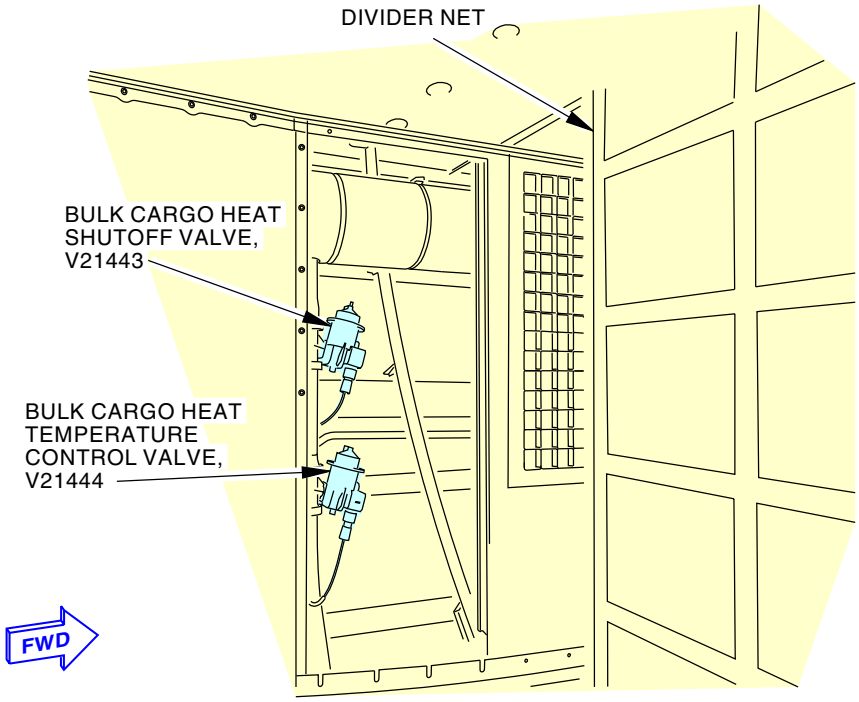

BULK CARGO COMPARTMENT

A

U55075 S0000194802_V2

Bulk Cargo Compartment Overheat Switch - Functional Test
Figure 501/21-44-00-990-806 (Sheet 1 of 3)

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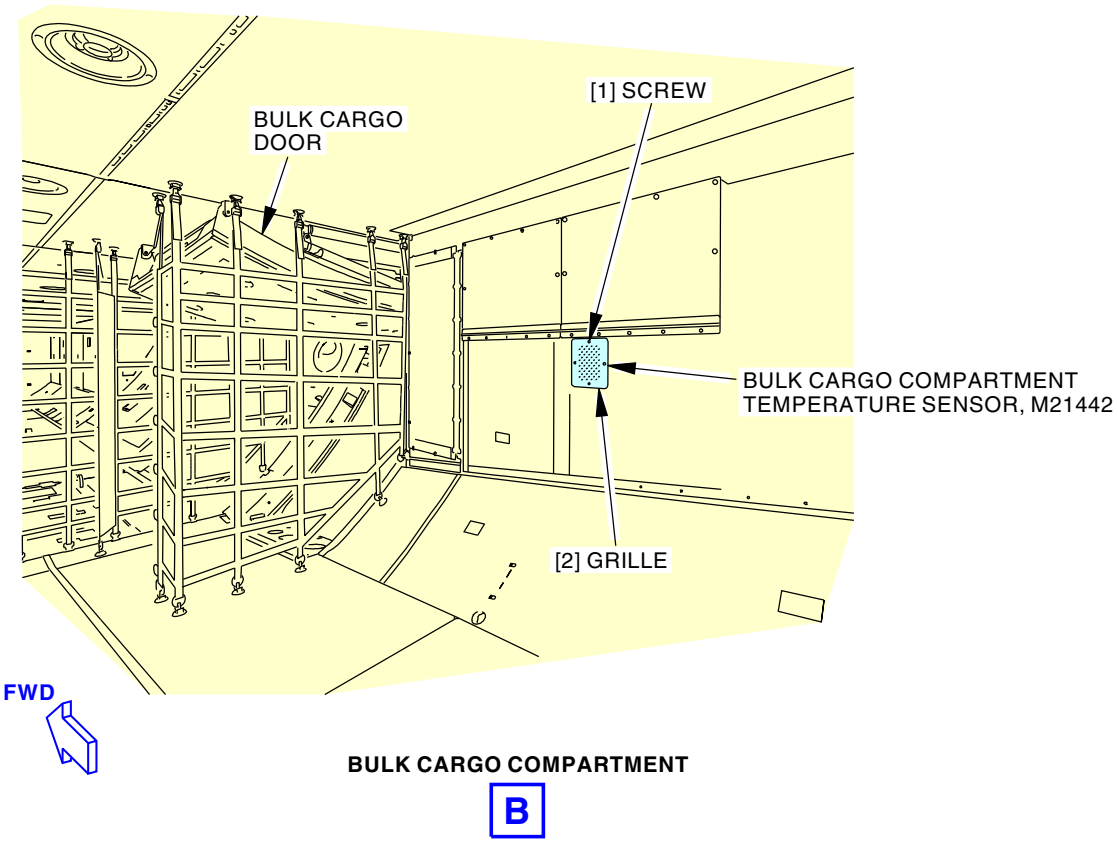

L74116 S0006403772_V2

Bulk Cargo Compartment Overheat Switch - Functional Test
Figure 501/21-44-00-990-806 (Sheet 2 of 3)

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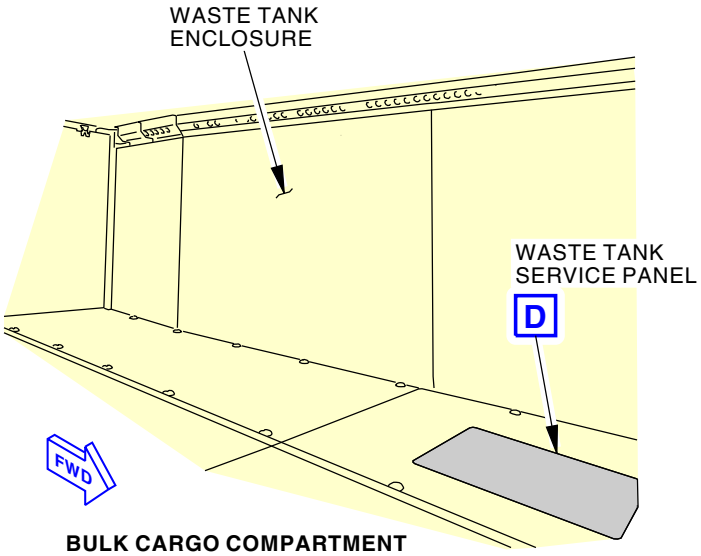
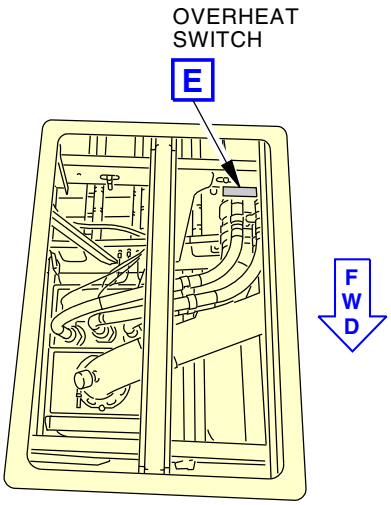


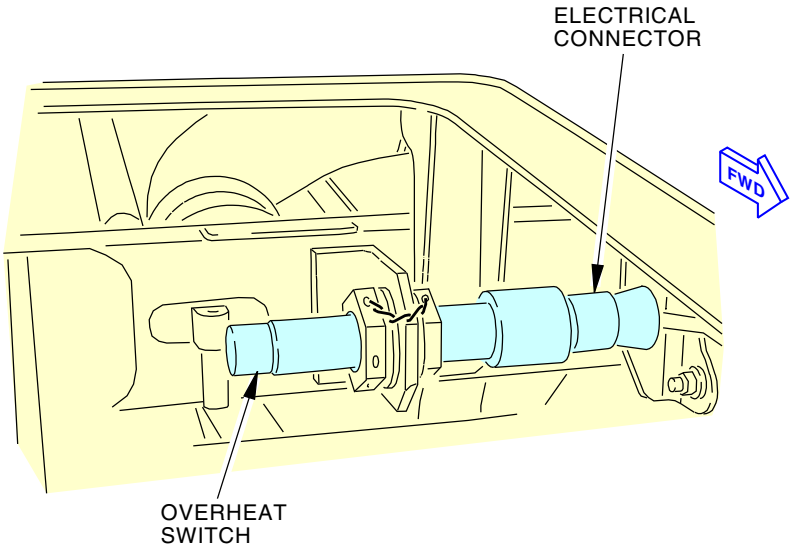
BULK CARGO COMPARTMENT

C



WASTE TANK SERVICE PANEL
(INTERNAL VIEW)

D



OVERHEAT SWITCH

E

L74122 S0006403773_V2

Bulk Cargo Compartment Overheat Switch - Functional Test
Figure 501/21-44-00-990-806 (Sheet 3 of 3)

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TASK 21-44-00-710-803

5. Aft Cargo Compartment Overheat Switch - Functional Test

(Figure 502)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This test makes sure that the aft cargo compartment overheat switch operates correctly.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (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)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
151	Aft Cargo Compartment, Left
153	Area Below Aft Cargo Compartment, Left
161	Bulk Cargo Compartment, Left
212	Flight Compartment, Right

D. Prepare for the Test

SUBTASK 21-44-00-860-011

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

SUBTASK 21-44-00-840-032

WARNING OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Put the air/ground system in the air mode. To do this, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 21-44-00-840-033

(3) Put the ADIRU switch on the P5 overhead panel to the OFF position.

SUBTASK 21-44-00-840-034

(4) Remove the left sidewall liner to get access to the cargo heat valves. To remove the sidewall liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 21-44-00-840-035

(5) Remove the floor panel to get access to the aft cargo compartment overheat switch. To remove the floor panel, do this task: Floor Panels and Walkways Removal, TASK 25-52-10-000-801.

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SUBTASK 21-44-00-840-037

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	26	C21607	L LAV/GLY FAN CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
G	2	C21608	R LAV/GLY FAN CTRL

E. Procedure

SUBTASK 21-44-00-840-040

(1) Put the AFT switch on CARGO TEMP SELECT module of the P61 Maintenance Panel to the OFF position.

SUBTASK 21-44-00-840-041

(2) Make sure that the FWD and the AFT CARGO FIRE switches on the P5 Overhead Panel are in the DISARM position.

NOTE: The switch is in the DISARM position when the light is not on.

SUBTASK 21-44-00-840-042

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV
G	25	C21615	AFT CGO HT SOV

SUBTASK 21-44-00-840-043

(4) Remove the screws [1] and the grille [2] which cover the box for the aft cargo temperature sensor.

SUBTASK 21-44-00-840-044

(5) Put a plastic bag filled with ice on the aft cargo temperature sensor, M21441.

NOTE: The ice will simulate a cold cargo compartment.

SUBTASK 21-44-00-840-045

(6) Disconnect the electrical connector, DV21441 from the aft cargo heat shutoff valve.

SUBTASK 21-44-00-840-046

(7) Disconnect the electrical connector, DV21442 from the aft cargo heat temperature control valve.

SUBTASK 21-44-00-840-047

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV
G	25	C21615	AFT CGO HT SOV

SUBTASK 21-44-00-760-005

(9) Do the voltage checks in the steps that follow to verify that cargo heat is off:

(a) Make sure there is 0 VDC between pins 5 and 6 of connector DV21441.

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(b) Make sure there is 0 VDC between pins 5 and 6 of connector DV21442.

SUBTASK 21-44-00-840-048

(10) Put the AFT switch on CARGO TEMP SELECT module of the P61 Maintenance Panel to the HIGH position.

SUBTASK 21-44-00-760-006

(11) Do the voltage checks in the steps that follow to verify that cargo heat is on:

(a) Make sure there is 28 VDC between pins 5 and 6 of connector DV21441.

(b) Make sure there is 28 VDC between pins 5 and 6 of connector DV21442.

SUBTASK 21-44-00-840-064

(12) Use a heat source such as a hot air gun or hot plate, adjustable in increments of 1 °F, to test the aft cargo overheat switch.

(a) Set the heat source at 126 to 130 °F (52.2 to 54.5 °C).

NOTE: The overheat switch is designed to close at 125 °F (51.7 °C).

(b) Put the heat source on the aft cargo overheat switch for five minutes.

NOTE: The overheat switch must be closed for 60 seconds to latch the overheat relay circuit

SUBTASK 21-44-00-760-007

(13) Do the voltage checks in the steps that follow to verify that cargo heat is off:

(a) Make sure there is 0 VDC between pins 5 and 6 of connector DV21441.

(b) Make sure there is 0 VDC between pins 5 and 6 of connector DV21442.

SUBTASK 21-44-00-840-050

(14) Remove the heat source from the aft cargo overheat switch.

SUBTASK 21-44-00-840-067

(15) Wait 5 minutes for the overheat switch to cool.

NOTE: The overheat switch will reopen when its temperature falls below 95 °F (35 °C).

SUBTASK 21-44-00-760-008

(16) Do the voltage checks in the steps that follow to verify that the overheat relay circuit is latched (cargo heat remains OFF):

(a) Make sure there is 0 VDC between pins 5 and 6 of connector DV21441.

(b) Make sure there is 0 VDC between pins 5 and 6 of connector DV21442.

SUBTASK 21-44-00-840-068

(17) Put the AFT switch on the CARGO TEMP SELECT module of the P61 Maintenance Panel to the OFF position and then back to the HIGH position.

SUBTASK 21-44-00-760-010

(18) Do the voltage checks in the steps that follow to verify that the overheat relay circuit is unlatched (cargo heat is on):

(a) Make sure there is 28 VDC between pins 5 and 6 of connector DV21441.

(b) Make sure there is 28 VDC between pins 5 and 6 of connector DV21442.

SUBTASK 21-44-00-840-051

(19) Put the AFT switch on CARGO TEMP SELECT module of the P61 Maintenance Panel to the OFF position.

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SUBTASK 21-44-00-840-052

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV
G	25	C21615	AFT CGO HT SOV

SUBTASK 21-44-00-840-053

(21) Connect the electrical connector, DV21441 to the aft cargo heat shutoff valve.

SUBTASK 21-44-00-840-054

(22) Connect the electrical connector, DV21442 to the aft cargo heat temperature control valve.

SUBTASK 21-44-00-840-055

(23) Remove the plastic bag filled with ice from the aft cargo temperature sensor.

SUBTASK 21-44-00-840-056

(24) Install the screws [1] and the grille [2] which cover the box for the aft cargo temperature sensor.

SUBTASK 21-44-00-840-057

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV
G	25	C21615	AFT CGO HT SOV

SUBTASK 21-44-00-840-058

(26) Put the AFT switch on CARGO TEMP SELECT module of the P61 Maintenance Panel to the OFF position.

F. Put the Airplane Back to its Usual Condition

SUBTASK 21-44-00-840-060

(1) Put the ADIRU switch on the P5 overhead panel to the ON position.

SUBTASK 21-44-00-840-061

(2) Put the air/ground system in the ground mode. To do this, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 21-44-00-840-062

(3) Install sidewall liner you removed. To install the sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-44-00-840-063

(4) Install the floor panel you removed. To install the floor panels, do this task: Floor Panels and Walkways Installation, TASK 25-52-10-400-801.

END OF TASK

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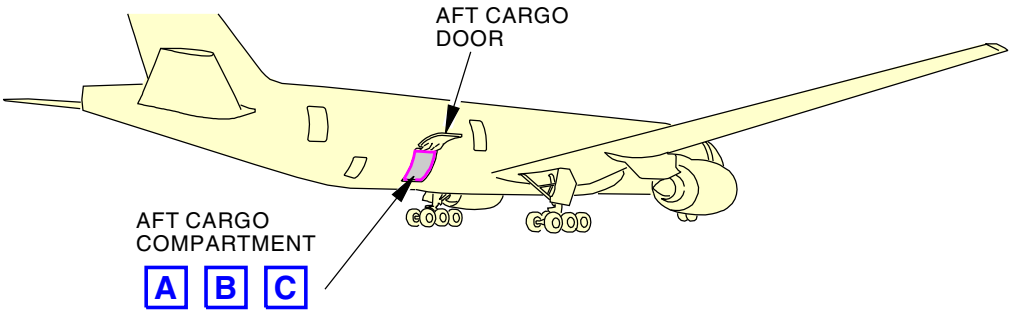

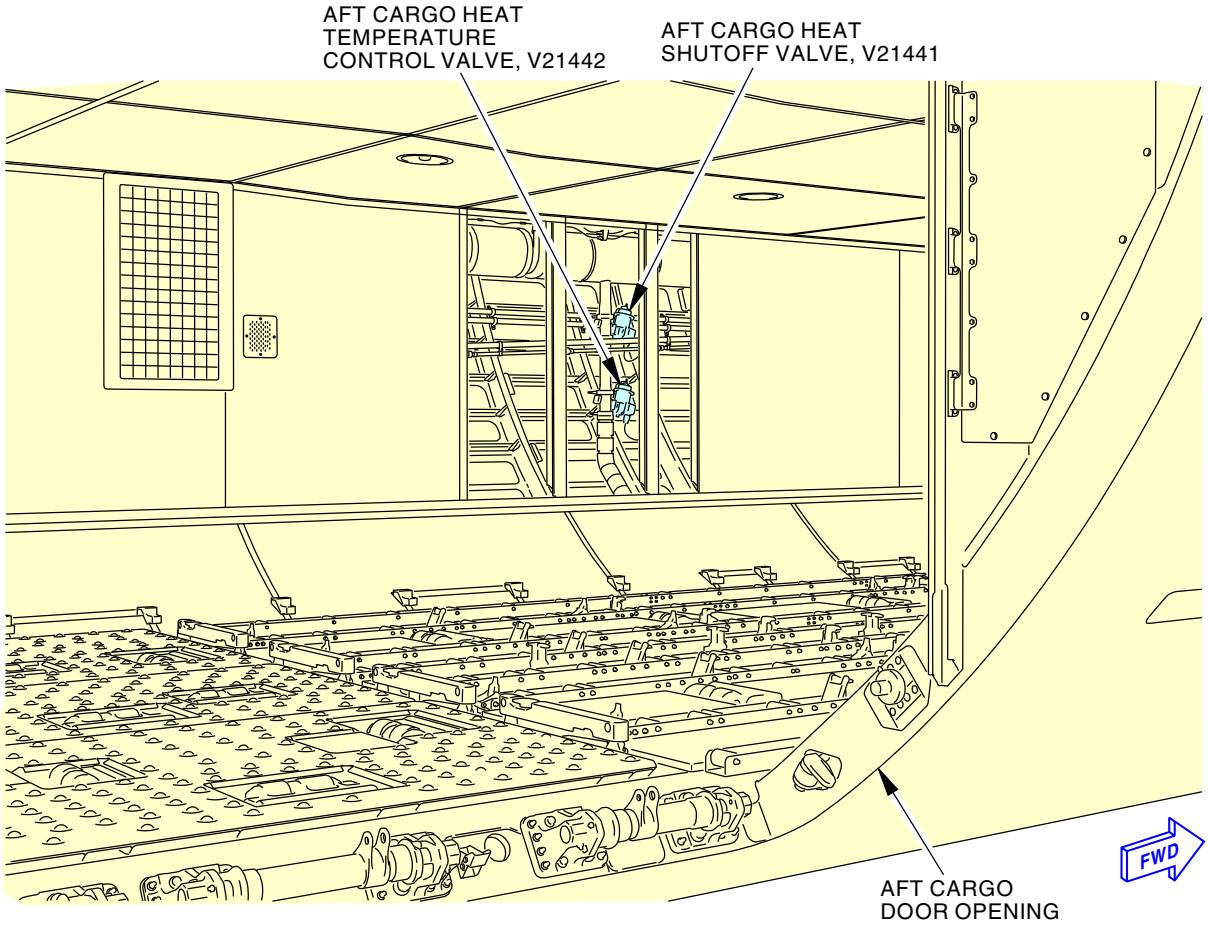

AFT CARGO COMPARTMENT

A

U55069 S0000194847_V2

Aft Cargo Compartment Overheat Switch - Functional Test
Figure 502/21-44-00-990-807 (Sheet 1 of 3)

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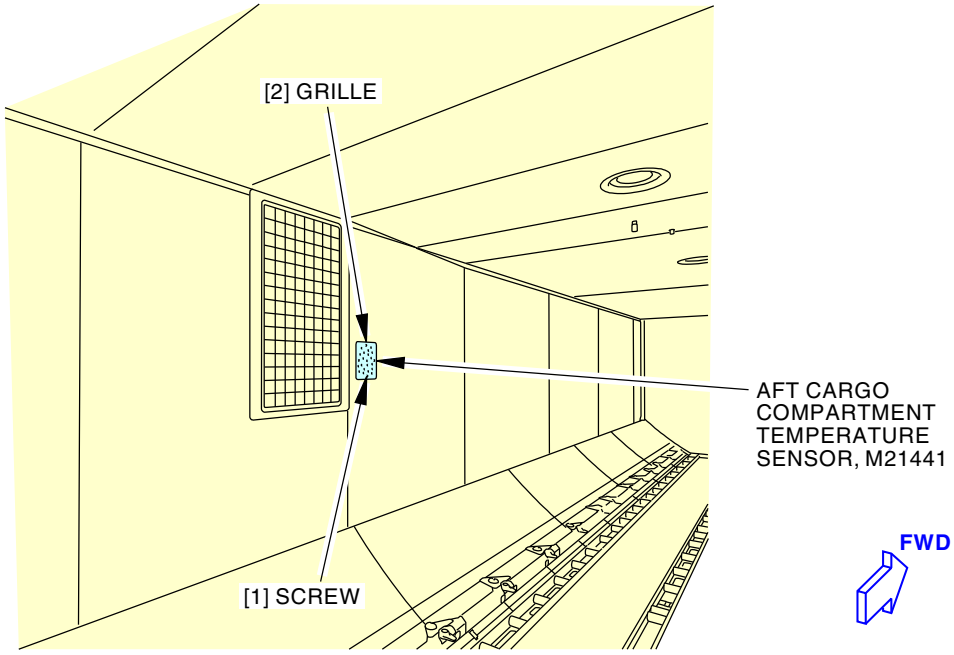

AFT CARGO COMPARTMENT

B

L74088 S0006403776_V2

Aft Cargo Compartment Overheat Switch - Functional Test
Figure 502/21-44-00-990-807 (Sheet 2 of 3)

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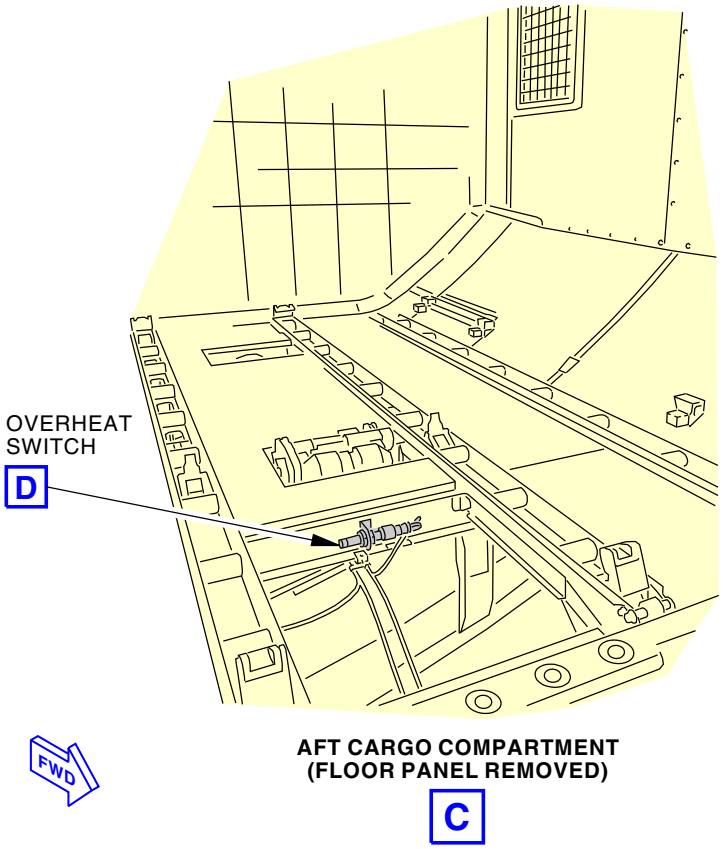

Aft Cargo Compartment Overheat Switch - Functional Test
Figure 502/21-44-00-990-807 (Sheet 3 of 3)

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AFT CARGO HEAT SHUTOFF VALVE AND TEMPERATURE CONTROL VALVE - REMOVAL/ INSTALLATION

1. General

A. This procedure contains the two tasks that follow:

(1) The first task removes these valves:

(a) The aft cargo heat shutoff valve

(b) The aft cargo heat temperature control valve.

(2) The second task installs these valves:

(a) The aft cargo heat shutoff valve

(b) The aft cargo heat temperature control valve.

(3) The aft cargo heat shutoff valve and the aft cargo heat temperature control valve are controlled by the left ECS Miscellaneous Card (ECSMC). Hot air from the APU duct flows through the aft cargo heat shutoff valve and the aft cargo heat temperature control valve into the aft cargo compartment. Under normal conditions, the aft cargo heat shutoff valve and the aft cargo heat temperature control valve open and close to supply hot air to the aft cargo compartment.

TASK 21-44-01-000-801

2. Aft Cargo Heat Shutoff Valve and Temperature Control Valve Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
52-30-00-860-801	Open the Aft Cargo Door (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
151	Aft Cargo Compartment, Left
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-44-01-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-44-01-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-44-01-860-002

(3) For the aft cargo heat shutoff valve [1], do the step that follows:

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	25	C21615	AFT CGO HT SOV

SUBTASK 21-44-01-860-003

(4) For the aft cargo heat temperature control valve [1], do the step that follows:

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV

SUBTASK 21-44-01-010-005

(5) Open the aft cargo door (TASK 52-30-00-860-801).

SUBTASK 21-44-01-010-003

(6) Remove the left sidewall liner (TASK 25-52-06-000-801).

E. Aft Cargo Heat Shutoff Valve Removal

SUBTASK 21-44-01-020-001

WARNING BE CAREFUL WHEN YOU DO WORK WITH THE AFT-CARGO HEAT SHUTOFF-VALVE AND THE AFT-CARGO TEMPERATURE SHUTOFF-VALVE. THE DUCT NEAR THESE VALVES CAN BE HOT AND CAN CAUSE INJURY.

(1) Disconnect the eletrical connector [2] from the aft cargo heat shutoff valve [1].

SUBTASK 21-44-01-020-002

(2) Remove the coupling [3] and the coupling [4].

SUBTASK 21-44-01-020-003

(3) Remove the aft cargo heat shutoff valve [1].

SUBTASK 21-44-01-420-007

(4) Install a cover on the duct openings to keep out unwanted material.

F. Aft Cargo Heat Temperature Control Valve Removal

SUBTASK 21-44-01-020-004

WARNING BE CAREFUL WHEN YOU DO WORK WITH THE AFT-CARGO HEAT SHUTOFF-VALVE AND THE AFT-CARGO TEMPERATURE SHUTOFF-VALVE. THE DUCT NEAR THESE VALVES CAN BE HOT AND CAN CAUSE INJURY.

(1) Disconnect the eletrical connector [2] from the aft cargo heat temperature control valve [1].

SUBTASK 21-44-01-020-005

(2) Remove the coupling [3] and the coupling [4].

SUBTASK 21-44-01-020-006

(3) Remove the aft cargo heat temperature control valve [1].

SUBTASK 21-44-01-420-008

(4) Install a cover on the duct openings to keep out unwanted material.

END OF TASK

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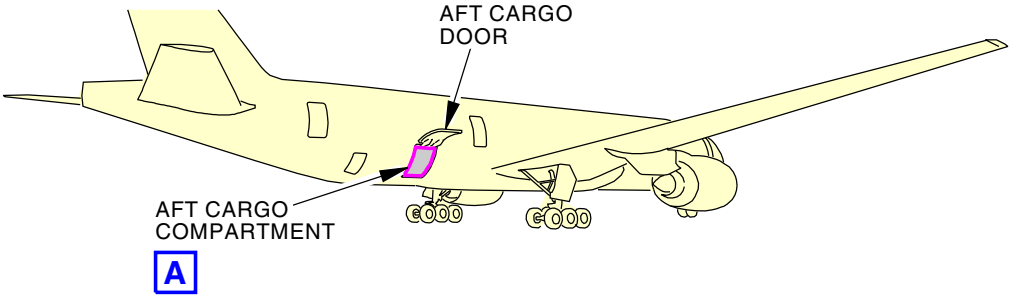

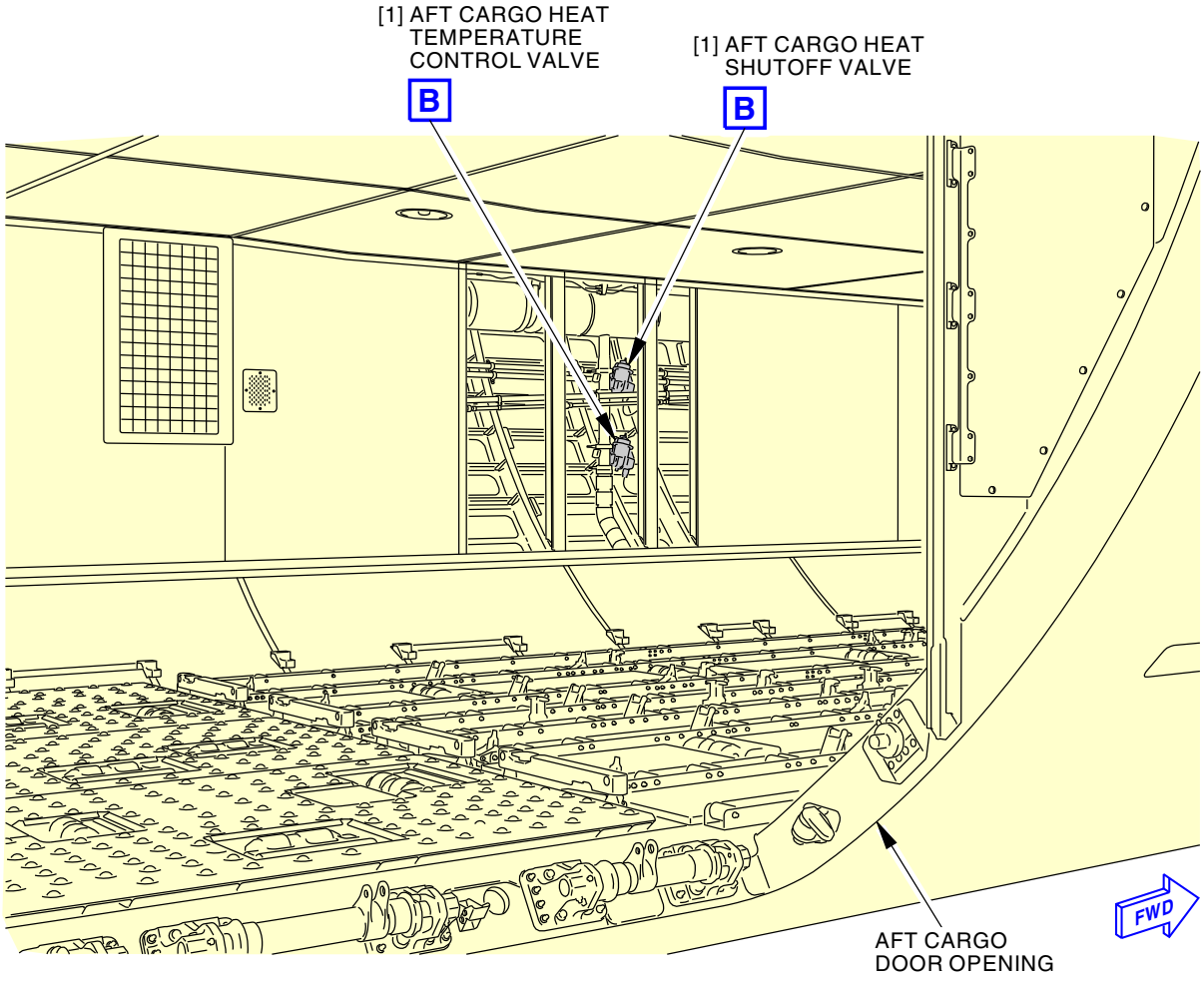

AFT CARGO COMPARTMENT

A

J12003 S0000166825_V2

Aft Cargo Heat Shutoff Valve and Temperature Control Valve Installation
Figure 401/21-44-01-990-802 (Sheet 1 of 2)

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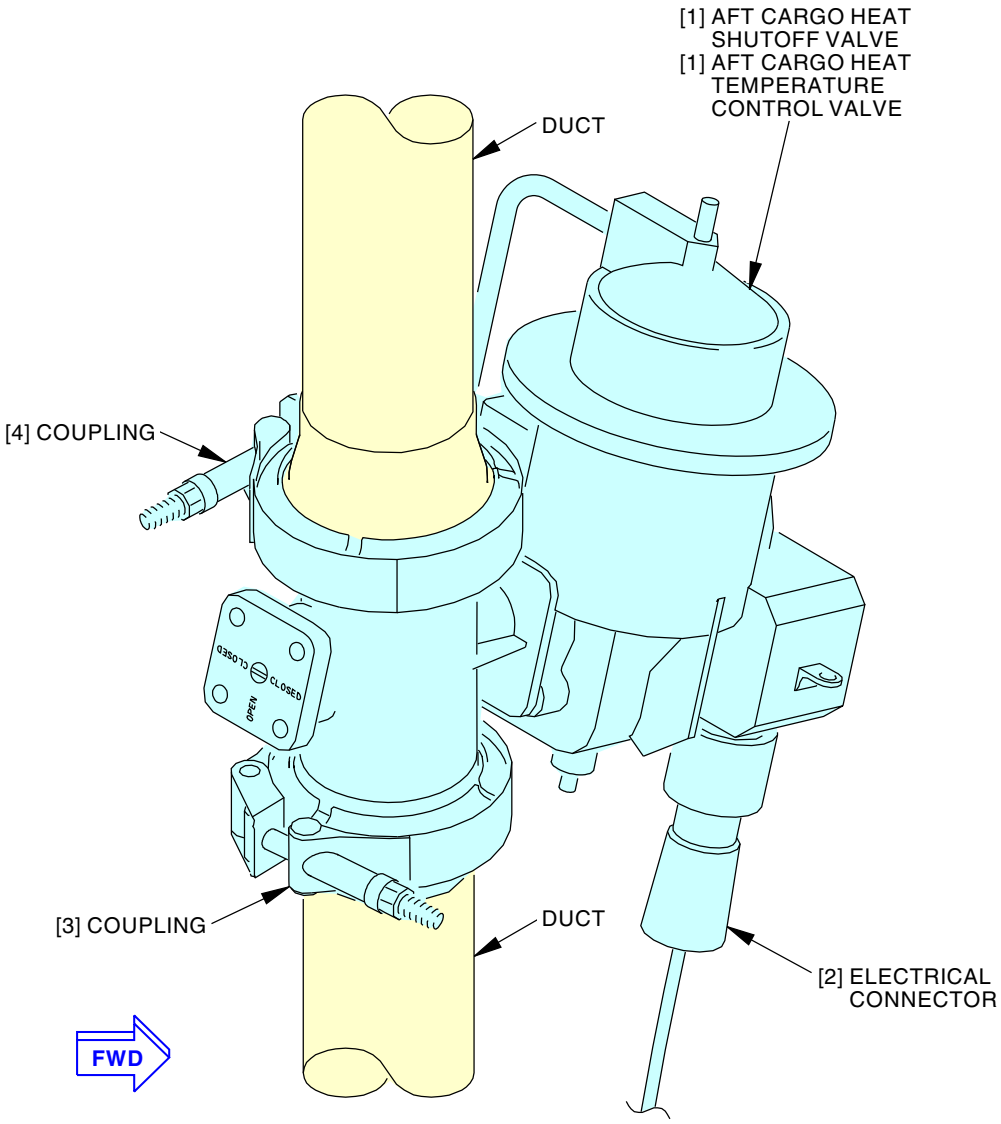

AFT CARGO HEAT SHUTOFF VALVE OR
AFT CARGO HEAT TEMPERATURE CONTROL VALVE

B

C98896 S0006403782_V2

Aft Cargo Heat Shutoff Valve and Temperature Control Valve Installation
Figure 401/21-44-01-990-802 (Sheet 2 of 2)

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TASK 21-44-01-000-802

3. Aft Cargo Heat Shutoff Valve and Temperature Control Valve Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-30-00-860-802	Close the Aft Cargo Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-44-01-02-015	ARO ALL
		21-44-03-01-090	ARO ALL

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
151	Aft Cargo Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Aft Cargo Heat Shutoff Valve Installation

SUBTASK 21-44-01-020-007

(1) Remove the covers from the duct openings.

SUBTASK 21-44-01-420-001

(2) Put the aft cargo heat shutoff valve [1] between the two ducts.

(a) Make sure that the flow arrow on the valve [1] points down.

SUBTASK 21-44-01-420-002

(3) Install the coupling [3] and the coupling [4].

NOTE: The coupling [3] is smaller in diameter than the coupling [4] and is installed below the coupling [4].

(a) Tighten the T-bolt on each coupling to 40 in-lb (5 N·m)-50 in-lb (6 N·m).

SUBTASK 21-44-01-420-003

(4) Connect the eletrical connector [2] to the aft cargo heat shutoff valve [1].

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SUBTASK 21-44-01-860-004

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	25	C21615	AFT CGO HT SOV

F. Aft Cargo Heat Temperature Control Valve Installation

SUBTASK 21-44-01-020-008

(1) Remove the covers from the duct openings.

SUBTASK 21-44-01-420-004

(2) Put the aft cargo heat temperature control valve [1] between the two ducts.

(a) Make sure that the flow arrow on the valve [1] points down.

SUBTASK 21-44-01-420-005

(3) Install the coupling [3] and the coupling [4].

NOTE: The coupling [3] is smaller in diameter than the coupling [4] and is installed below the coupling [4].

(a) Tighten the T-bolt on each coupling to 40 in-lb (5 N·m)-50 in-lb (6 N·m).

SUBTASK 21-44-01-420-006

(4) Connect the eletrical connector [2] to the aft cargo heat temperature control valve [1].

SUBTASK 21-44-01-860-005

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	24	C21619	AFT CGO HT TCV

G. Aft Cargo Heat Shutoff Valve and Temperature Control Valve Installation Test

SUBTASK 21-44-01-860-006

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

SUBTASK 21-44-01-860-007

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-44-01-740-001

(3) Do the steps that follow to do a system test and an air leakage check of the applicable valve:

(a) Use a maintenance access terminal (MAT) to do the System test of the Aft Cargo Heat Shutoff Valve and Temperature Control Valve (TASK 45-10-00-740-808).

NOTE: While the MAT test is in operation, the aft cargo heat shutoff valve and temperature control valve will open. A second person should put their hand approximately 6 in. (152 mm) away from the applicable valve to feel for air leakage while the test is in operation. If air leakage is felt, the applicable valve and couplings must be adjusted until air leakage is not felt.

1) Make these selections on the MAT:

a) ONBOARD MAINTENANCE

b) LINE MAINTENANCE

c) GROUND TESTS

d) 21 Environmental Control System

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e) SYSTEM TEST

f) AFT CARGO HEAT

g) CONTINUE

2) Do the instructions that show on the MAT and then make these selections:

a) CONTINUE

b) START TEST

3) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

4) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-44-01-410-001

(1) Install the left sidewall liner (TASK 25-52-06-400-801).

SUBTASK 21-44-01-410-005

(2) Close the aft cargo door (TASK 52-30-00-860-802).

SUBTASK 21-44-01-860-008

(3) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-44-01-410-003

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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BULK CARGO HEAT SHUTOFF VALVE AND TEMPERATURE CONTROL VALVE - REMOVAL/ INSTALLATION

1. General

A. This procedure contains the two tasks that follow:

(1) The first task removes these valves:

(a) The bulk cargo heat shutoff valve

(b) The bulk cargo heat temperature control valve.

(2) The second task installs these valves:

(a) The bulk cargo heat shutoff valve

(b) The bulk cargo heat temperature control valve.

(3) The bulk cargo heat shutoff valve and the bulk cargo heat temperature control valve are controlled by the right ECS Miscellaneous Card (ECSMC). Hot air from the APU duct flows through the bulk cargo heat shutoff valve and the bulk cargo heat temperature control valve into the bulk cargo compartment. Under normal conditions, the bulk cargo heat shutoff valve and the bulk cargo heat temperature control valve open and close to supply hot air to the bulk cargo compartment.

TASK 21-44-03-000-801

2. Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Removal

(Figure 401)

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
52-36-00-860-801	Open the Door (P/B 201)

B. Location Zones

Zone	Area
118	Main Equipment Center, Right
162	Bulk Cargo Compartment, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-44-03-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-44-03-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-44-03-860-002

(3) For the bulk cargo heat shutoff valve [1], do the step that follows:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	3	C21616	BULK CGO HT SOV

SUBTASK 21-44-03-860-003

(4) For the bulk cargo heat temperature control valve [1], do the step that follows:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	4	C21620	BULK CGO HT TCV

SUBTASK 21-44-03-010-002

(5) Open the bulk cargo door (TASK 52-36-00-860-801).

SUBTASK 21-44-03-010-004

(6) Disconnect the divider net along the left sidewall and move it out of the way.

SUBTASK 21-44-03-010-003

(7) Remove the left sidewall liner (TASK 25-52-06-000-801).

E. Bulk Cargo Heat Shutoff Valve Removal

SUBTASK 21-44-03-020-001

WARNING

DO NOT TOUCH THE CARGO HEAT DUCTS WHEN THEY ARE HOT. THE DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the electrical connector [2] from the bulk cargo heat shutoff valve [1].

SUBTASK 21-44-03-020-002

(2) Remove the coupling [3] and the coupling [4].

SUBTASK 21-44-03-020-003

(3) Remove the bulk cargo heat shutoff valve [1].

SUBTASK 21-44-03-420-001

(4) Install a cover on the duct openings to keep out unwanted material.

F. Bulk Cargo Heat Temperature Control Valve Removal

SUBTASK 21-44-03-020-004

WARNING

DO NOT TOUCH THE CARGO HEAT DUCTS WHEN THEY ARE HOT. THE DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the electrical connector [2] from the bulk cargo heat temperature control valve [1].

SUBTASK 21-44-03-020-005

(2) Remove the coupling [3] and the coupling [4].

SUBTASK 21-44-03-020-006

(3) Remove the bulk cargo heat temperature control valve [1].

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SUBTASK 21-44-03-420-002

(4) Install a cover on the duct openings to keep out unwanted material.

END OF TASK

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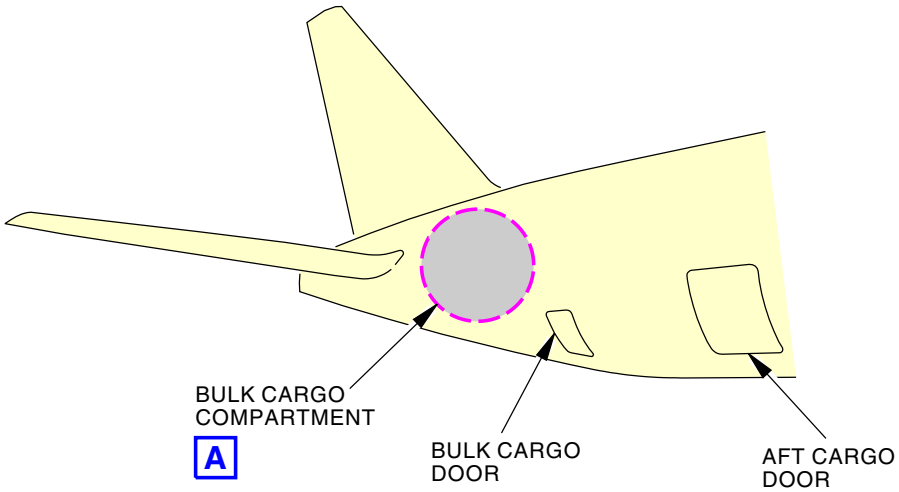

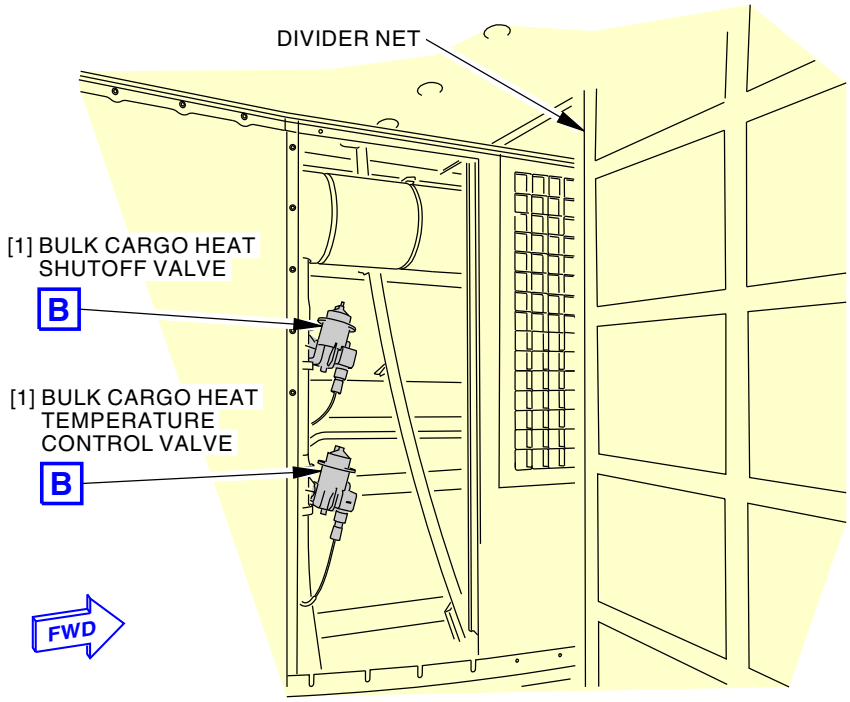

**BULK CARGO COMPARTMENT
(LEFT SIDEWALL)**

A

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**Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Installation
Figure 401/21-44-03-990-802 (Sheet 1 of 2)**

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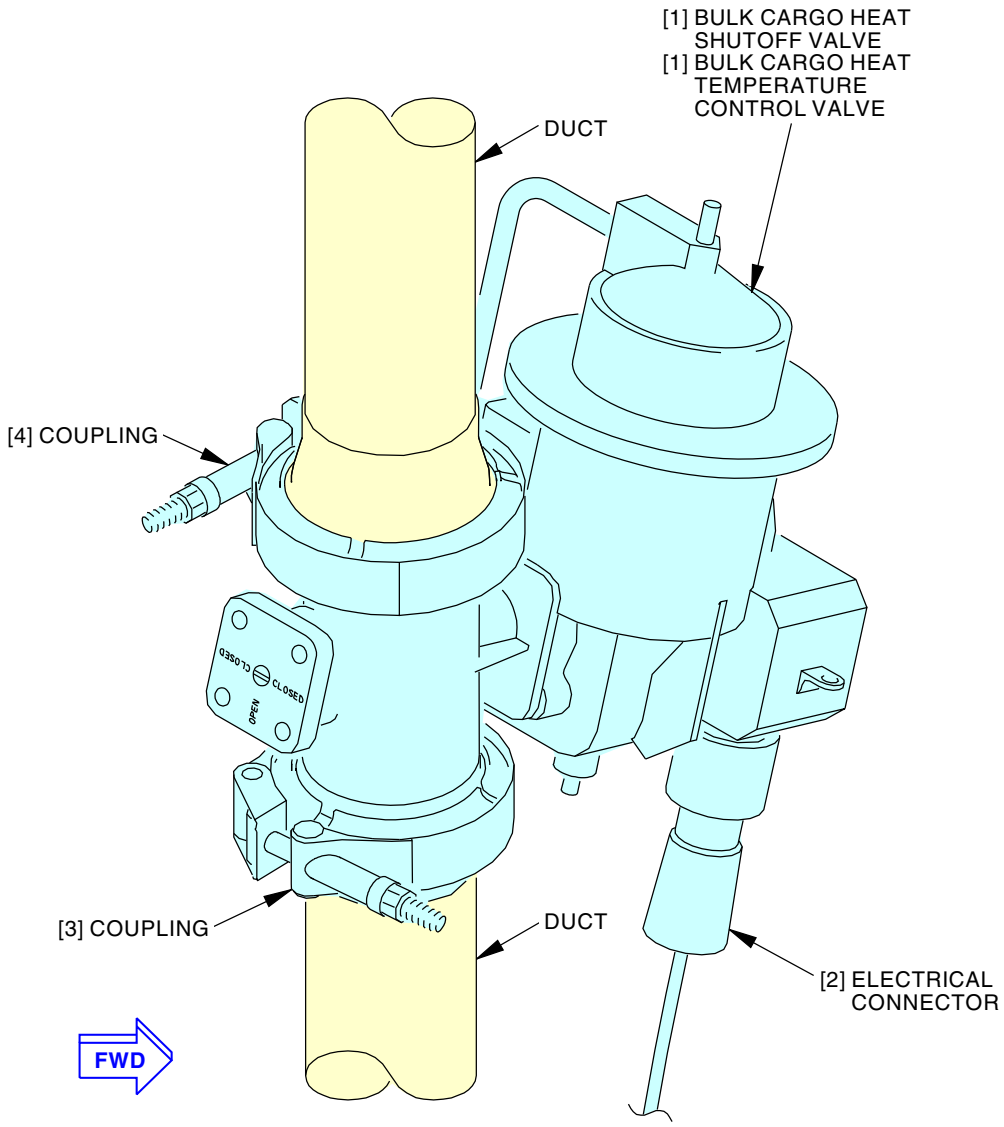

**AFT CARGO HEAT SHUTOFF VALVE OR
AFT CARGO HEAT TEMPERATURE CONTROL VALVE**

B

C98794 S0006403788_V2

**Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Installation
Figure 401/21-44-03-990-802 (Sheet 2 of 2)**

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TASK 21-44-03-000-802

3. Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-44-03-01-090	ARO ALL

C. Location Zones

Zone	Area
118	Main Equipment Center, Right
162	Bulk Cargo Compartment, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Bulk Cargo Heat Shutoff Valve Installation

SUBTASK 21-44-03-020-007

(1) Remove the covers from the duct openings.

SUBTASK 21-44-03-420-003

(2) Put the bulk cargo heat shutoff valve [1] between the two ducts.

(a) Make sure that the flow arrow on the valve [1] points down.

SUBTASK 21-44-03-420-004

(3) Install the coupling [3] and the coupling [4].

NOTE: The coupling [3] is smaller in diameter than the coupling [4] and is installed below the coupling [4].

(a) Tighten the T-bolt on each coupling to 40 in-lb (4.5 N·m) - 50 in-lb (5.6 N·m).

SUBTASK 21-44-03-420-005

(4) Connect the electrical connector [2] to the bulk cargo heat shutoff valve [1].

SUBTASK 21-44-03-860-004

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	3	C21616	BULK CGO HT SOV

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F. Bulk Cargo Heat Temperature Control Valve Installation

SUBTASK 21-44-03-020-008

(1) Remove the covers from the duct openings.

SUBTASK 21-44-03-420-006

(2) Put the bulk cargo heat temperature control valve [1] between the two ducts.

(a) Make sure that the flow arrow on the valve [1] points down.

SUBTASK 21-44-03-420-007

(3) Install the coupling [3] and the coupling [4].

NOTE: The coupling [3] is smaller in diameter than the coupling [4] and is installed below the coupling [4].

(a) Tighten the T-bolt on each coupling to 40 in-lb (4.5 N·m) - 50 in-lb (5.6 N·m).

SUBTASK 21-44-03-420-008

(4) Connect the electrical connector [2] to the bulk cargo heat temperature control valve [1].

SUBTASK 21-44-03-860-005

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	4	C21620	BULK CGO HT TCV

G. Bulk Cargo Heat Shutoff Valve and Temperature Control Valve Installation Test

SUBTASK 21-44-03-860-006

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

SUBTASK 21-44-03-860-007

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-44-03-740-001

(3) Do the steps that follow to do a system test and an air leakage check of the applicable valve:

(a) Use a maintenance access terminal (MAT) to do the System test of the Bulk Cargo Heat Shutoff Valve and Temperature Control Valve (TASK 45-10-00-740-808).

NOTE: While the MAT test is in operation, the bulk cargo heat shutoff valve and temperature control valve will open. A second person should put their hand approximately six inches away from the applicable valve to feel for air leakage. If air leakage is felt, the applicable valve and couplings must be adjusted until air leakage is not felt.

1) Make these selections on the MAT:
   a) ONBOARD MAINTENANCE
   b) LINE MAINTENANCE
   c) GROUND TESTS
   d) 21 Environmental Control System
   e) SYSTEM TEST
   f) Bulk Cargo Heat
   g) CONTINUE
2) Do the instructions that show on the MAT and then make these selections:
   a) CONTINUE

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b) START TEST

3) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

4) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-44-03-410-001

(1) Install the left sidewall liner (TASK 25-52-06-400-801).

SUBTASK 21-44-03-410-004

(2) Reconnect the divider net along the left sidewall.

SUBTASK 21-44-03-410-002

(3) Close the bulk cargo door (TASK 52-36-00-860-802).

SUBTASK 21-44-03-860-008

(4) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-44-03-410-003

(5) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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AFT CARGO COMPARTMENT TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the aft cargo compartment temperature sensor

(2) An installation of the aft cargo compartment temperature sensor.

(3) The aft cargo compartment temperature sensor is a single element thermistor. The resistance across the aft cargo compartment temperature sensor changes as the temperature of the thermistor changes. The left ECSMC sends out a low current through the aft cargo compartment temperature sensor and then receives back a voltage. The voltage that it receives back is then correlated to a temperature.

TASK 21-44-05-000-801

2. Aft Cargo Compartment Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-35-00-860-805	Open the Aft Small Cargo Door (P/B 201)

B. Location Zones

Zone	Area
151	Aft Cargo Compartment, Left
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Aft Cargo Compartment Temperature Sensor Removal

SUBTASK 21-44-05-010-002

(1) To get access to the Left System Cardfile, P85,

Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-44-05-860-005

(2) Set the power switch for the left ECS Miscellaneous card (ECSMC) to the OFF position.

NOTE: Use the power control decal on the front of the cardfile to find the appropriate switch.

SUBTASK 21-44-05-860-001

(3) Make sure the AFT CARGO TEMP SELECT switch, which is on the CARGO HEAT panel, is in the OFF position.

NOTE: The CARGO HEAT panel is on the Maintenance Panel, P61.

(a) Attach a DO-NOT-OPERATE tag to the switch.

SUBTASK 21-44-05-010-001

(4) Do this task: Open the Aft Small Cargo Door, TASK 52-35-00-860-805.

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SUBTASK 21-44-05-010-003

(5) Partially remove the left sidewall liner in the aft cargo compartment (TASK 25-52-06-000-801).

NOTE: It is not necessary to completely remove the sidewall liner to get access to the aft cargo compartment temperature sensor.

E. Aft Cargo Compartment Temperature Sensor Removal

SUBTASK 21-44-05-020-001

(1) Remove the lockwire which holds the aft cargo compartment temperature sensor [2] to the boss on the box assembly.

SUBTASK 21-44-05-020-002

(2) Disconnect the electrical connector [1] from the aft cargo compartment temperature sensor [2].

SUBTASK 21-44-05-020-003

(3) Turn the aft cargo compartment temperature sensor [2] counterclockwise until you can remove it from the boss.

——— END OF TASK ———

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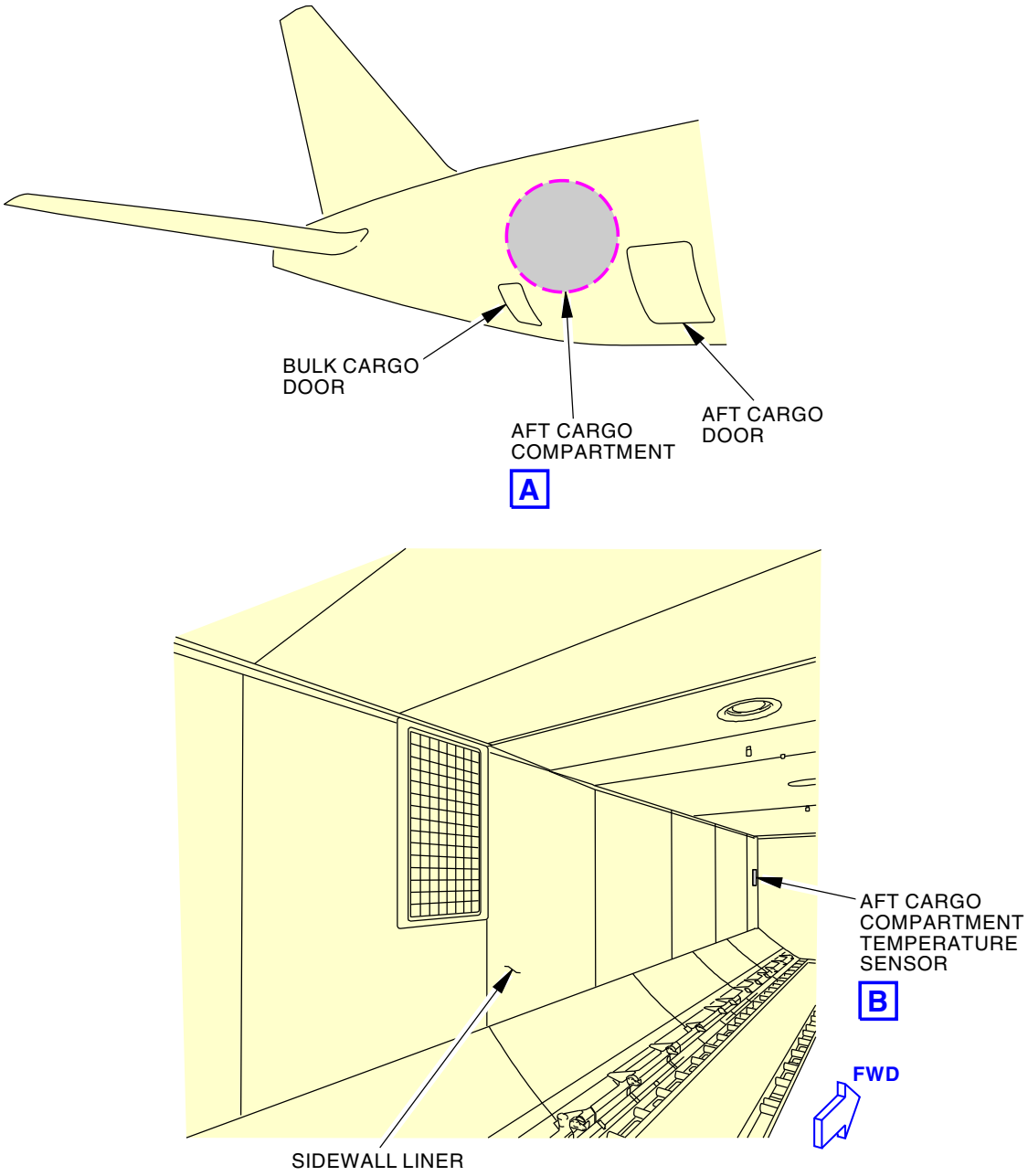

Aft Cargo Compartment Temperature Sensor Installation
Figure 401/21-44-05-990-801 (Sheet 1 of 2)

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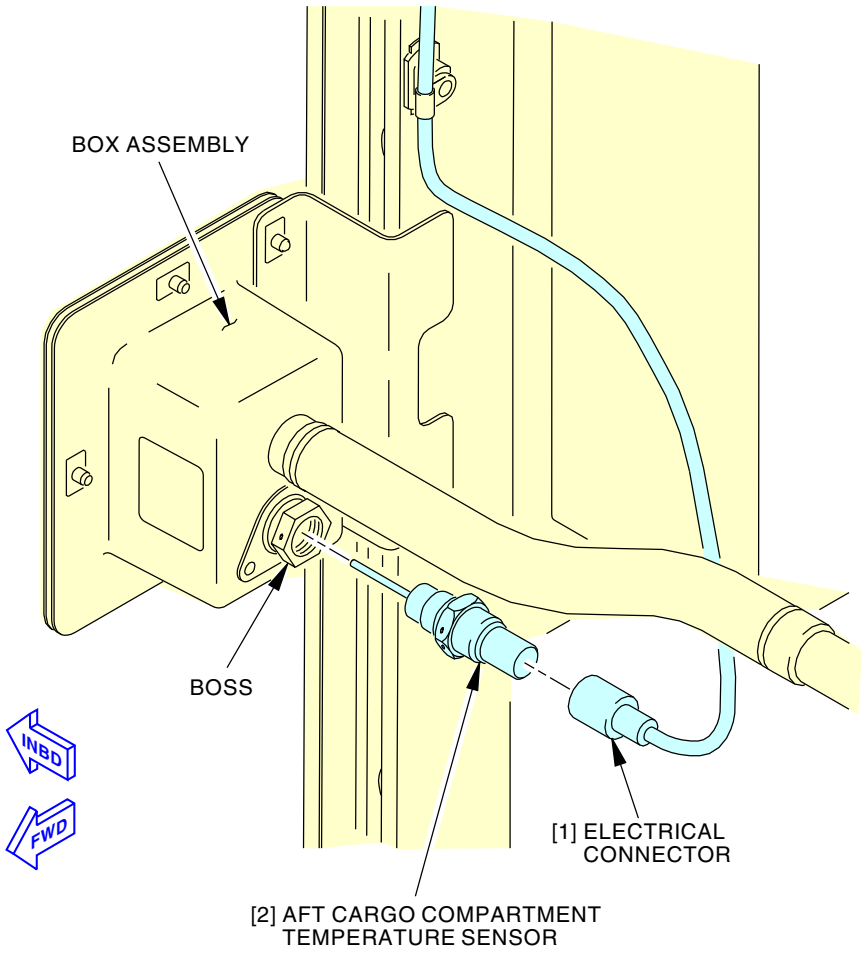

AFT CARGO COMPARTMENT TEMPERATURE SENSOR

B

NOTE:

THE SIDEWALL LINER IS NOT SHOWN.
IT IS NOT NECESSARY TO COMPLETELY REMOVE THE SIDEWALL LINER TO GET ACCESS TO THE AFT CARGO COMPARTMENT TEMPERATURE SENSOR [2].

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Aft Cargo Compartment Temperature Sensor Installation
Figure 401/21-44-05-990-801 (Sheet 2 of 2)

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TASK 21-44-05-400-801

3. Aft Cargo Compartment Temperature Sensor Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
52-35-00-860-806	Close the Aft Small Cargo Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Aft cargo compartment temperature sensor	21-44-05-01C-030	ARO ALL

C. Location Zones

Zone	Area
151	Aft Cargo Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Aft Cargo Compartment Temperature Sensor Installation

SUBTASK 21-44-05-420-001

(1) Do these steps to install the aft cargo compartment temperature sensor [2] into the box assembly:

(a) Turn the aft cargo compartment temperature sensor [2] clockwise until it is fully in the boss.

(b) Tighten the aft cargo compartment temperature sensor [2] to 10 in-lb (1.1 N·m) - 20 in-lb (2.3 N·m).

SUBTASK 21-44-05-420-002

(2) Install a new lockwire to hold the aft cargo compartment temperature sensor [2] to the boss.

SUBTASK 21-44-05-420-003

(3) Connect the electrical connector [1] to the aft cargo compartment temperature sensor [2].

F. Aft Cargo Compartment Temperature Sensor Installation Test

SUBTASK 21-44-05-860-002

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

SUBTASK 21-44-05-860-006

(2) Set the power switch for the left ECS Miscellaneous card (ECSMC) to the ON position.

NOTE: Use the power control decal on the front of the cardfile to find the appropriate switch.

SUBTASK 21-44-05-860-007

(3) Remove the DO-NOT-OPERATE tag and set the AFT CARGO TEMP SELECT switch, on the CARGO HEAT panel, to LOW.

NOTE: The CARGO HEAT panel is on the Maintenance Panel, P61.

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SUBTASK 21-44-05-210-001

(4) Make sure the EICAS message, CARGO HEAT AFT (ADVISORY), does not show on the EICAS display.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-44-05-410-001

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

SUBTASK 21-44-05-410-002

(2) Do this task: Close the Aft Small Cargo Door, TASK 52-35-00-860-806.

SUBTASK 21-44-05-410-003

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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BULK CARGO COMPARTMENT TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the bulk cargo compartment temperature sensor

(2) An installation of the bulk cargo compartment temperature sensor.

(3) The bulk cargo compartment temperature sensor is a single element thermistor. The resistance across the bulk cargo compartment temperature sensor changes as the temperature of the thermistor changes. The right ECSMC sends out a low current through the bulk cargo compartment temperature sensor and then receives back a voltage. The voltage that it receives back is then correlated to a temperature.

TASK 21-44-06-000-801

2. Bulk Cargo Compartment Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
52-36-00-860-801	Open the Door (P/B 201)

B. Location Zones

Zone	Area
162	Bulk Cargo Compartment, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Bulk Cargo Compartment Temperature Sensor Removal

SUBTASK 21-44-06-010-003

(1) To get access to the Right System Cardfile, P84,

Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-44-06-860-005

(2) Set the power switch for the right ECS Miscellaneous card (ECSMC) to the OFF position.

NOTE: Use the power control decal on the front of the cardfile to find the appropriate switch.

SUBTASK 21-44-06-860-001

(3) Make sure the BULK CARGO TEMP SELECT switch, which is on the CARGO HEAT panel, is in the OFF position.

NOTE: The CARGO HEAT panel is on the Maintenance Panel, P61.

(a) Attach a DO-NOT-OPERATE tag to the switch.

SUBTASK 21-44-06-010-001

(4) Do this task: Open the Door, TASK 52-36-00-860-801.

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E. Bulk Cargo Compartment Temperature Sensor Removal

SUBTASK 21-44-06-010-002

(1) Open the access panel for the E12 equipment rack.

SUBTASK 21-44-06-020-001

(2) Disconnect the electrical connector [1] from the bulk cargo compartment temperature sensor [2].

SUBTASK 21-44-06-020-003

(3) Remove the lockwire which holds the bulk cargo compartment temperature sensor [2] to the boss on the box assembly.

SUBTASK 21-44-06-020-002

(4) Turn the bulk cargo compartment temperature sensor [2] counterclockwise until you can remove it from the boss.

——— END OF TASK ———

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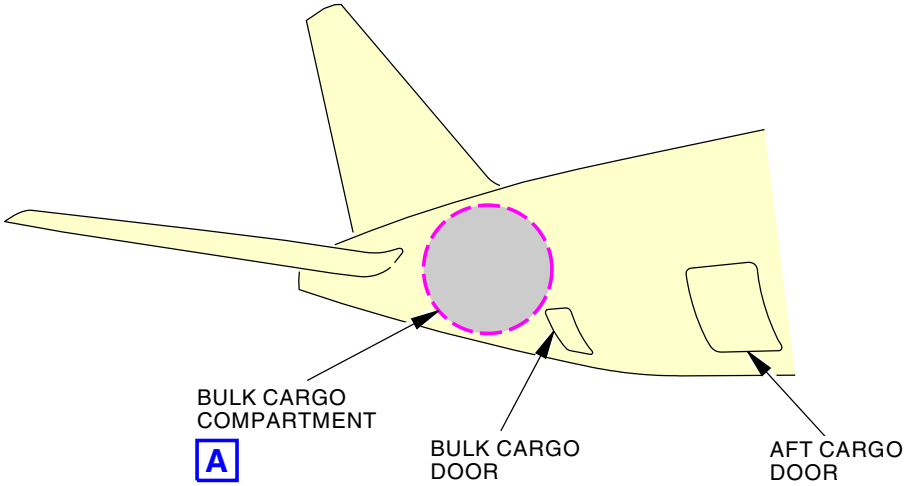

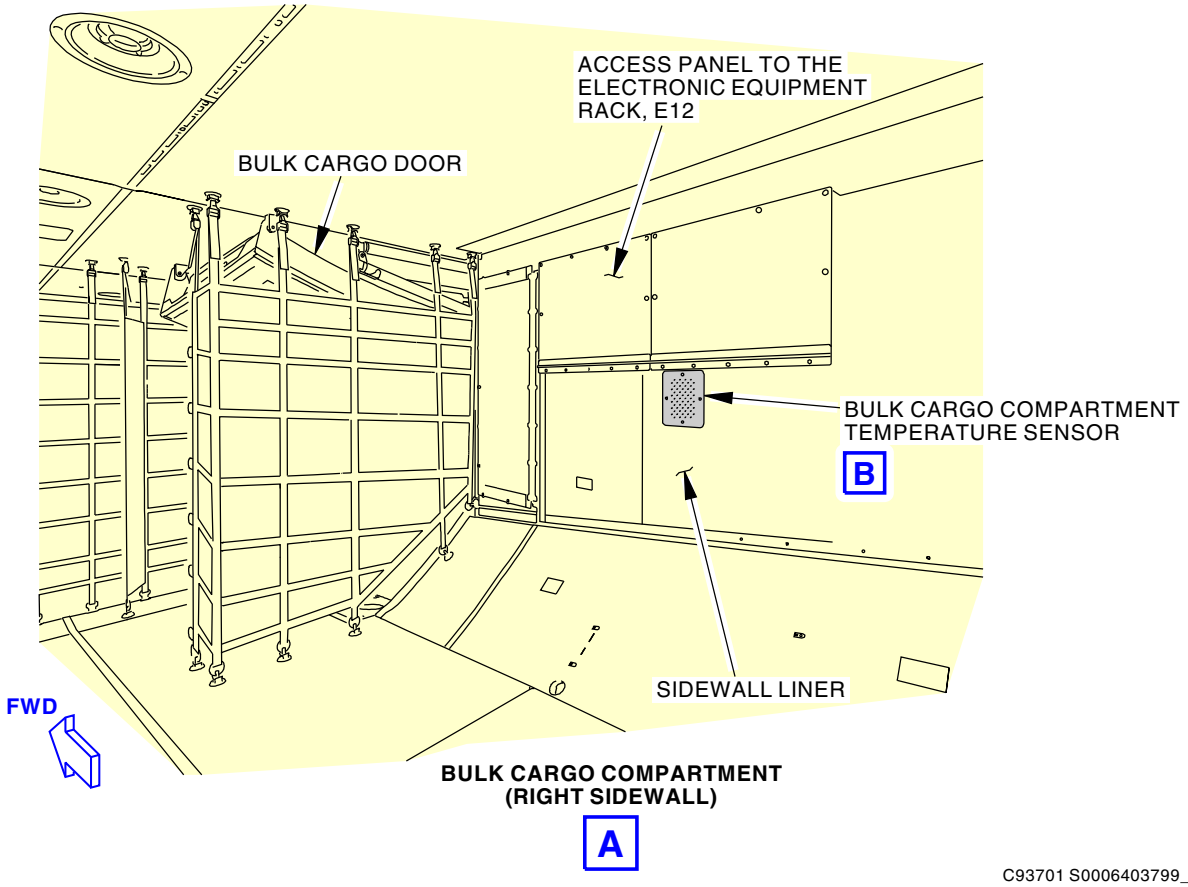

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Bulk Cargo Compartment Temperature Sensor Installation
Figure 401/21-44-06-990-801 (Sheet 1 of 2)

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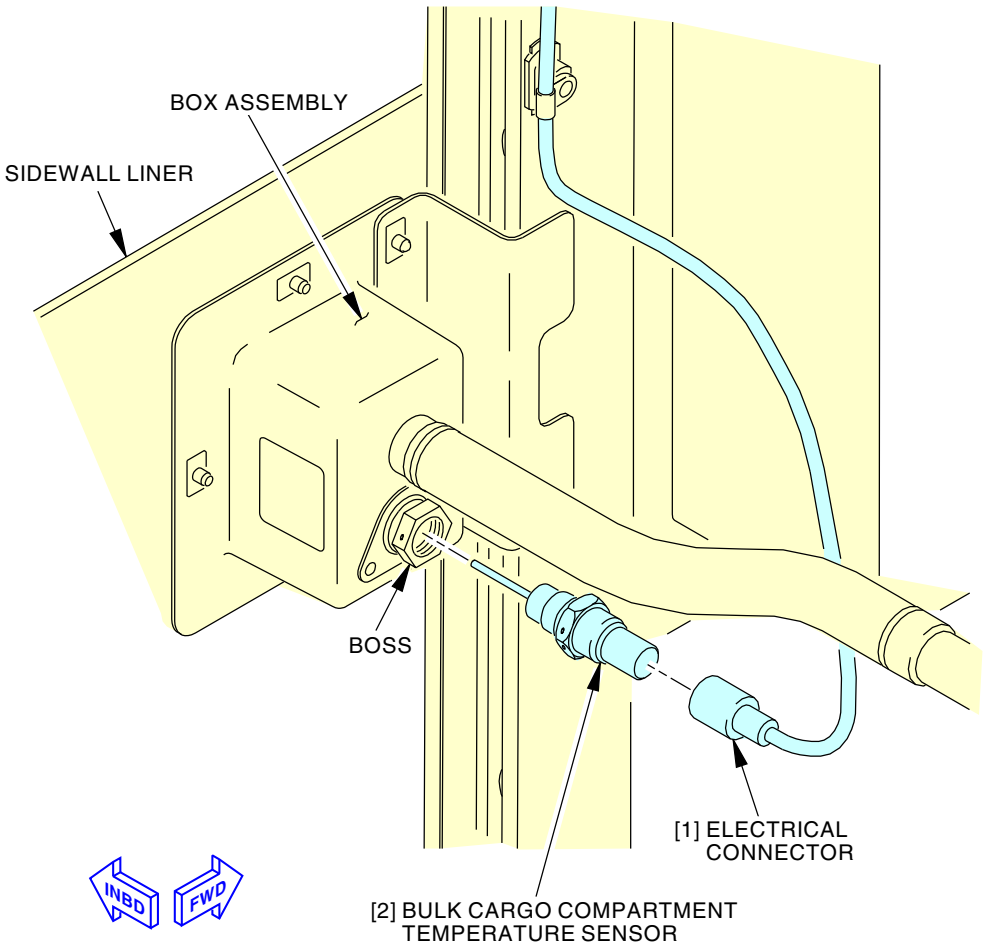

BULK CARGO COMPARTMENT TEMPERATURE SENSOR

B

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Bulk Cargo Compartment Temperature Sensor Installation
Figure 401/21-44-06-990-801 (Sheet 2 of 2)

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TASK 21-44-06-400-801

3. Bulk Cargo Compartment Temperature Sensor Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
52-36-00-860-802	Close the Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Sensor	21-44-06-01-030	ARO ALL

C. Location Zones

Zone	Area
162	Bulk Cargo Compartment, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Bulk Cargo Compartment Temperature Sensor Installation

SUBTASK 21-44-06-420-001

(1) Do these steps to install the bulk cargo compartment temperature sensor [2] into the box assembly:

(a) Turn the bulk cargo compartment temperature sensor [2] clockwise until it is fully in the boss.

(b) Tighten the bulk cargo compartment temperature sensor [2] to 10 in-lb (1 N·m) — 20 in-lb (2 N·m).

SUBTASK 21-44-06-420-002

(2) Install a new lockwire to hold the bulk cargo temperature sensor [2] to the boss.

SUBTASK 21-44-06-420-003

(3) Connect the electrical connector [1] to the bulk cargo compartment temperature sensor [2].

SUBTASK 21-44-06-410-001

(4) Close the access panel to the E12 equipment rack.

F. Bulk Cargo Compartment Temperature Sensor Installation Test

SUBTASK 21-44-06-860-002

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

SUBTASK 21-44-06-860-006

(2) Set the power switch for the right ECS Miscellaneous card (ECSMC) to the ON position.

NOTE: Use the power control decal on the front of the cardfile to find the appropriate switch.

SUBTASK 21-44-06-860-007

(3) Remove the DO-NOT-OPERATE tag and set the BULK CARGO TEMP SELECT switch, on the CARGO HEAT panel, to LOW.

NOTE: The the CARGO HEAT panel is on the Maintenance Panel, P61.

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SUBTASK 21-44-06-210-001

(4) Make sure the EICAS message, CARGO HEAT BULK (ADVISORY), does not show on the EICAS display.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-44-06-410-002

(1) Do this task: Close the Door, TASK 52-36-00-860-802.

SUBTASK 21-44-06-410-003

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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AFT CARGO HEAT TEMPERATURE SELECTOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the aft cargo heat temperature selector

(2) An installation of the aft cargo heat temperature selector.

B. The aft cargo heat temperature selector controls the temperature of the aft cargo compartment. The temperature selector can be selected to OFF, LOW or HIGH position.

TASK 21-44-07-000-801

2. Aft Cargo Heat Temperature Selector Removal

(Figure 401)

A. General

(1) The aft cargo heat temperature selector is on the CARGO TEMP SELECT module which is found on the Maintenance Panel, P61.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 21-44-07-860-005

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-44-07-010-001

(2) Do the steps that follow to get access to the temperature selector [3] at the backside of the CARGO TEMP SELECT module which is on the Maintenance Panel, P61:

(a) Turn the four quarter-turn fasteners [1] which hold the CARGO TEMP SELECT module to the Maintenance Panel, P61.

(b) Carefully lower the CARGO TEMP SELECT module out of the Maintenance Panel, P61 to get access to the temperature selector [3].

SUBTASK 21-44-07-020-001

(3) Disconnect the electrical connector [2] from the temperature selector [3].

SUBTASK 21-44-07-020-002

(4) Loosen the set screws [5] which hold the knob [6] on the temperature selector [3].

SUBTASK 21-44-07-020-003

(5) Remove the knob [6] from the temperature selector [3].

SUBTASK 21-44-07-020-004

(6) Remove the nut [7] which attaches the temperature selector [3] to the CARGO TEMP SELECT module.

SUBTASK 21-44-07-020-005

(7) Remove the washer [8] from the temperature selector [3].

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SUBTASK 21-44-07-020-006

(8) Remove the temperature selector [3].

SUBTASK 21-44-07-210-004

(9) Examine the O-ring [4] on the zone temperature selector [3] for damage or deterioration.

(a) Remove and discard the O-ring [4] if it has damage or deterioration.

——— END OF TASK ———

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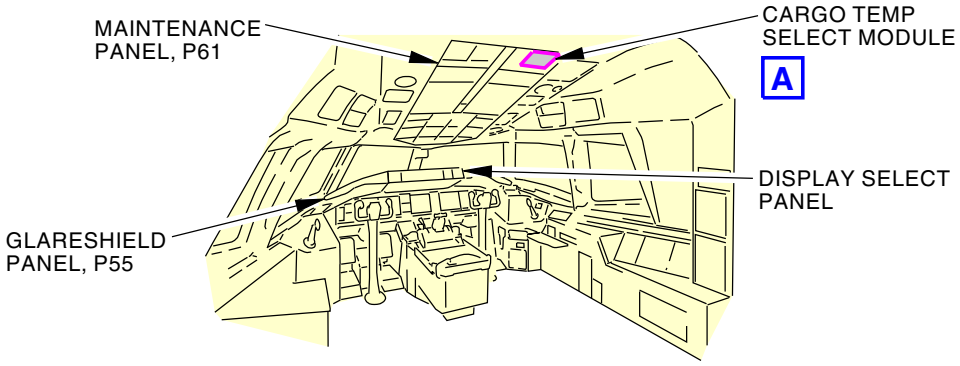
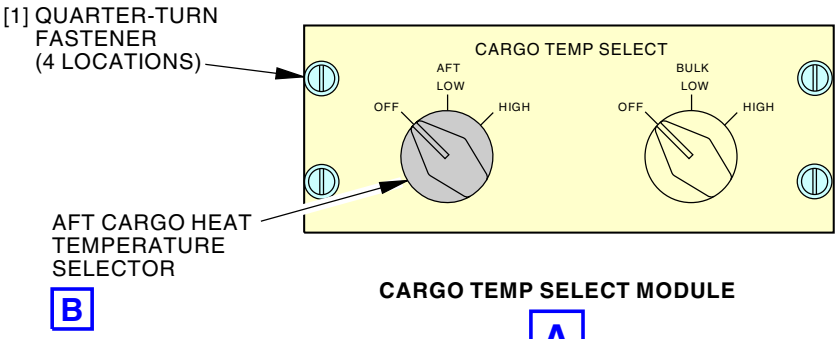
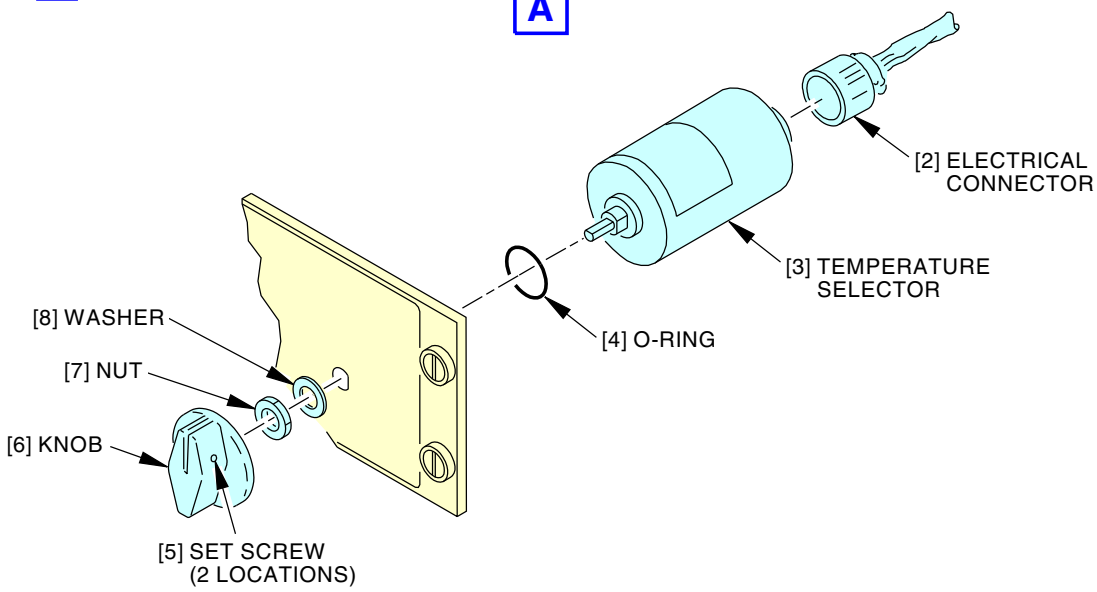


FLIGHT COMPARTMENT



CARGO TEMP SELECT MODULE

A



AFT CARGO HEAT TEMPERATURE SELECTOR

B

C32287 S0006403805_V2

Aft Cargo Heat Temperature Selector Installation
Figure 401/21-44-07-990-801

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TASK 21-44-07-400-801

3. Aft Cargo Heat Temperature Selector Installation

(Figure 401)

A. General

(1) The aft cargo heat temperature selector is on the CARGO TEMP SELECT module which is found on the Maintenance Panel, P61.

B. References

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

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Temperature selector	21-44-07-01A-015	ARO ALL
6	Knob	21-44-07-01A-010	ARO ALL

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Aft Cargo Heat Temperature Selector Installation

SUBTASK 21-44-07-420-001

(1) Install the O-ring [4] on the temperature selector [3].

SUBTASK 21-44-07-420-002

(2) Put the temperature selector [3] through the hole in the CARGO TEMP SELECT module.

SUBTASK 21-44-07-420-003

(3) Install the washer [8] on the temperature selector [3].

SUBTASK 21-44-07-420-004

(4) Install the nut [7] on the temperature selector [3].

(a) Carefully tighten the nut [7] until it touches the washer [8].

SUBTASK 21-44-07-420-006

(5) Install the knob [6] and tighten the set screws [5].

SUBTASK 21-44-07-420-005

(6) Connect the electrical connector [2] to the temperature selector [3].

SUBTASK 21-44-07-410-001

(7) Do the steps that follow to install the CARGO TEMP SELECT module into the Maintenance Panel, P61:

(a) Put the CARGO TEMP SELECT module into the Maintenance Panel, P61.

(b) Turn the four quarter-turn fasteners [1].

F. Aft Cargo Heat Temperature Selector Installation Test

SUBTASK 21-44-07-860-001

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

SUBTASK 21-44-07-860-002

(2) Push the L INBD, LWR CTR, or the R INBD button on the Display Select Panel which is found on the Glareshield Panel, P55.

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SUBTASK 21-44-07-860-003

(3) Push the AIR button on the Display Select Panel.

NOTE: This shows the AIR synoptic page on the L INBD, LWR CTR, or the R INBD Display Unit (DU).

SUBTASK 21-44-07-210-001

(4) Do these steps to make sure the AFT CARGO TEMP SELECT selector operates in the OFF position:

(a) Put the AFT CARGO TEMP SELECT selector in the OFF position.

(b) Make sure there is no target temperature for the AFT indication on the synoptic page.

NOTE: The target temperature is shown in magenta (left indication) and the actual temperature is shown in white (right indication).

SUBTASK 21-44-07-210-002

(5) Do these steps to make sure the AFT CARGO TEMP SELECT selector operates in the LOW position:

(a) Put the AFT CARGO TEMP SELECT selector in the LOW position.

(b) Make sure the target temperature for the AFT indication shows 45°F (7.2°C) on the synoptic page.

SUBTASK 21-44-07-210-003

(6) Do these steps to make sure the AFT CARGO TEMP SELECT selector operates in the HIGH position:

(a) Put the AFT CARGO TEMP SELECT selector in the HIGH position.

(b) Make sure the target temperature for the AFT indication shows 70°F (21.1°C) on the synoptic page.

(c) Put the AFT CARGO TEMP SELECT selector in the OFF position.

——— END OF TASK ———

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BULK CARGO HEAT TEMPERATURE SELECTOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the bulk cargo heat temperature selector

(2) An installation of the bulk cargo heat temperature selector.

B. The bulk cargo heat temperature selector controls the temperature of the bulk cargo compartment. The temperature selector can be selected to OFF, LOW or HIGH position.

TASK 21-44-08-000-801

2. Bulk Cargo Heat Temperature Selector Removal

(Figure 401)

A. General

(1) The bulk cargo heat temperature selector is on the CARGO TEMP SELECT module which is found on the Maintenance Panel, P61.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 21-44-08-860-005

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-44-08-010-001

(2) Do the steps that follow to get access to the temperature selector [3] at the backside of the CARGO TEMP SELECT module which is on the Maintenance Panel, P61:

(a) Turn the four quarter-turn fasteners [1] which hold the CARGO TEMP SELECT module to the Maintenance Panel, P61.

(b) Carefully lower the CARGO TEMP SELECT module out of the Maintenance Panel, P61 to get access to the temperature selector [3].

SUBTASK 21-44-08-020-001

(3) Disconnect the electrical connector [2] from the temperature selector [3].

SUBTASK 21-44-08-020-002

(4) Loosen the set screws [5] which hold the knob [6] on the temperature selector [3].

SUBTASK 21-44-08-020-003

(5) Remove the knob [6] from the temperature selector [3].

SUBTASK 21-44-08-020-004

(6) Remove the nut [7] which attaches the temperature selector [3] to the CARGO TEMP SELECT module.

SUBTASK 21-44-08-020-005

(7) Remove the washer [8] from the temperature selector [3].

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SUBTASK 21-44-08-020-006

(8) Remove the temperature selector [3].

SUBTASK 21-44-08-210-004

(9) Examine the O-ring [4] on the zone temperature selector [3] for damage or deterioration.

(a) Remove and discard the O-ring [4] if it has damage or deterioration.

——— END OF TASK ———

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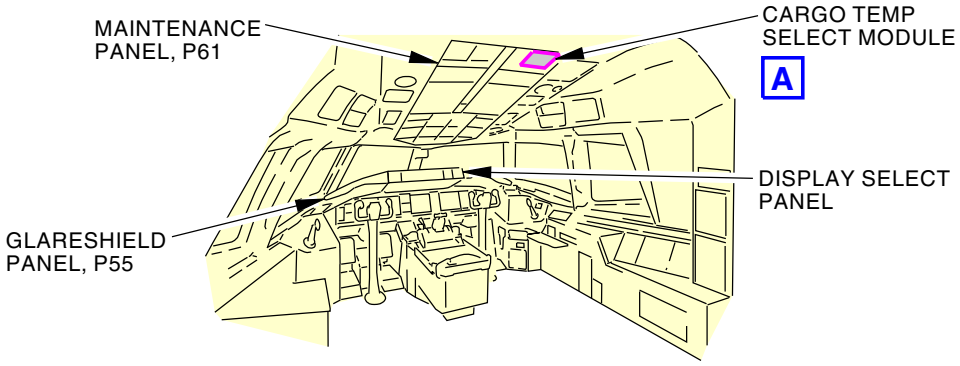
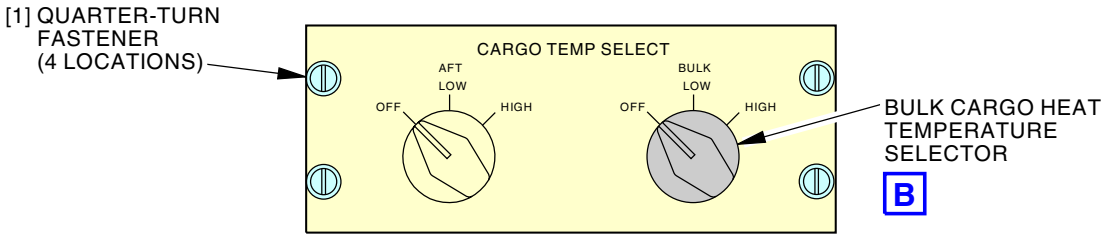
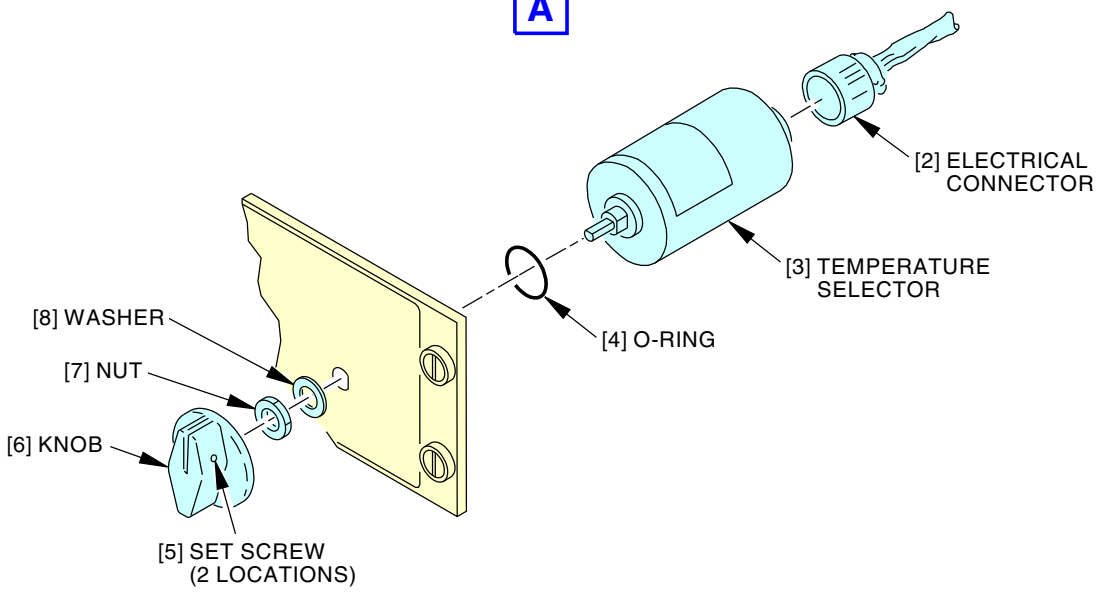


FLIGHT COMPARTMENT



CARGO TEMP SELECT MODULE

A



AFT CARGO HEAT TEMPERATURE SELECTOR

B

C32290 S0006403810_V2

Bulk Cargo Heat Temperature Selector Installation
Figure 401/21-44-08-990-801

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TASK 21-44-08-400-801

3. Bulk Cargo Heat Temperature Selector Installation

(Figure 401)

A. General

(1) The bulk cargo heat temperature selector is on the CARGO TEMP SELECT module which is found on the Maintenance Panel, P61.

B. References

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

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Temperature selector	21-44-08-01A-015	ARO ALL
6	Knob	21-44-08-01A-010	ARO ALL

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Bulk Cargo Heat Temperature Selector Installation

SUBTASK 21-44-08-420-001

(1) Install the O-ring [4] on the temperature selector [3].

SUBTASK 21-44-08-420-002

(2) Put the temperature selector [3] through the hole in the CARGO TEMP SELECT module.

SUBTASK 21-44-08-420-003

(3) Install the washer [8] on the temperature selector [3].

SUBTASK 21-44-08-420-004

(4) Install the nut [7] on the temperature selector [3].

(a) Carefully tighten the nut [7] until it touches the washer [8].

SUBTASK 21-44-08-420-007

(5) Install the knob [6] and tighten the set screws [5].

SUBTASK 21-44-08-420-005

(6) Connect the electrical connector [2] to the temperature selector [3].

SUBTASK 21-44-08-420-006

(7) Do the steps that follow to install the CARGO TEMP SELECT module into the Maintenance Panel, P61:

(a) Put the CARGO TEMP SELECT module into the Maintenance Panel, P61.

(b) Turn the four quarter-turn fasteners [1].

F. Bulk Cargo Heat Temperature Selector Installation Test

SUBTASK 21-44-08-860-001

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

SUBTASK 21-44-08-860-002

(2) Push the L INBD, LWR CTR, or the R INBD button on the Display Select Panel which is found on the Glareshield Panel, P55.

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SUBTASK 21-44-08-860-003

(3) Push the AIR button on the Display Select Panel.

NOTE: This shows the AIR synoptic page on the L INBD, LWR CTR, or the R INBD Display Unit (DU).

SUBTASK 21-44-08-210-001

(4) Do these steps to make sure the BULK CARGO TEMP SELECT selector operates in the OFF position:

(a) Put the BULK CARGO TEMP SELECT selector in the OFF position.

(b) Make sure there is no target temperature for the BULK indication on the synoptic page.

NOTE: The target temperature is shown in magenta (left indication) and the actual temperature is shown in white (right indication).

SUBTASK 21-44-08-210-002

(5) Do these steps to make sure the BULK CARGO TEMP SELECT selector operates in the LOW position:

(a) Put the BULK CARGO TEMP SELECT selector in the LOW position.

(b) Make sure the target temperature for the BULK indication shows 45°F (7.2°C) on the synoptic page.

SUBTASK 21-44-08-210-003

(6) Do these steps to make sure the BULK CARGO TEMP SELECT selector operates in the HIGH position:

(a) Put the BULK CARGO TEMP SELECT selector in the HIGH position.

(b) Make sure the target temperature for the BULK indication shows 70°F (21.1°C) on the synoptic page.

(c) Put the BULK CARGO TEMP SELECT selector in the OFF position.

——— END OF TASK ———

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CARGO TEMP SELECT MODULE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the Cargo Temp Select module

(2) An installation of the Cargo Temp Select module.

B. The Cargo Temp Select module is located on the Aft Overhead Maintenance Panel, P61.

C. The Cargo Temp Select module has these control switches for the cargo heat system:

(1) The AFT CARGO TEMP SELECT switch

(2) The BULK CARGO TEMP SELECT switch.

TASK 21-44-09-000-801

2. Cargo Temp Select Module Removal

(Figure 401)

A. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)

B. Location Zones

Zone	Area
212	Flight Compartment, Right

C. Cargo Temp Select Module Removal

SUBTASK 21-44-09-860-001

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-44-09-020-001

(2) Loosen the four quarter-turn fasteners [3].

SUBTASK 21-44-09-020-002

(3) Carefully remove the cargo temp select module assembly [1] from the Aft Overhead Maintenance Panel, P61, to get access to the electrical connecctor [2].

SUBTASK 21-44-09-020-003

(4) Disconnect the electrical connecctor [2].

SUBTASK 21-44-09-020-004

(5) Remove the cargo temp select module assembly [1].

——— END OF TASK ———

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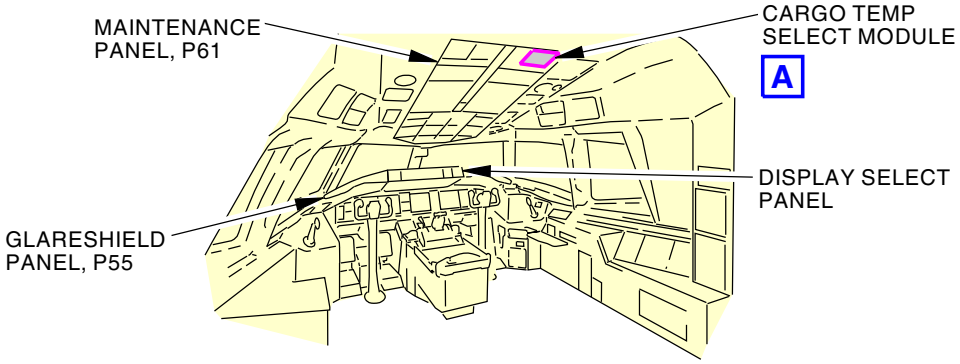
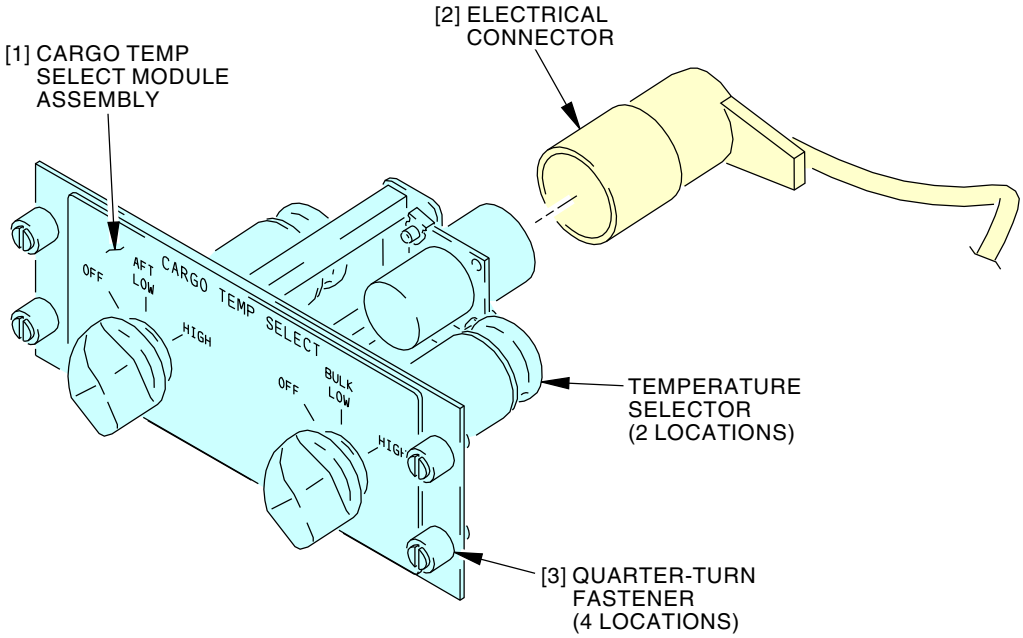


FLIGHT COMPARTMENT



CARGO TEMP SELECT MODULE

A

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Cargo Temperature Select Module Installation
Figure 401/21-44-09-990-801

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TASK 21-44-09-400-801

3. Cargo Temp Select Module Installation

(Figure 401)

A. 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)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Cargo temp select module assembly	21-44-07-01A-005	ARO ALL
		21-44-08-01A-005	ARO ALL
		21-61-07-02-006	ARO ALL
		31-12-11-01B-565	ARO ALL
		31-12-16-01A-025	ARO ALL
		33-13-00-02A-215	ARO ALL

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Cargo Temp Select Module Installation

SUBTASK 21-44-09-420-001

(1) Connect the electrical connecctor [2].

SUBTASK 21-44-09-420-002

(2) Carefully put the cargo temp select module assembly [1] into the Aft Overhead Maintenance Panel, P61.

SUBTASK 21-44-09-420-003

(3) Tighten the four quarter-turn fasteners [3].

E. Cargo Temp Select Module Installation Test

SUBTASK 21-44-09-860-002

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

SUBTASK 21-44-09-860-003

(2) Push the L INBD, LWR CTR, or the R INBD button on the Display Select Panel.

NOTE: The Display Select Panel is located on the Center Glareshield Panel, P55

SUBTASK 21-44-09-860-004

(3) Push the AIR button on the Display Select Panel.

NOTE: This shows the AIR synoptic page on the L INBD, LWR CTR, or the R INBD Display Unit.

SUBTASK 21-44-09-210-001

(4) Do these steps to make sure the AFT CARGO TEMP SELECT switch operates in the OFF position:

(a) Put the AFT CARGO TEMP SELECT switch in the OFF position.

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(b) Make sure that the target temperature indication for the AFT cargo compartment does not show on the synoptic page.

NOTE: The target temperature is shown in magenta (left indication) and the actual temperature is shown in white (right indication).

SUBTASK 21-44-09-210-002

(5) Do these steps to make sure the AFT CARGO TEMP SELECT switch operates in the LOW position:

(a) Put the AFT CARGO TEMP SELECT switch in the LOW position.

(b) Make sure that the target temperature indication for the AFT cargo compartment shows 45°F (7°C) on the synoptic page.

SUBTASK 21-44-09-210-003

(6) Do these steps to make sure the AFT CARGO TEMP SELECT switch operates in the HIGH position:

(a) Put the AFT CARGO TEMP SELECT switch in the HIGH position.

(b) Make sure that the target temperature indication for the AFT cargo compartment shows 70°F (21°C) on the synoptic page.

(c) Put the AFT CARGO TEMP SELECT switch in the OFF position.

SUBTASK 21-44-09-210-004

(7) Do these steps to make sure the BULK CARGO TEMP SELECT switch operates in the OFF position:

(a) Put the BULK CARGO TEMP SELECT switch in the OFF position.

(b) Make sure that the target temperature indication for the BULK cargo compartment does not show on the synoptic page.

SUBTASK 21-44-09-210-005

(8) Do these steps to make sure the BULK CARGO TEMP SELECT switch operates in the LOW position:

(a) Put the BULK CARGO TEMP SELECT switch in the LOW position.

(b) Make sure that the target temperature indication for the BULK cargo compartment shows 45°F (7°C) on the synoptic page.

SUBTASK 21-44-09-210-006

(9) Do these steps to make sure the BULK CARGO TEMP SELECT switch operates in the HIGH position:

(a) Put the BULK CARGO TEMP SELECT switch in the HIGH position.

(b) Make sure that the target temperature indication for the BULK cargo compartment shows 70°F (21°C) on the synoptic page.

(c) Put the BULK CARGO TEMP SELECT switch in the OFF position.

SUBTASK 21-44-09-860-011

(10) If it is not necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

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CARGO COMPARTMENT OVERHEAT SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the Aft Cargo Compartment Overheat Switch

(2) A removal of the Bulk Cargo Compartment Overheat Switch

(3) An installation of the Aft Cargo Compartment Overheat Switch.

(4) An installation of the Bulk Cargo Compartment Overheat Switch.

TASK 21-44-10-000-801

2. Aft Cargo Compartment Overheat Switch Removal

(Figure 401)

A. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
52-35-00-860-801	Open the Aft Small Cargo Door Electrically (P/B 201)

B. Location Zones

Zone	Area
153	Area Below Aft Cargo Compartment, Left

C. Prepare for the Removal

SUBTASK 21-44-10-860-001

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-44-10-860-002

(2) To remove the overheat switch in the aft cargo compartment, do the applicable steps that follows:

(a) Do this task: Open the Aft Small Cargo Door Electrically, TASK 52-35-00-860-801.

(b) Remove the applicable floor panel (TASK 25-52-10-000-801).

D. Aft Cargo Compartment Overheat Switch Removal

SUBTASK 21-44-10-020-001

(1) Disconnect the electrical connector from the overheat switch [1].

SUBTASK 21-44-10-020-002

(2) Remove the lockwire from the nut [2] and the overheat switch [1].

SUBTASK 21-44-10-020-003

(3) Remove the nut [2] and washer [3] which attach the switch [1] to the bracket on the airplane structure.

SUBTASK 21-44-10-020-004

(4) Remove the overheat switch [1] and the washer [3].

END OF TASK

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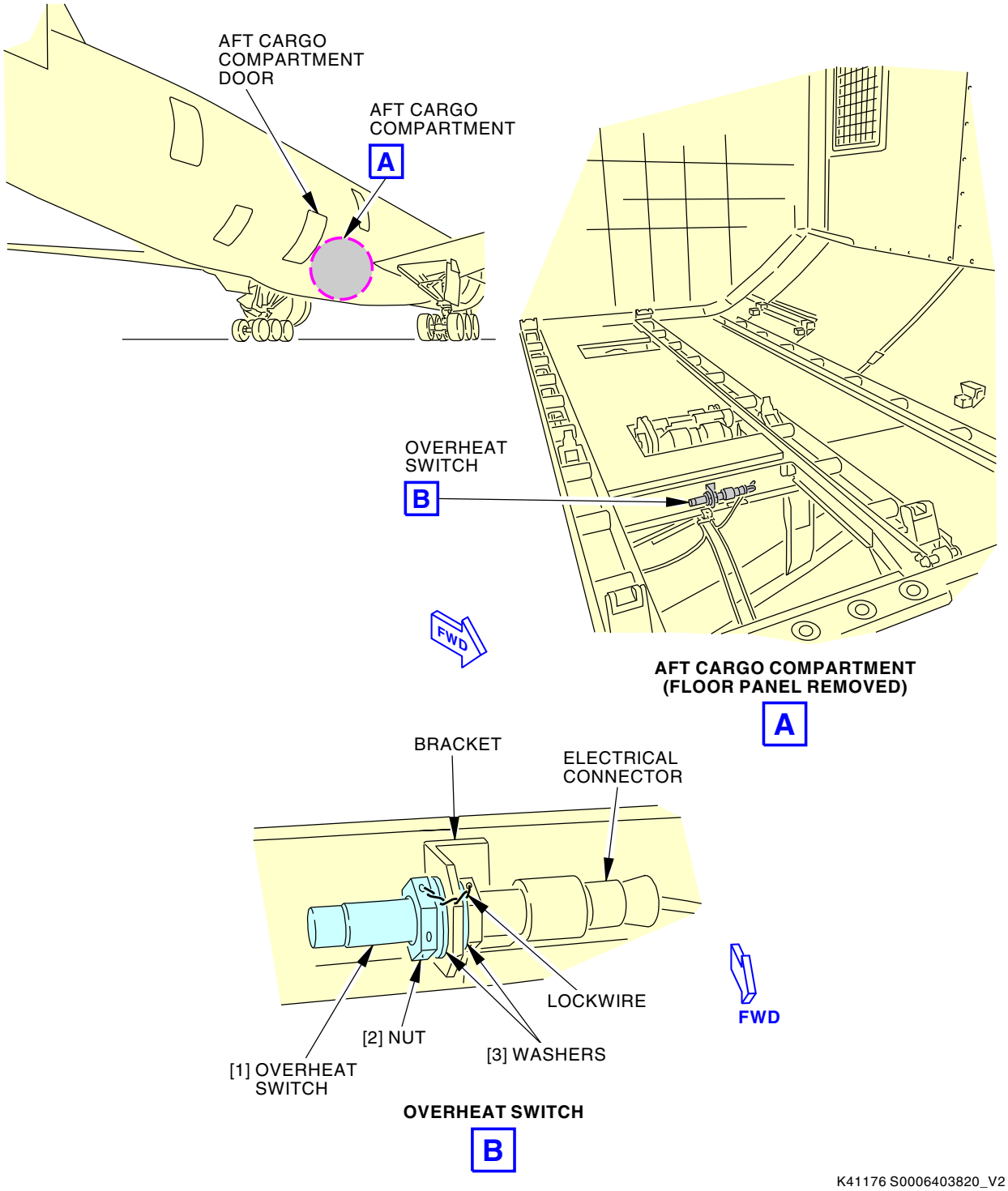

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Aft Cargo Overheat Switch Installation
Figure 401/21-44-10-990-801

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TASK 21-44-10-000-802

3. Bulk Cargo Compartment Overheat Switch Removal

(Figure 402)

A. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)
25-52-11-000-801	Bulk Cargo Floor Removal (P/B 401)
52-36-00-860-801	Open the Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch	21-44-50-01-220	ARO ALL

C. Location Zones

Zone	Area
163	Area Below Bulk Cargo Compartment, Left

D. Prepare for the Removal

SUBTASK 21-44-10-860-003

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-44-10-010-001

(2) To remove the overheat switch in the bulk cargo compartment, do the steps that follows:

(a) Do this task: Open the Door, TASK 52-36-00-860-801.

(b) Remove the applicable floor panel (TASK 25-52-11-000-801).

E. Bulk Cargo Compartment Overheat Switch Removal

SUBTASK 21-44-10-020-005

(1) Disconnect the electrical connector from the overheat switch [1].

SUBTASK 21-44-10-020-006

(2) Remove the lockwire from the nut [2] and the overheat switch [1].

SUBTASK 21-44-10-020-007

(3) Remove the nut [2] and washer [3] which attach the switch [1] to the bracket on the airplane structure.

SUBTASK 21-44-10-020-008

(4) Remove the overheat switch [1] and the washer [3].

——— END OF TASK ———

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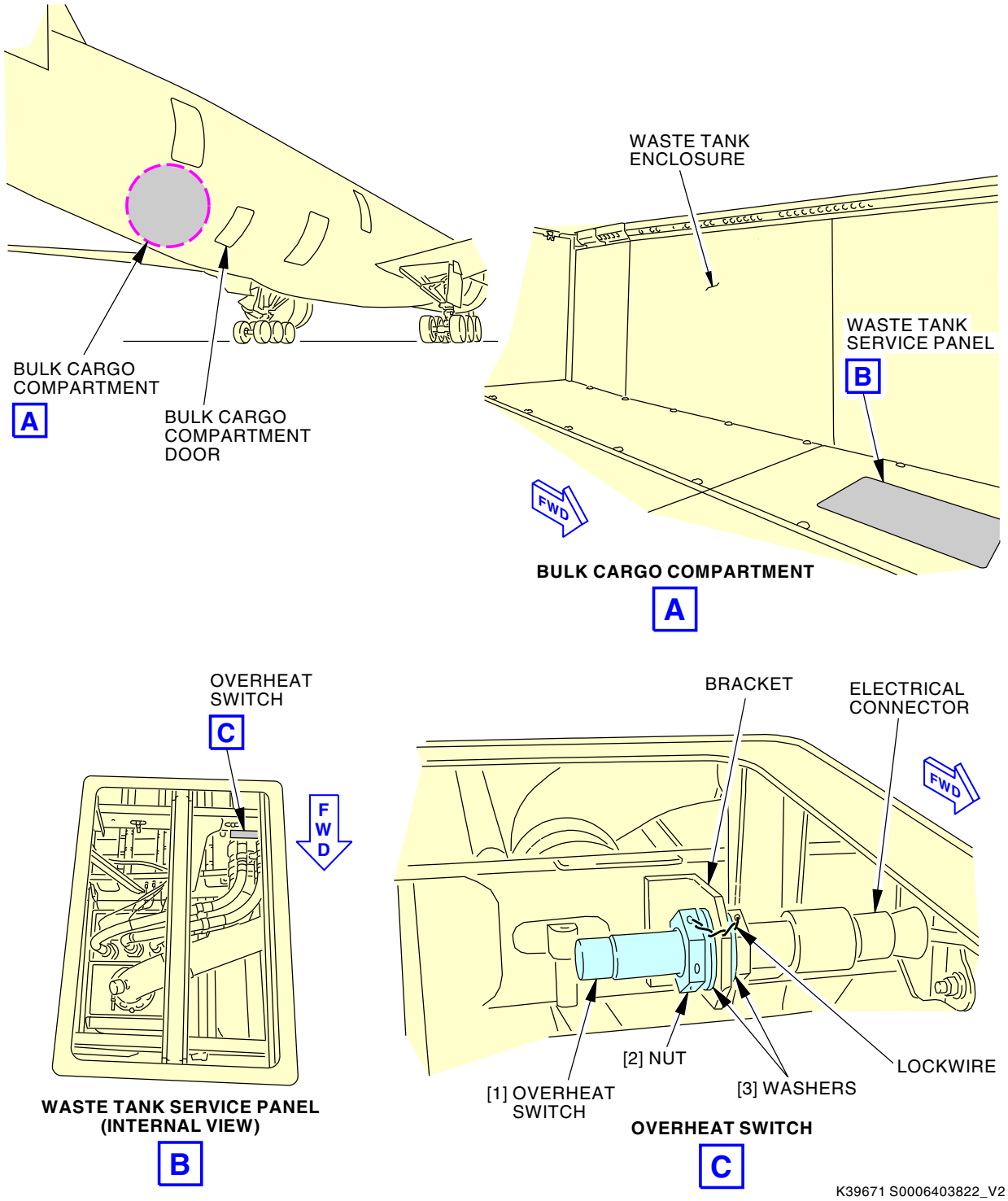

Bulk Cargo Overheat Switch Installation
Figure 402/21-44-10-990-802

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TASK 21-44-10-400-801

4. Aft Cargo Compartment Overheat Switch Installation

(Figure 401)

A. References

Reference	Title
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
52-35-00-860-802	Close the Aft Small Cargo Door Electrically (P/B 201)

B. Consumable Materials

Reference	Description	Specification
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

C. Location Zones

Zone	Area
153	Area Below Aft Cargo Compartment, Left

D. Aft Cargo Compartment Overheat Switch Installation

SUBTASK 21-44-10-420-001

(1) Put the washer [3] on the overheat switch [1].

SUBTASK 21-44-10-420-002

(2) Put the overheat switch [1] in its position on the bracket.

SUBTASK 21-44-10-420-003

(3) Install the nut [2] and the washer [3] which attach the overheat switch [1] to the bracket.

(a) Tighten the nut [2] to 15 in-lb (2 N·m)-25 in-lb (3 N·m).

SUBTASK 21-44-10-020-009

(4) Install new MS20995NC32 lockwire, G01912 on the nut [2] and the overheat switch [1].

SUBTASK 21-44-10-420-004

(5) Connect the electrical connector to the overheat switch [1].

(a) Make sure the maximum resistance between overheat switch [1] and the floor structure is less than 0.008 Ohm.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-44-10-010-002

(1) Do the applicable tasks that follow:

(a) Install the floor panel you removed (TASK 25-52-10-400-801).

(b) Do this task: Close the Aft Small Cargo Door Electrically, TASK 52-35-00-860-802.

——— END OF TASK ———

TASK 21-44-10-400-802

5. Bulk Cargo Compartment Overheat Switch Installation

(Figure 402)

A. References

Reference	Title
25-52-11-400-801	Bulk Cargo Floor Installation (P/B 401)
52-36-00-860-802	Close the Door (P/B 201)

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B. Consumable Materials

Reference	Description	Specification
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch	21-44-50-01-220	ARO ALL

D. Location Zones

Zone	Area
163	Area Below Bulk Cargo Compartment, Left

E. Bulk Cargo Compartment Overheat Switch Installation

SUBTASK 21-44-10-420-005

(1) Put the washer [3] on the overheat switch [1].

SUBTASK 21-44-10-420-006

(2) Put the overheat switch [1] in its position on the bracket.

SUBTASK 21-44-10-420-007

(3) Install the nut [2] and the washer [3] which attach the overheat switch [1] to the bracket.

(a) Tighten the nut [2] to 15 in-lb (2 N·m)-25 in-lb (3 N·m).

SUBTASK 21-44-10-020-010

(4) Install new MS20995NC32 lockwire, G01912 on the nut [2] and the overheat switch [1].

SUBTASK 21-44-10-420-008

(5) Connect the electrical connector to the overheat switch [1].

(a) Make sure the maximum resistance between overheat switch [1] and the floor structure is less than 0.008 Ohm.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-44-10-010-003

(1) Do the tasks that follow:

(a) Install the floor panel you removed. To install the floor panel, do this task: Bulk Cargo Floor Installation, TASK 25-52-11-400-801

(b) Do this task: Close the Door, TASK 52-36-00-860-802.

——— END OF TASK ———

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CARGO HEAT DUCT - REPAIRS

1. General

A. This procedure contains one task. The task is to repair the forward, aft and bulk cargo heat ducts.

B. Two procedures are available to repair the duct. Use procedure 1 to replace short sections of the duct. Use procedure 2 to replace long sections of the duct.

TASK 21-44-11-200-801

2. Repair the Duct Section

(Figure 801)

A. 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
A00578	Adhesive - Fire Resistant Insulative, Silicon Rubber Based Topcoat, 2 Part - RTV60	BMS10-102 Type II
G50131	Ducting, Titanium, Commercially Pure, Tube Or Rolled Sheet, 40 kpsi Min Strength	BMS7-21 Grade II
G50132	Sheet - Stainless Steel, CRES 301, .032 inch Thick, Annealed Condition	AMS 5901 (Supersedes MIL-S-5059)

D. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
153	Area Below Aft Cargo Compartment, Left
154	Area Below Aft Cargo Compartment, Right
163	Area Below Bulk Cargo Compartment, Left
164	Area Below Bulk Cargo Compartment, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
821	Forward Large Cargo Door
823	Aft Small Cargo Door
825	Bulk Cargo Door

F. Equipment

SUBTASK 21-44-11-800-002

(1) BMI duct segment (only for repair of long sections)

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G. Procedure

SUBTASK 21-44-11-760-001

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

SUBTASK 21-44-11-710-006

WARNING REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

NOTE: The CARGO TEMP SELECT MODULE is located on the Pilot Overhead Panel, P61.

SUBTASK 21-44-11-710-001

(3) On the CARGO TEMP SELECT MODULE, make sure that the AFT and BULK cargo heat temperature selectors are OFF

NOTE: The CARGO TEMP SELECT MODULE is located on the Pilot's Overhead Panel, P61.

(a) Install DO NOT OPERATE tags, STD-858 on the selectors.

SUBTASK 21-44-11-010-001

(4) Open the applicable cargo doors:

Number	Name/Location
821	Forward Large Cargo Door
823	Aft Small Cargo Door
825	Bulk Cargo Door

SUBTASK 21-44-11-010-002

(5) Remove the applicable floor panel to get access to the damaged duct section.

SUBTASK 21-44-11-350-001

(6) Do these steps to repair the damaged duct section:

(a) Cut and remove the damaged duct section.

(b) To repair a short duct section (2 ft (1 m) or shorter) or a long duct section (2 ft (1 m) or longer), do these steps (Procedure 1):

1) Make a new duct section which is 6 inches longer than the damaged duct section from the ducting, G50131 or CRES 301 sheet, G50132 duct material.

NOTE: The new duct section must extend at least 3 inches over each end of the mating heat duct sections.

2) Use a mandrel or ball to expand the diameter of the ends of the new duct section to permit the installation over the mating heat duct sections.

(c) To repair a long duct section (2 ft (1 m) or longer), do these steps (Procedure 2):

1) Make a new duct section which is slightly shorter than the damaged duct section from the BMI duct material.

2) Make two 6-inch long sleeves from the ducting, G50131 or CRES 301 sheet, G50132 duct material.

3) Use a mandrel or ball to expand the diameter of the ends of the sleeve to permit the installation over the mating heat duct sections.

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(d) Install the repair duct section as shown in Figure 801.

NOTE: This heat distribution duct is low pressure. Air leakage at the duct repair joint is not important.

1) If it is necessary, loosen the support clamps for the heat duct to permit the installation of the repair duct section.

2) For a ducting, G50131 duct section (or sleeve), use the scrivets to attach the ducting, G50131 duct section (sleeve) to the mating heat duct sections.

NOTE: Use scrivets - P/N 231-700055-00-3704, Fastex Co., 195 East Algona Road, Des Plains, Illinois 60191-1150.

3) For a CRES 301 sheet, G50132 duct section (or sleeve), use the RTV60 adhesive, A00578, to bond the ends of the CRES 301 sheet, G50132 duct section (sleeve) to the mating heat duct sections.

NOTE: You can use straps or clamps to temporarily hold the CRES 301 sheet, G50132 duct section (sleeve) to the mating heat duct sections until the sealant has cured.

4) Punch or drill holes along the length of the replacement duct section to align with the heat outlet holes in the mating heat duct sections.

5) Tighten all the duct support clamps.

SUBTASK 21-44-11-410-001

(7) Install the floor panels.

SUBTASK 21-44-11-710-002

(8) Close the apllicable cargo doors:

Number	Name/Location
821	Forward Large Cargo Door
823	Aft Small Cargo Door
825	Bulk Cargo Door

SUBTASK 21-44-11-710-008

(9) On the CARGO TEMP SELECT MODULE, remove the DO NOT OPERATE tags, STD-858 from the temperature selectors.

SUBTASK 21-44-11-760-002

(10) Remove electrical power if it is not necessary (TASK 24-22-00-860-806).

END OF TASK

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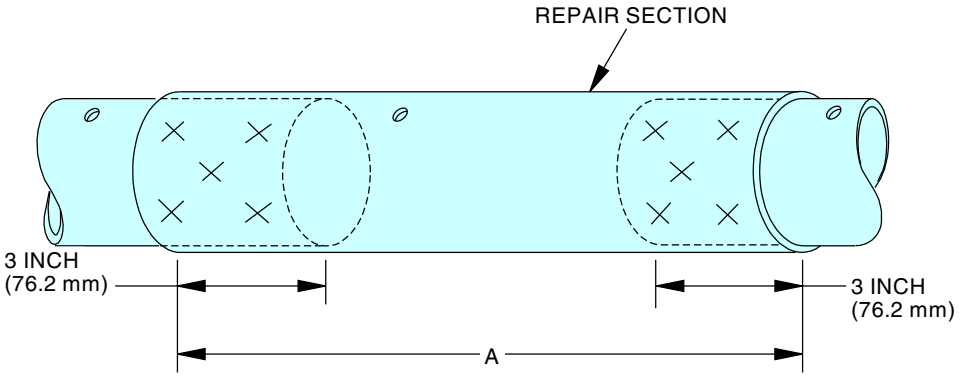
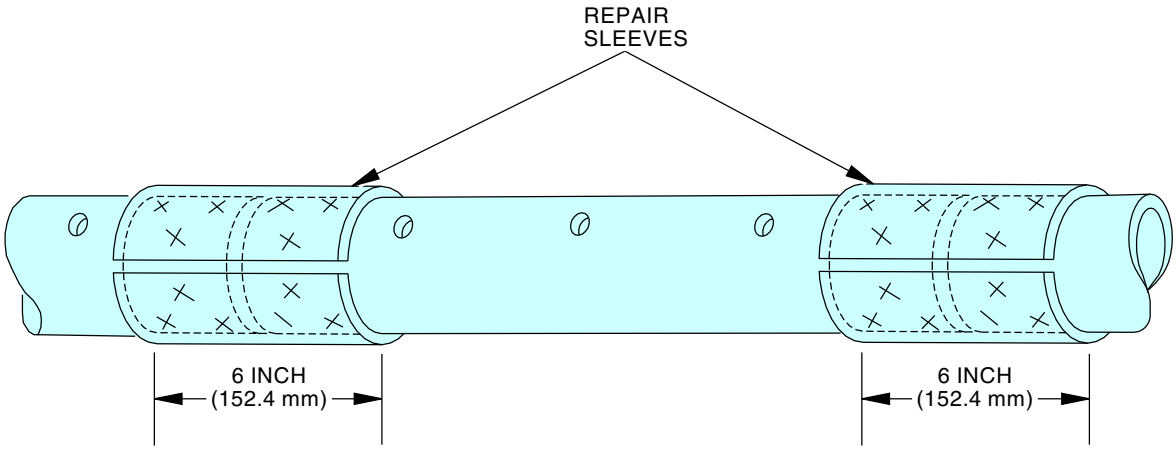


PROCEDURE 1 - SHORT SECTION REPAIR



PROCEDURE 2 - LONG SECTION REPAIR

NOTE:

CUT AND REMOVE THE DAMAGED SECTION TO PERMIT SUFFICIENT ACCESS TO RIVET THE REPAIR SECTION. PUT THE RIVETS 1 TO 1.25 INCHES (25.4 TO 31.75 mm) APART WITH 0.35 INCH (8.89 mm) MINIMUM EDGE DISTANCE.

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Cargo Heating Duct - Repair
Figure 801/21-44-11-990-801

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AFT CARGO HEAT SHROUD - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the Aft Cargo Heat Shroud

(2) An installation of the Aft Cargo Heat Shroud.

B. The aft cargo heat shroud protects the aft cargo compartment heat duct from unwanted materials.

C. There are 15 sections of shroud installed over the aft cargo heat duct. The removal and installation of each section is identical.

TASK 21-44-12-000-801

2. Aft Cargo Heat Shroud Removal

(Figure 401)

A. References

Reference	Title
25-52-10-000-801	Floor Panels and Walkways Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
52-35-00-860-801	Open the Aft Small Cargo Door Electrically (P/B 201)

B. Location Zones

Zone	Area
153	Area Below Aft Cargo Compartment, Left

C. Prepare for the Removal

SUBTASK 21-44-12-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-44-12-860-002

(2) To remove the aft cargo heat shroud, do the steps that follow:

(a) Do this task: Open the Aft Small Cargo Door Electrically, TASK 52-35-00-860-801.

(b) Remove the applicable floor panel (TASK 25-52-10-000-801).

D. Aft Cargo Heat Shroud Removal

SUBTASK 21-44-12-020-001

(1) Remove the four screws [2] and four washers [3], which attach the shroud [1] to the brackets on the airplane structure.

SUBTASK 21-44-12-020-002

(2) Carefully lift and move the shroud [1] forward to clear the other shroud sections.

END OF TASK

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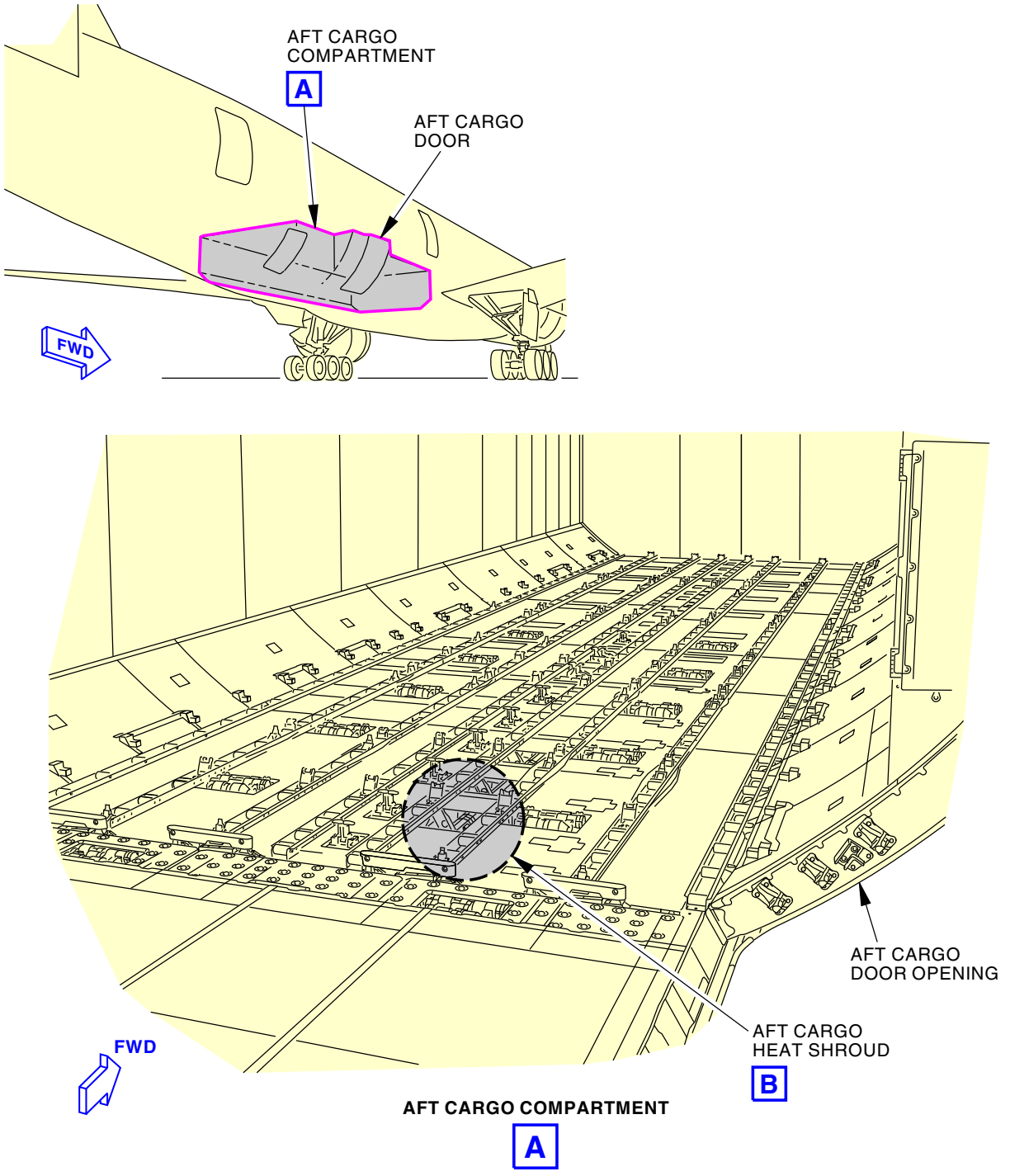

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Aft Cargo Heat Shroud Installation
Figure 401/21-44-12-990-801 (Sheet 1 of 2)

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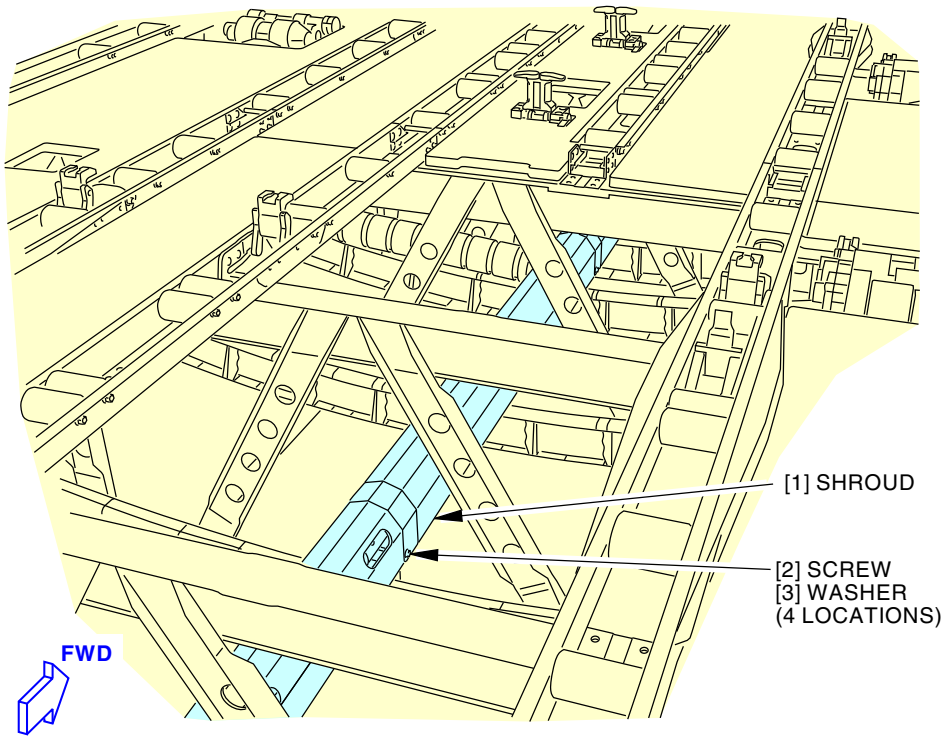

**AFT CARGO HEAT SHROUD
(FLOOR PANELS REMOVED)**

B

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**Aft Cargo Heat Shroud Installation
Figure 401/21-44-12-990-801 (Sheet 2 of 2)**

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TASK 21-44-12-400-801

3. Aft Cargo Heat Shroud Installation

(Figure 401)

A. References

Reference	Title
25-52-10-400-801	Floor Panels and Walkways Installation (P/B 401)
52-35-00-860-802	Close the Aft Small Cargo Door Electrically (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Shroud	21-44-01-03-035	ARO 001-013
		21-44-01-03-040	ARO 001-013
		21-44-01-03-045	ARO 001-013
		21-44-01-03-050	ARO 001-013
		21-44-01-03-055	ARO 001-013
		21-44-01-03-060	ARO 001-013
		21-44-01-03-065	ARO 001-013

C. Location Zones

Zone	Area
153	Area Below Aft Cargo Compartment, Left

D. Aft Cargo Heat Shroud Installation

SUBTASK 21-44-12-420-001

(1) Put the shroud [1] in its position on the brackets.

NOTE: The aft end of the shroud is installed below the forward end of the previous section.

SUBTASK 21-44-12-420-002

(2) Install the four screws [2] and four washers [3] which attach the shroud [1] to the brackets on the airplane structure.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-44-12-010-001

(1) Do the steps that follow:

(a) Install the floor panel you removed (TASK 25-52-10-400-801).

(b) Do this task: Close the Aft Small Cargo Door Electrically, TASK 52-35-00-860-802.

——— END OF TASK ———

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SUPPLEMENTAL HEATING SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Operational Test - Galley Heaters

(2) Operational Test - Captain's and First Officer's Foot Heaters

(3) Operational Test - Captain's and First Officer's Shoulder Heaters

(4) System Test - Door Area Heaters.

B. Do each of the above tasks for a complete system test of the supplemental heating system.

TASK 21-45-00-740-801

2. Galley Heaters Operational Test

A. References

Reference	Title
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

B. Location Zones

Zone	Area
212	Flight Compartment, Right
221	Passenger Compartment, Left - Section 41
222	Passenger Compartment, Right - Section 41
251	Passenger Compartment, Left - Section 46
252	Passenger Compartment, Right - Section 46
261	Passenger Compartment, Left - Section 47
262	Passenger Compartment, Right - Section 47

C. Procedure

SUBTASK 21-45-00-860-001

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

SUBTASK 21-45-00-860-019

(2) Operate at least one of the two air conditioning packs (TASK 21-00-00-800-803).

SUBTASK 21-45-00-200-001

(3) Do the steps that follow to do a test of the forward galley heater:

(a) Put the galley heat switch in the LOW position.

NOTE: The galley heat switch is found on the forward galley control panel.

(b) Make sure the air that comes out of the galley heat outlet grill is warm.

NOTE: The galley heat outlet grill is found near the floor.

(c) Put the galley heat switch in the HI position.

(d) Make sure the air that comes out of the galley heat outlet grill becomes more warm.

(e) Put the galley heat switch in the OFF position.

(f) Make sure the air that comes out of the galley heat outlet grill becomes cool.

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SUBTASK 21-45-00-200-006

(4) Do the steps that follow to do a test of the mid galley heater:

(a) Put the galley heat switch in the LOW position.

NOTE: The galley heat switch is found on the mid galley control panel.

(b) Make sure the air that comes out of the galley heat outlet grill is warm.

NOTE: The galley heat outlet grill is found near the floor.

(c) Put the galley heat switch in the HI position.

(d) Make sure the air that comes out of the galley heat outlet grill becomes more warm.

(e) Put the galley heat switch in the OFF position.

(f) Make sure the air that comes out of the galley heat outlet grill becomes cool.

SUBTASK 21-45-00-200-002

(5) Do the steps that follow to do a test of the aft galley heaters:

(a) Put the galley heat switch in the LOW position.

NOTE: The galley heat switch is found on the aft galley control panel.

(b) Make sure the air that comes out of the galley heat outlet grills is warm.

NOTE: The galley heat outlet grills are found near the floor.

(c) Put the aft galley heater switch in the HI position.

(d) Make sure the air that comes out of the galley heat outlet grills becomes more warm.

(e) Put the galley heat switch in the OFF position.

(f) Make sure the air that comes out of the galley heat outlet grill becomes cool.

SUBTASK 21-45-00-860-002

(6) Stop the operation of the air conditioning pack(s) (TASK 21-00-00-800-804).

END OF TASK

TASK 21-45-00-740-802

3. Captain's and First Officer's Foot Heaters Operational Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)

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

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D. Procedure

SUBTASK 21-45-00-860-004

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

SUBTASK 21-45-00-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-00-860-005

WARNING REMOVE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. IF YOU DO NOT REMOVE POWER TO THE SEATS, YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

SUBTASK 21-45-00-860-006

WARNING OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Put the air/ground system in the air mode (TASK 32-09-00-860-801).

SUBTASK 21-45-00-710-001

(5) Make sure the foot heater switch in the OFF position.

NOTE: The Captain's foot heater switch is found on the P13 panel. The First Officer's foot heater switch is found on the P14 panel.

(a) Make sure the foot heaters are cool.

SUBTASK 21-45-00-200-003

(6) If the temperature of the foot heaters is more than 80.0 °F (26.7 °C), then do this step:

(a) Put an ice pack on the aft end of the foot heaters for approximately 5 minutes.

NOTE: The temperature of the foot heaters must be less than 70.0 °F (21.1 °C) for the foot heaters to operate.

SUBTASK 21-45-00-710-002

(7) Put the foot heater switch in the LOW position.

(a) Make sure the foot heaters become warm.

SUBTASK 21-45-00-710-003

(8) Put the foot heater switch in the HIGH position.

(a) Make sure the foot heaters become more warm.

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SUBTASK 21-45-00-710-004

(9) Put the foot heater switch in the OFF position.

(a) Make sure the foot heaters become cool.

SUBTASK 21-45-00-860-007

(10) Put the air/ground system back to the ground mode (TASK 32-09-00-860-801).

SUBTASK 21-45-00-860-008

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

SUBTASK 21-45-00-410-001

(12) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-45-00-740-803

4. Captain's and First Officer's Shoulder Heaters Operational Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)

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 21-45-00-860-010

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

SUBTASK 21-45-00-860-011

(2) Put the LOWER RECIRC FANS switch in the ON position.

NOTE: The LOWER RECIRC FANS switch is on the pilot's overhead panel, P5.

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SUBTASK 21-45-00-860-012

WARNING OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Put the air/ground system in the air mode (TASK 32-09-00-860-801).

SUBTASK 21-45-00-710-005

(4) Make sure the shoulder heater switch is in the OFF position.

NOTE: The Captain's shoulder heater switch is found on the P13 panel. The First Officer's shoulder heater switch is found on the P14 panel.

(a) Make sure the air that exits adjacent to the window is cool.

SUBTASK 21-45-00-710-006

(5) Put the shoulder heater switch in the LOW position.

(a) Make sure the air that exits adjacent to the window becomes warm.

SUBTASK 21-45-00-710-007

(6) Put the shoulder heater switch in the HIGH position.

(a) Make sure the air that exits adjacent to the window becomes warmer.

SUBTASK 21-45-00-710-008

(7) Put the shoulder heater switch in the OFF position.

SUBTASK 21-45-00-860-013

(8) Put the air/ground system back to the ground mode (TASK 32-09-00-860-801).

SUBTASK 21-45-00-860-014

(9) Put the LOWER RECIRC FANS switch to the OFF position.

——— END OF TASK ———

TASK 21-45-00-740-804

5. Door Area Heaters System Test

A. General

(1) A maintenance access terminal (MAT) 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 21-45-00-860-016

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

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SUBTASK 21-45-00-860-017

(2) Put the UPPER and LOWER RECIRC FANS switches in the ON position.

NOTE: The UPPER and LOWER RECIRC FANS switches are on the pilot's overhead panel, P5.

SUBTASK 21-45-00-740-001

(3) Use a maintenance access terminal (MAT) to do the system test of the door area heaters.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) SYSTEM TEST
6) Door Area Heater
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 ———

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CAPTAIN'S AND FIRST OFFICER'S FOOT HEATERS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Captain's and first officer's foot heaters - deactivation.

(2) Captain's and first officer's foot heaters - activation.

TASK 21-45-01-040-801

2. Captain's and First Officer's Foot Heaters - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the captain's and first officer's foot heaters.

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1179	Tester - Pyrometer

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 21-45-01-210-001

(1) On the Left Side Panel, P13, make sure that the FOOT temperature knob is OFF.

SUBTASK 21-45-01-210-002

(2) On the Right Side Panel, P14, make sure that the FOOT temperature knob is OFF.

SUBTASK 21-45-01-010-002

(3) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-01-020-005

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

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(WARNING PRECEDES)

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
D	18	C25323	CAPT SEAT
H	20	C21654	CAPT FT & SHLDR HTR CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

F. Captain's and First Officer's Foot Heaters - Tryout

NOTE: This tryout is to make sure that the captain's and first officer's foot heaters are in a zero energy state.

SUBTASK 21-45-01-860-011

(1) Do these steps to do a test of the captain's foot heater:

(a) Go to the captain's foot heater in the flight compartment.

(b) Use a pyrometer, STD-1179 to measure the temperature of the foot heater.

(c) On the Left Side Panel, P13, turn the FOOT temperature knob to HIGH.

(d) Wait approximately 5 minutes.

(e) Use a pyrometer, STD-1179 to measure the temperature of the foot heater.

1) Make sure that the temperature does not increase.

SUBTASK 21-45-01-860-012

(2) On the Left Side Panel, P13, turn the FOOT temperature knob to OFF.

(a) Install a DO NOT OPERATE tag, STD-858 on the FOOT temperature knob.

SUBTASK 21-45-01-860-013

(3) Do these steps to do a test of the first officer's foot heater:

(a) Go to the first officer's foot heater in the flight compartment.

(b) Use a pyrometer, STD-1179 to measure the temperature of the foot heater.

(c) On the Right Side Panel, P14, turn the FOOT temperature knob to HIGH.

(d) Wait approximately 5 minutes.

(e) Use a pyrometer, STD-1179 to measure the temperature of the foot heater.

1) Make sure that the temperature does not increase.

SUBTASK 21-45-01-860-014

(4) On the Right Side Panel, P14, turn the FOOT temperature knob to OFF.

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(a) Install a DO NOT OPERATE tag, STD-858 on the FOOT temperature knob.

——— END OF TASK ———

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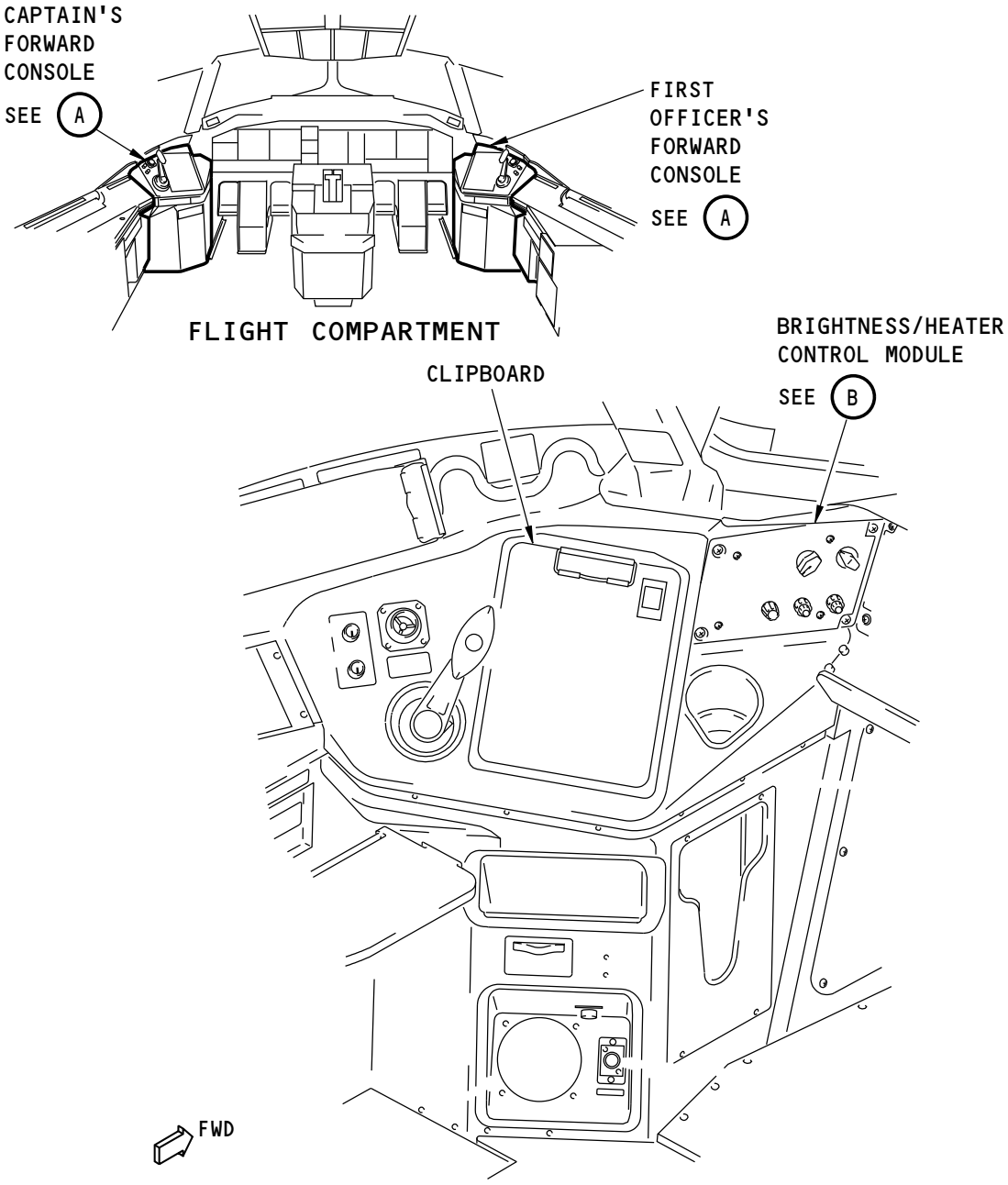

Captain's and First Officer's Foot Heater
Figure 201/21-45-01-990-802 (Sheet 1 of 4)

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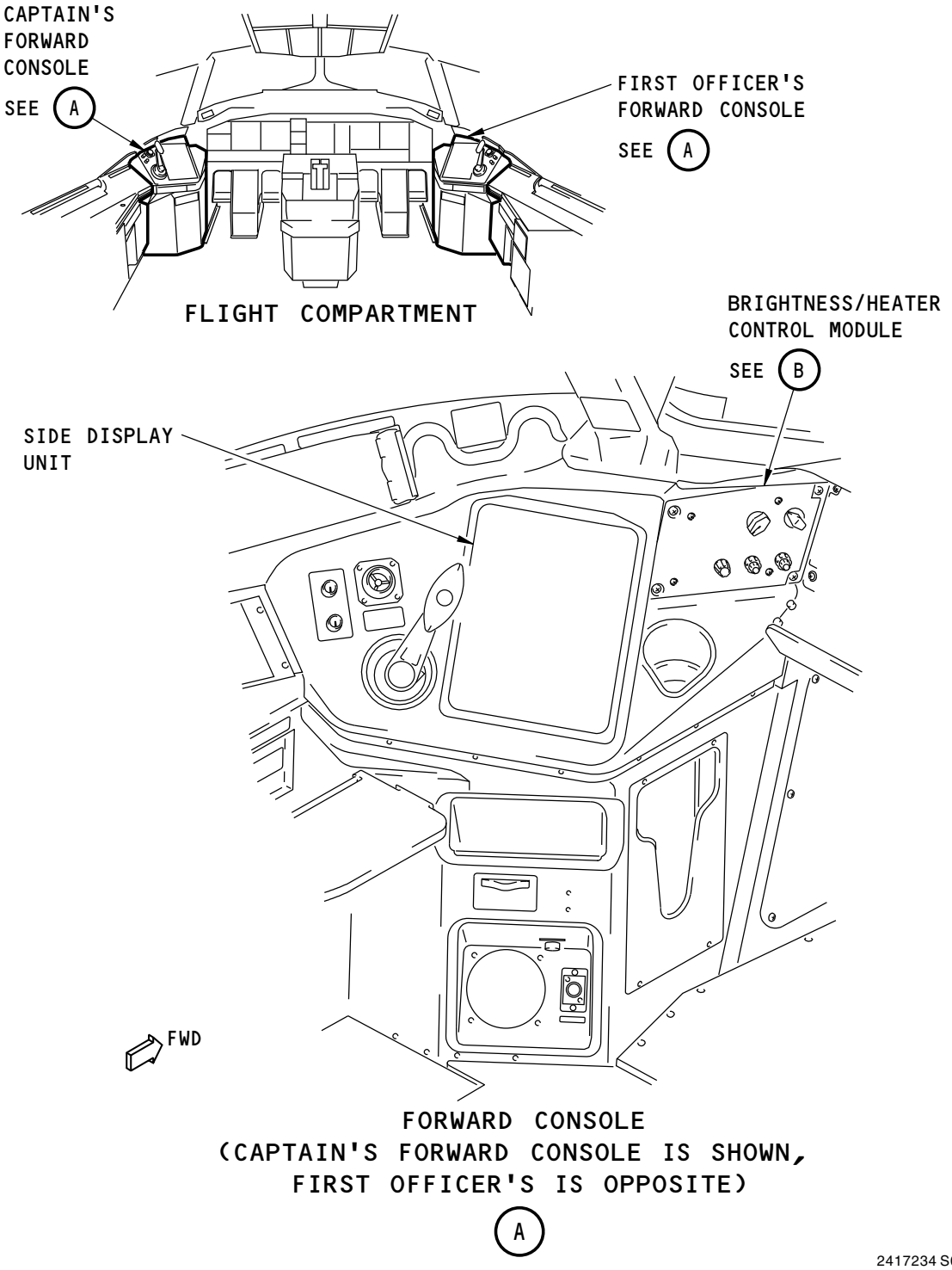

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Captain's and First Officer's Foot Heater
Figure 201/21-45-01-990-802 (Sheet 2 of 4)

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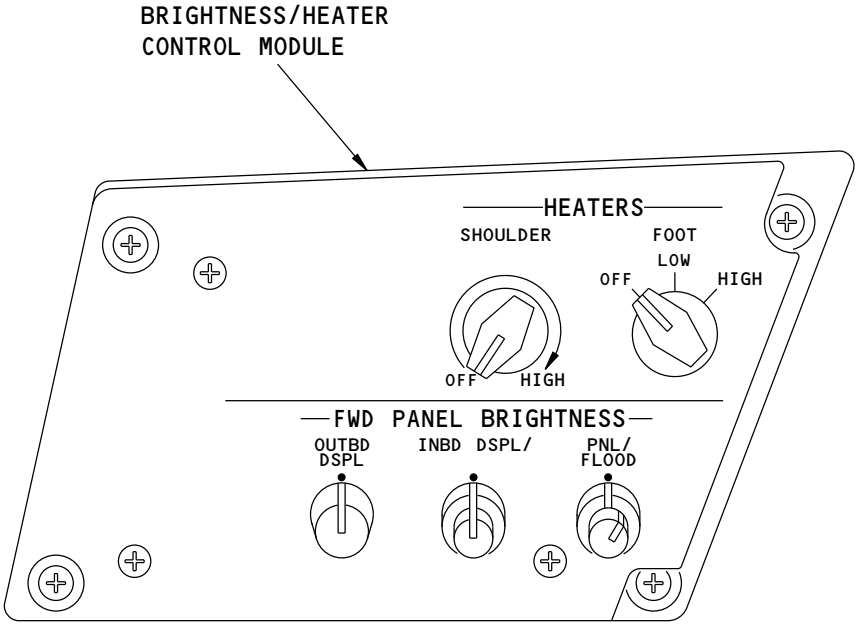

BRIGHTNESS/HEATER CONTROL MODULE
(CAPTAIN'S CONTROL MODULE SHOWN,
FIRST OFFICER'S IS OPPOSITE)

B

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Captain's and First Officer's Foot Heater
Figure 201/21-45-01-990-802 (Sheet 3 of 4)

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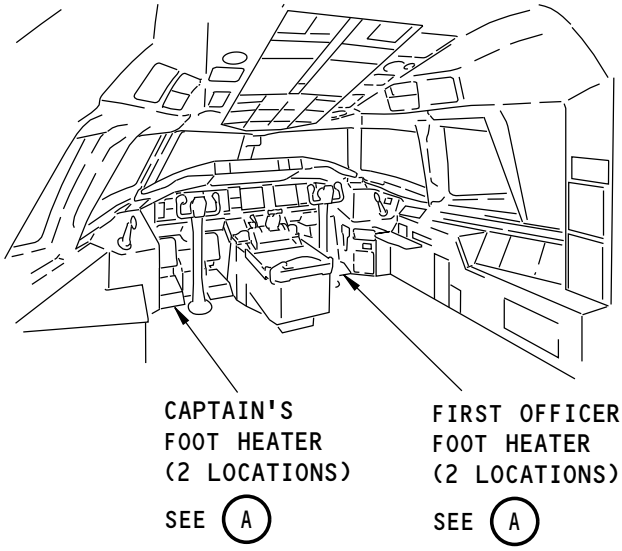
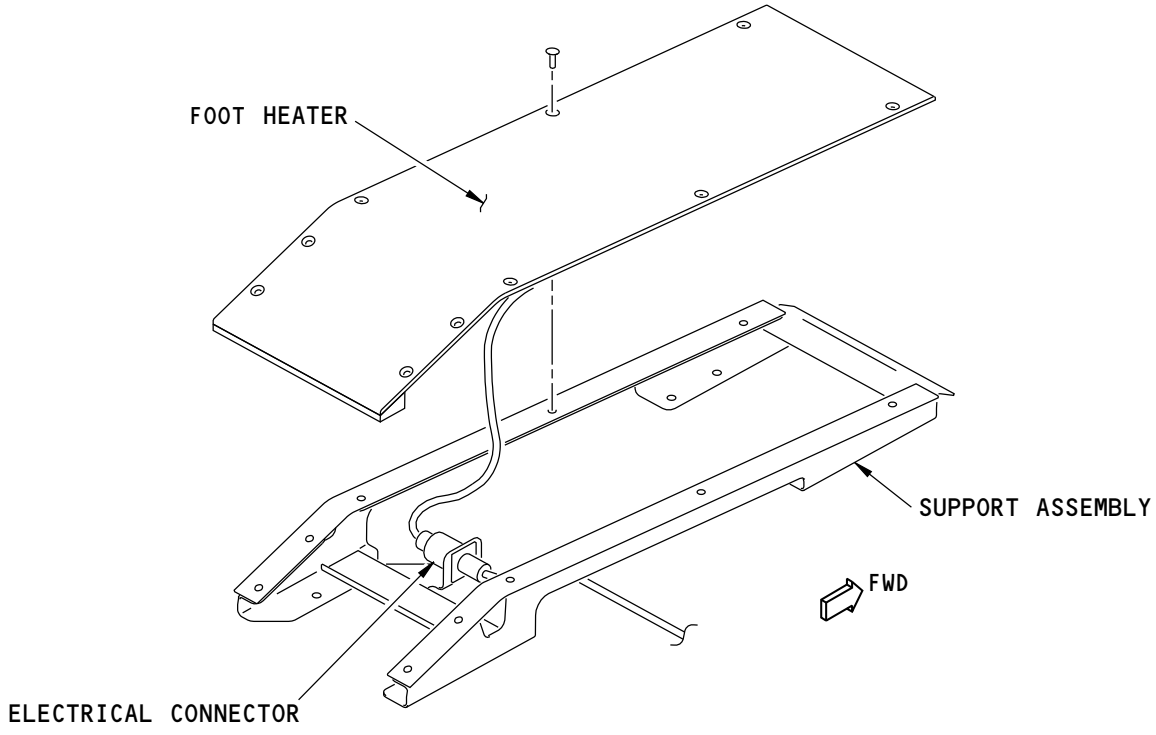


FLIGHT COMPARTMENT



CAPTAIN'S AND FIRST OFFICER'S FOOT HEATER

A

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Captain's and First Officer's Foot Heater
Figure 201/21-45-01-990-802 (Sheet 4 of 4)

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TASK 21-45-01-440-801

3. Captain's and First Officer's Foot Heaters - Activation

(Figure 201)

A. General

(1) This task will activate the captain's and first officer's foot heaters.

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 21-45-01-420-003

WARNING

KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
D	18	C25323	CAPT SEAT

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT
B	27	C21320	F/O FT & SHLDR HTR

SUBTASK 21-45-01-860-015

(2) On the Left Side Panel, P13, remove the DO NOT OPERATE tag, STD-858 on the FOOT temperature knob.

SUBTASK 21-45-01-860-016

(3) On the Right Side Panel, P14, Remove the DO NOT OPERATE tag, STD-858 on the FOOT temperature knob.

END OF TASK

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CAPTAIN'S AND FIRST OFFICER'S FOOT HEATERS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the Captain's and First Officer's foot heaters.

(2) An installation of the Captain's and First Officer's foot heaters.

B. There is a left foot heater and a right foot heater for both the Captain and the First Officer. The foot heaters operate only when the airplane is in the air. Each foot heater has a control thermostat which closes at 70 ±5°F (21.1 ±2.8°C) and opens at 80 ±5°F (26.7 ±2.8°C). The foot heaters are controlled by a switch on the Forward Panel Brightness/Heater Control Panels, P13 (Captain's) and P14 (First Officer's). Each switch has an OFF, LOW and HIGH position. The LOW position corresponds to a foot heater power output of 16.5 Watts. The HIGH position corresponds to a foot heater power output of 50 Watts.

TASK 21-45-01-000-801

2. Captain's and First Officer's Foot Heater 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. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

C. Prepare for the Removal

SUBTASK 21-45-01-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-01-860-001

WARNING REMOVE ELECTRICAL POWER FROM THE FIRST OFFICER'S AND CAPTAIN'S SEATS. YOU CAN ACCIDENTALLY CAUSE A SEAT TO MOVE AND CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) To make sure that the Captain's and First Officer's seats do not operate accidentally,

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

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Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

SUBTASK 21-45-01-860-002

(3) For the Captain's foot heaters,

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
H	20	C21654	CAPT FT & SHLDR HTR CTRL

SUBTASK 21-45-01-860-003

(4) For the First Officer's foot heaters,

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

D. Foot Heater Removal

SUBTASK 21-45-01-020-001

(1) Remove the 10 screws [2] which attach the foot heater [1] to the support assembly.

SUBTASK 21-45-01-020-002

(2) Lift up the foot heater [1] until you can see the electrical connector [3].

SUBTASK 21-45-01-020-003

(3) Disconnect the electrical connector [3].

SUBTASK 21-45-01-020-004

(4) Remove the foot heater [1].

END OF TASK

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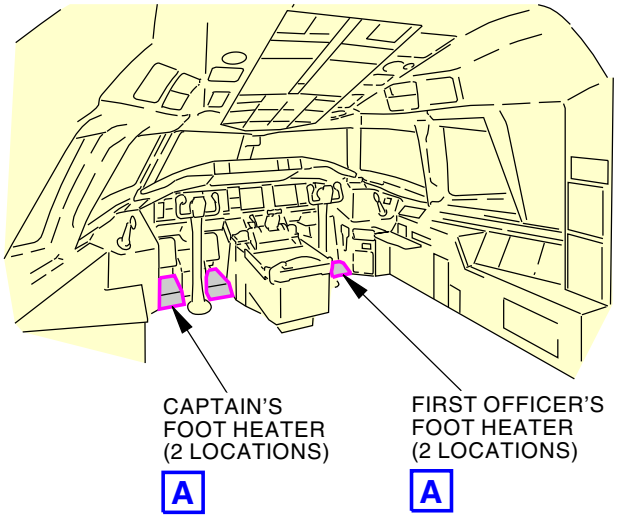
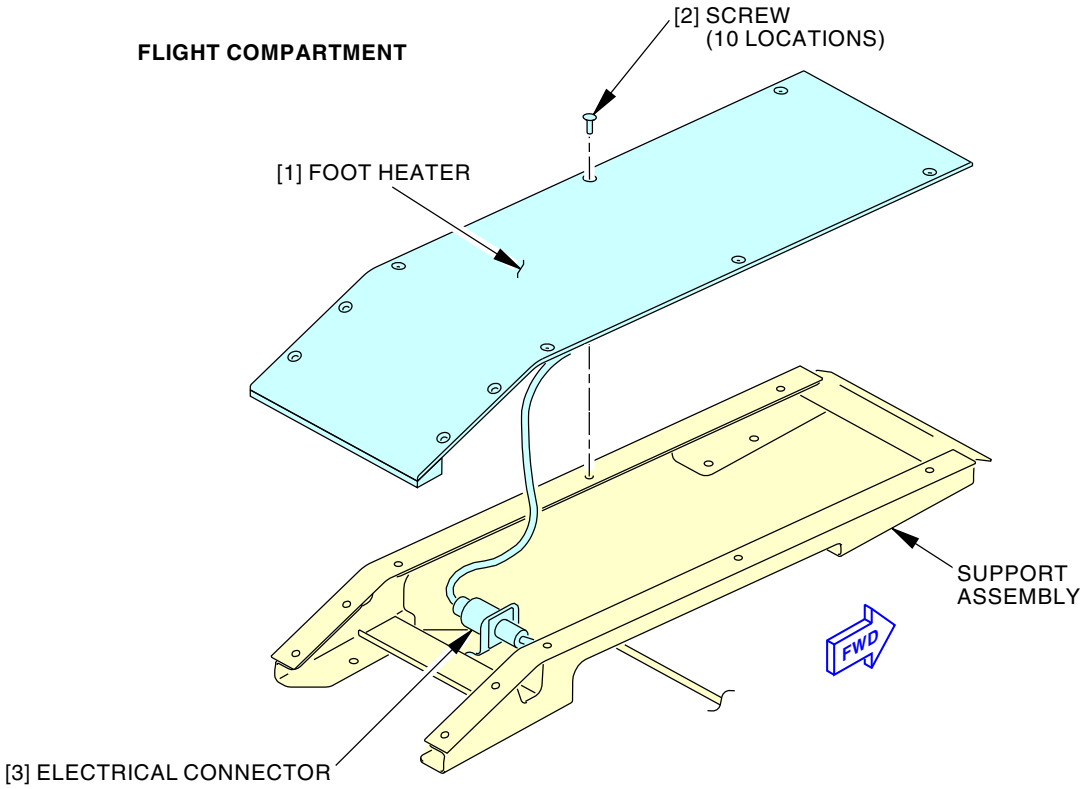


FLIGHT COMPARTMENT



CAPTAIN'S AND FIRST OFFICER'S FOOT HEATER

A

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Captain's and First Officer's Foot Heaters Installation
Figure 401/21-45-01-990-801

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TASK 21-45-01-400-801

3. Captain's and First Officer's Foot Heater Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Heater	21-45-01-02-005	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. Foot Heater Installation

SUBTASK 21-45-01-420-001

(1) Connect the electrical connector [3] to the foot heater [1].

SUBTASK 21-45-01-410-001

(2) Put the foot heater [1] on the support assembly.

SUBTASK 21-45-01-420-002

(3) Install the 10 screws [2] that holds the foot heater [1] to the support assembly.

SUBTASK 21-45-01-860-004

(4) For the Captain's foot heaters,

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
H	20	C21654	CAPT FT & SHLDR HTR CTRL

SUBTASK 21-45-01-860-005

(5) For the First Officer's foot heaters,

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

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F. Captain's and First Officer's Foot Heaters Installation Test

SUBTASK 21-45-01-860-006

(1) Supply electrical power (TASK 24-22-00-860-805).

SUBTASK 21-45-01-860-007

WARNING OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Put the air/ground system in the air mode (TASK 32-09-00-860-801).

SUBTASK 21-45-01-200-001

(3) Do the steps that follow to make sure the applicable foot heater operates:

NOTE: The foot heater will not operate if the temperature of the foot heater is more than 75°F (23.9°C). You have to cool down the foot heater to less than 75°F (23.9°C) for it to operate. You can use an ice pack as a cooling source to cool down the foot heater.

(a) Put the applicable HEATERS-FOOT switch in the LOW or the HIGH position.

NOTE: The Captain's HEATERS-FOOT switch is found on the left Forward Panel Brightness/Heater Control panel, P13. The First Officer's HEATERS-FOOT switch is found on the right Forward Panel Brightness/Heater Control panel, P14.

(b) Make sure the applicable foot heater becomes warm.

(c) Put the applicable HEATERS-FOOT switch to the OFF position.

(d) Make sure applicable foot heater becomes cool.

SUBTASK 21-45-01-860-008

(4) Put the air/ground system in the ground mode (TASK 32-09-00-860-801).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-45-01-860-009

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	18	C25323	CAPT SEAT

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT

SUBTASK 21-45-01-410-002

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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CAPTAIN'S AND FIRST OFFICER'S SHOULDER HEATERS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Captain's and first officer's shoulder heaters - deactivation.

(2) Captain's and first officer's shoulder heaters - activation.

TASK 21-45-02-040-801

2. Captain's and First Officer's Shoulder Heaters - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the captain's and first officer's shoulder heaters.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Tools/Equipment

Reference	Description
STD-85	Ammeter - Clamp-on
STD-858	Tag - DO NOT OPERATE

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. Procedure

SUBTASK 21-45-02-860-013

WARNING REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do these steps to make sure that conditioned air is not supplied to the flight compartment:

NOTE: This will make sure that there is no air flow in the ducts when you remove the shoulder heater.

(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

(b) Do not operate a ground conditioned air source which can supply conditioned air to the airplane through the ground conditioned air connector.

(c) Do these steps to make sure that the lower recirculation fans DO NOT come on.

1) Make sure that the UPPER and LOWER RECIRC FAN switch-lights on the Pilot's Overhead Panel, P5, are in the OFF position.

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a) Install DO NOT OPERATE tags, STD-858 on the switch-lights.

SUBTASK 21-45-02-010-003

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-02-020-006

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
D	18	C25323	CAPT SEAT
H	20	C21654	CAPT FT & SHLDR HTR CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

G. Captain's and First Officer's Shoulder Heaters - Tryout

NOTE: This tryout is to make sure that the captain's and first officer's shoulder heaters are in a zero energy state.

SUBTASK 21-45-02-860-014

(1) On the Left Side Panel, P13, turn the SHOULDER temperature knob to HIGH.

SUBTASK 21-45-02-860-015

(2) Do these steps to do a test of the captain's shoulder heater:

(a) Go to the captain's shoulder heater at (STA 212, LBL 58, WL 180).

(b) Use a clamp-on ammeter, STD-85, to clamp around a single wire in the wire bundle.

1) Make sure that the display shows 0 amps.

2) Repeat for each wire in the wire bundle.

SUBTASK 21-45-02-860-016

(3) On the Left Side Panel, P13, turn the SHOULDER temperature knob to OFF.

(a) Install a DO NOT OPERATE tag, STD-858 on the SHOULDER temperature knob.

SUBTASK 21-45-02-860-017

(4) On the Right Side Panel, P14, turn the SHOULDER temperature knob to HIGH.

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SUBTASK 21-45-02-860-018

(5) Do these steps to do a test of the first officer's shoulder heater:

(a) Go to the first officer's shoulder heater at (STA 212, LBL 58, WL 180).

(b) Use a clamp-on ammeter, STD-85, to clamp around a single wire in the wire bundle.

1) Make sure that the display shows 0 amps.

2) Repeat for each wire in the wire bundle.

SUBTASK 21-45-02-860-019

(6) On the Right Side Panel, P14, turn the SHOULDER temperature knob to OFF.

(a) Install a DO NOT OPERATE tag, STD-858 on the SHOULDER temperature knob.

——— END OF TASK ———

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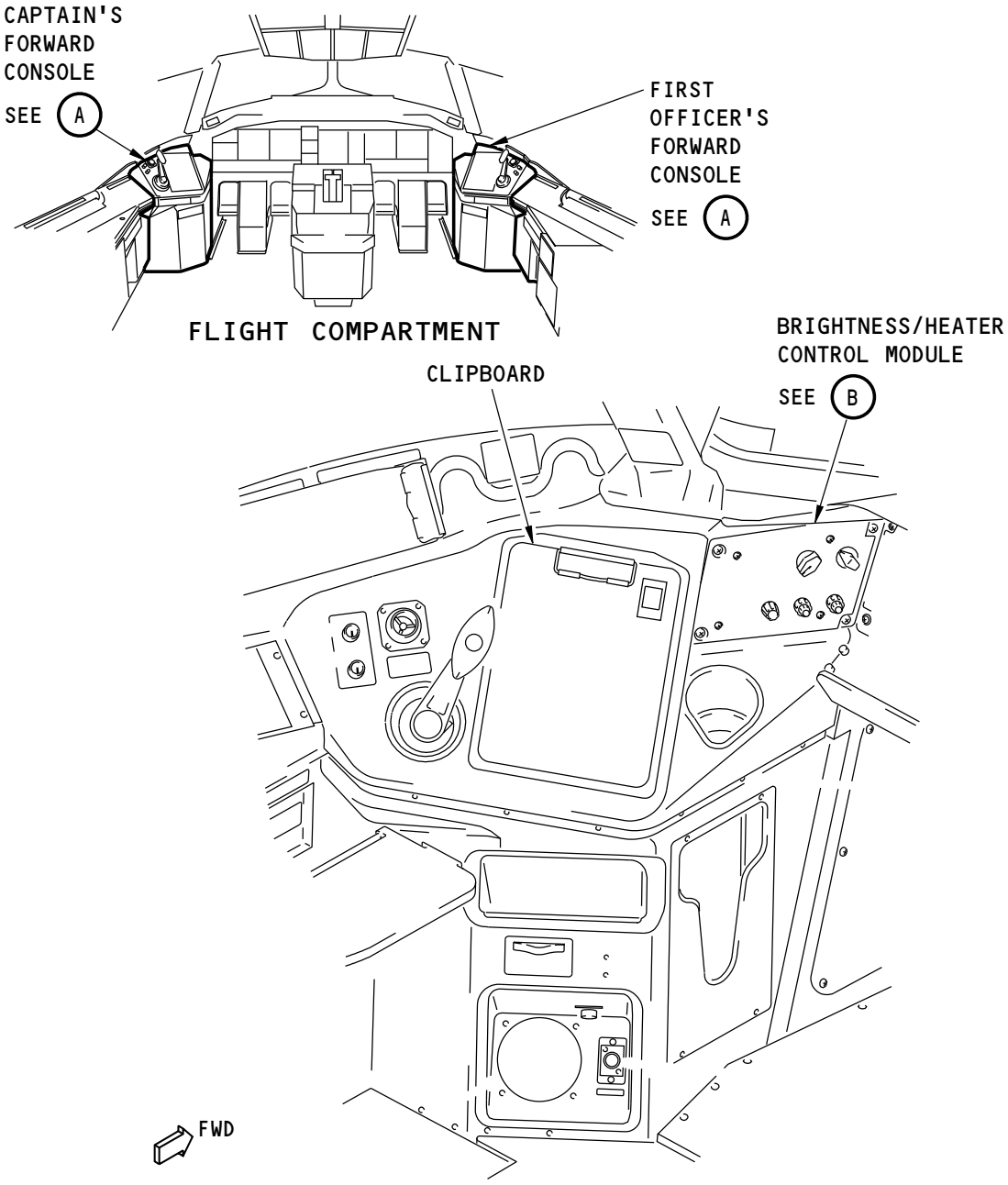

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Captain's and First Officer's Shoulder Heaters
Figure 201/21-45-02-990-802 (Sheet 1 of 5)

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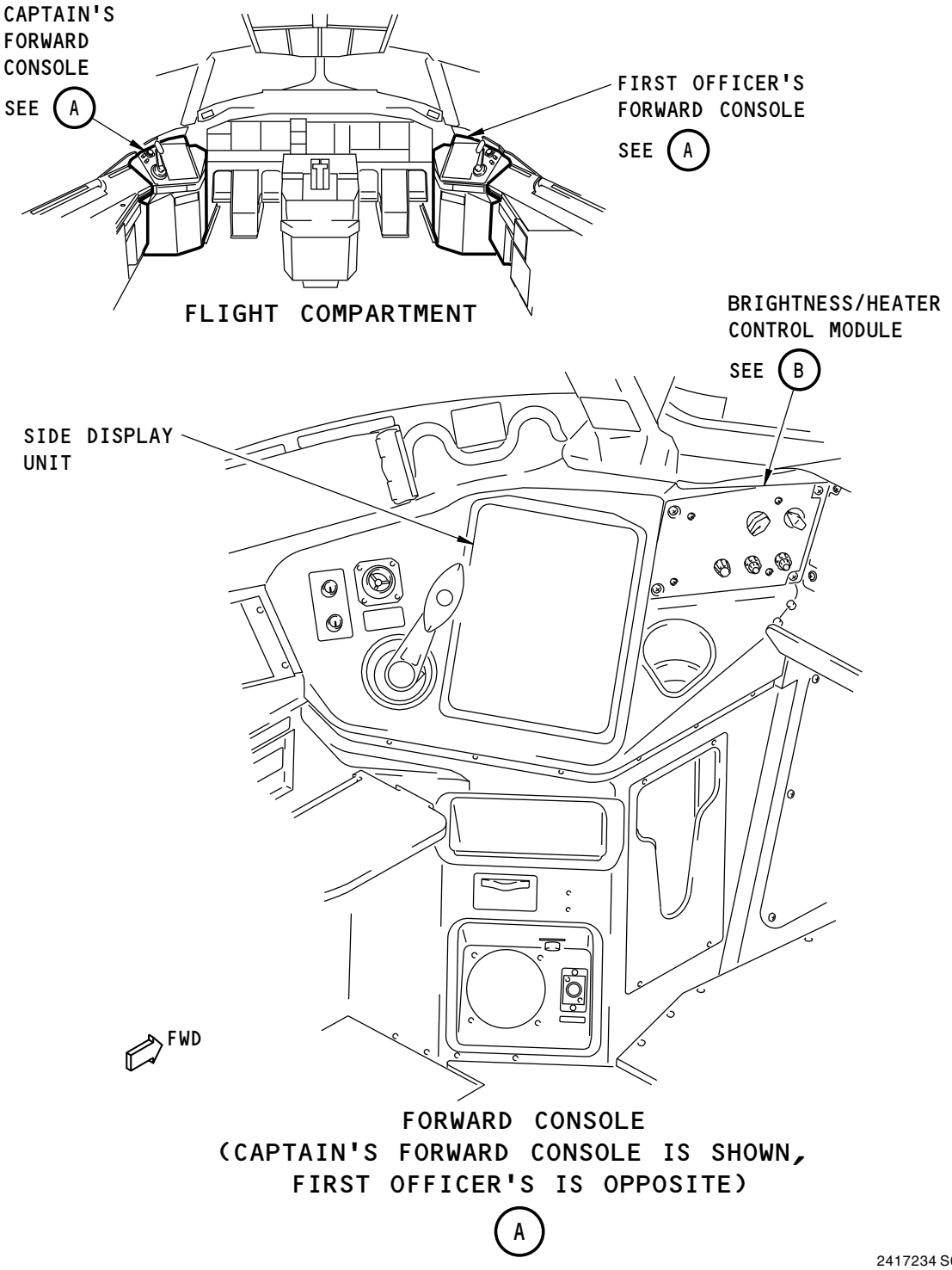

Captain's and First Officer's Shoulder Heaters
Figure 201/21-45-02-990-802 (Sheet 2 of 5)

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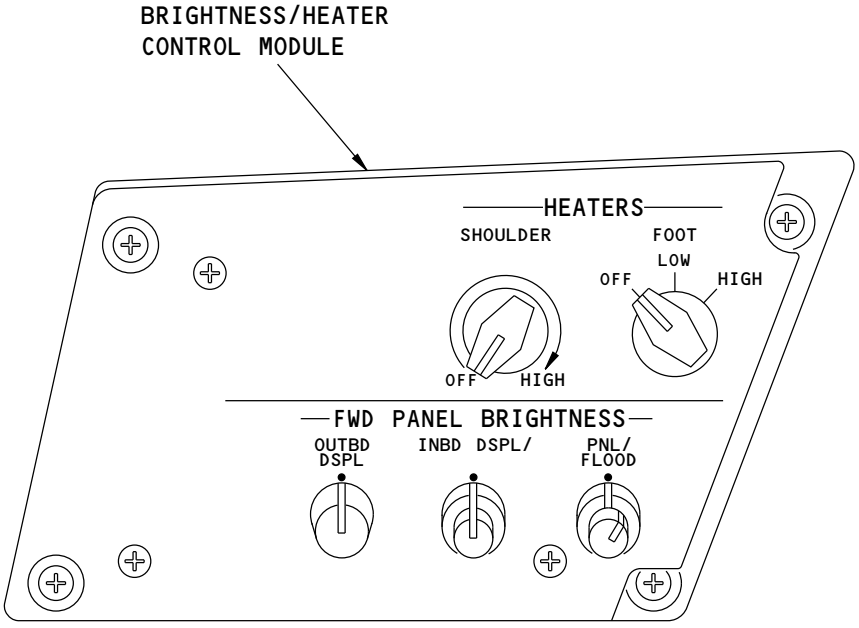

BRIGHTNESS/HEATER CONTROL MODULE
(CAPTAIN'S CONTROL MODULE SHOWN,
FIRST OFFICER'S IS OPPOSITE)

B

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Captain's and First Officer's Shoulder Heaters
Figure 201/21-45-02-990-802 (Sheet 3 of 5)

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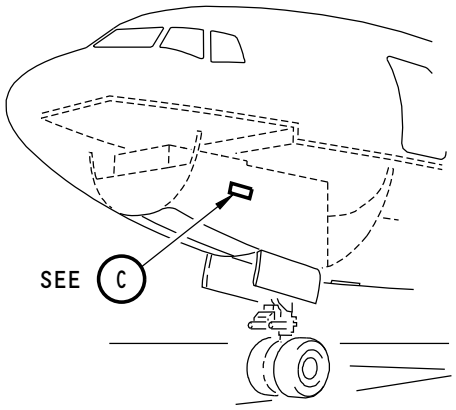
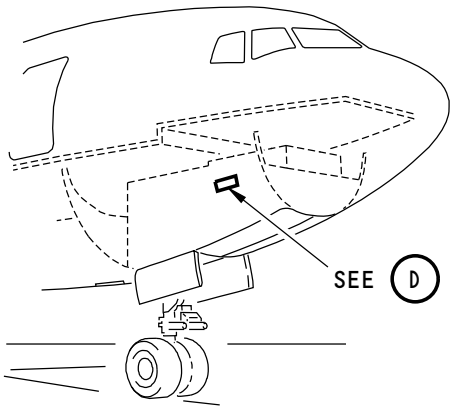
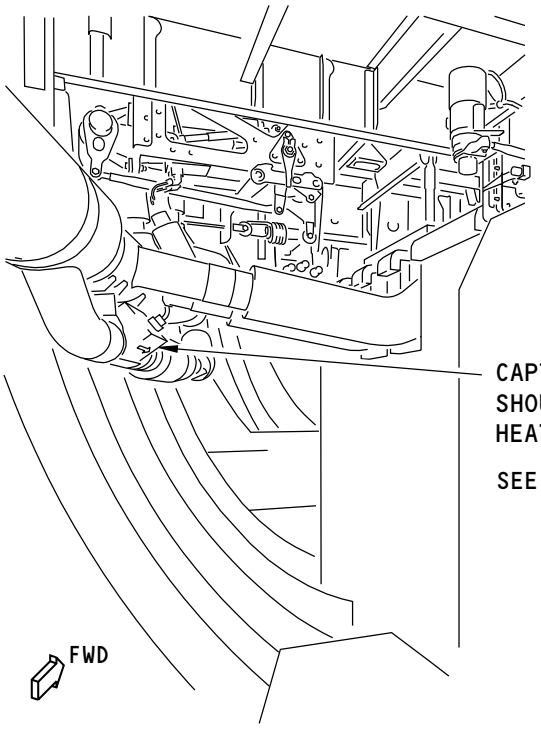
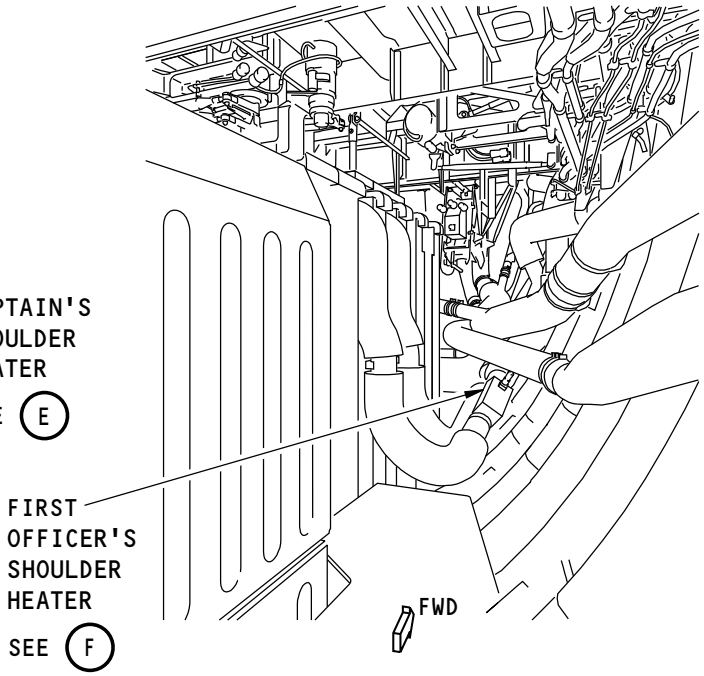






AREA OUTBOARD OF THE
NOSE LANDING GEAR WHEEL WELL
(LEFT SIDE)

C



AREA OUTBOARD OF THE
NOSE LANDING GEAR WHEEL WELL
(RIGHT SIDE)

D

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Captain's and First Officer's Shoulder Heaters
Figure 201/21-45-02-990-802 (Sheet 4 of 5)

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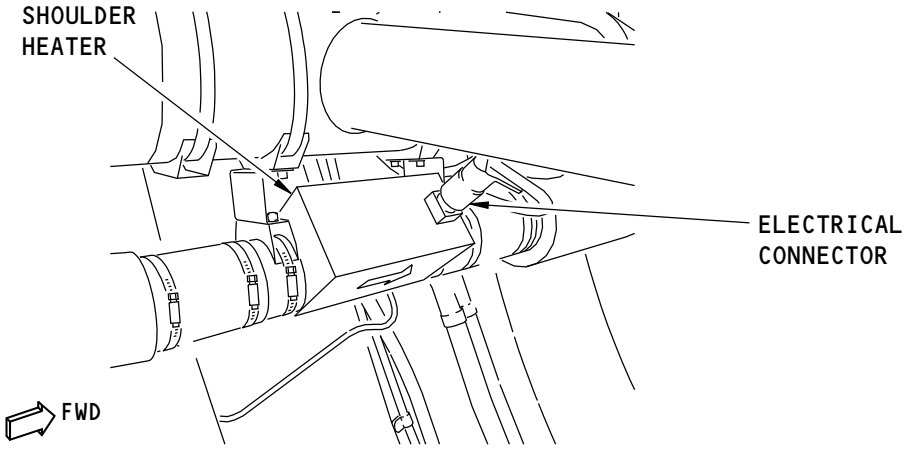
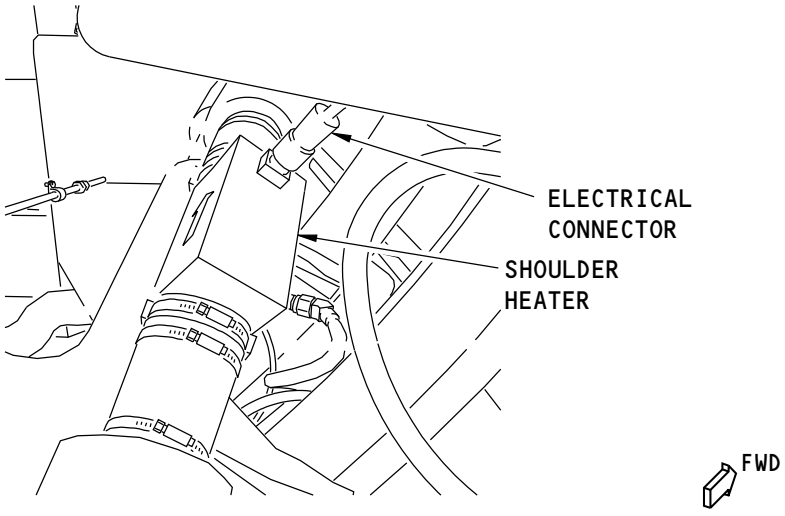


CAPTAIN'S SHOULDER HEATER

E



FIRST OFFICER'S SHOULDER HEATER

F

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Captain's and First Officer's Shoulder Heaters
Figure 201/21-45-02-990-802 (Sheet 5 of 5)

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TASK 21-45-02-440-801

3. Captain's and First Officer's Shoulder Heaters - Activation

(Figure 201)

A. General

(1) This task will activate the captain's and first officer's shoulder heaters.

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 21-45-02-420-004

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
D	18	C25323	CAPT SEAT
H	20	C21654	CAPT FT & SHLDR HTR CTRL

Right Power Management Panel, P210

Row	Col	Number	Name
B	13	C25324	F/O SEAT
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

SUBTASK 21-45-02-860-020

(2) On the Left Side Panel, P13, remove the DO NOT OPERATE tag, STD-858 on the SHOULDER temperature knob.

SUBTASK 21-45-02-860-021

(3) On the Right Side Panel, P14, Remove the DO NOT OPERATE tag, STD-858 on the SHOULDER temperature knob.

END OF TASK

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CAPTAIN'S AND FIRST OFFICER'S SHOULDER HEATERS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the Captain's and First Officer's shoulder heaters

(2) An installation of the Captain's and First Officer's shoulder heaters.

B. There is a shoulder heater for the Captain and for the First Officer installed below the flight compartment floor in the area outboard of the nose landing gear wheel well. The shoulder heaters heat the conditioned air that is supplied either by the left cooling pack, the lower recirculation fans, or a ground conditioned air source. The heated conditioned air is then blown out of the window outlets found in the flight compartment.

C. The shoulder heaters are controlled by the HEATERS-SHOULDER selectors found on the Forward Panel Brightness/Heater Control panels, P13 (Captain's) and P14 (First Officer's). The HEATERS-SHOULDER selectors can be moved between the OFF and HIGH positions. The shoulder heaters only operate when the airplane is in the air and when the HEATERS-SHOULDER selectors are not set to the OFF position.

TASK 21-45-02-000-801

2. Captain's and First Officer's Shoulder Heater Removal

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-45-02-860-001

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

SUBTASK 21-45-02-860-002

(2) Do the steps that follow to make sure that conditioned air is not supplied to the flight compartment:

NOTE: This will make sure that there is no air flow in the ducts when you remove the shoulder heater.

(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

(b) Do not operate a ground conditioned air source which can supply conditioned air to the airplane through the ground conditioned air connector.

(c) Do not operate the lower recirculation fans.

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1) Make sure that the LOWER RECIRC FAN switch-light on the Pilot's Overhead Panel, P5, is in the OFF position.

SUBTASK 21-45-02-010-001

(3) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-02-860-010

(4) For the Captain's shoulder heater [1];

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
H	20	C21654	CAPT FT & SHLDR HTR CTRL

SUBTASK 21-45-02-860-011

(5) For the First Officer's shoulder heater [1];

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

E. Shoulder Heater Removal

SUBTASK 21-45-02-020-001

(1) Disconnect the electrical connector from the shoulder heater [1].

SUBTASK 21-45-02-020-002

(2) Do the steps that follow to remove the bonding jumper [3].

(a) Remove the nut [4] and the washer [5].

(b) Remove the bonding jumper [3].

SUBTASK 21-45-02-020-003

(3) Remove the clamps [2] which hold the shoulder heater [1] to the bracket assemblies.

SUBTASK 21-45-02-020-004

(4) Remove the shoulder heater [1].

——— END OF TASK ———

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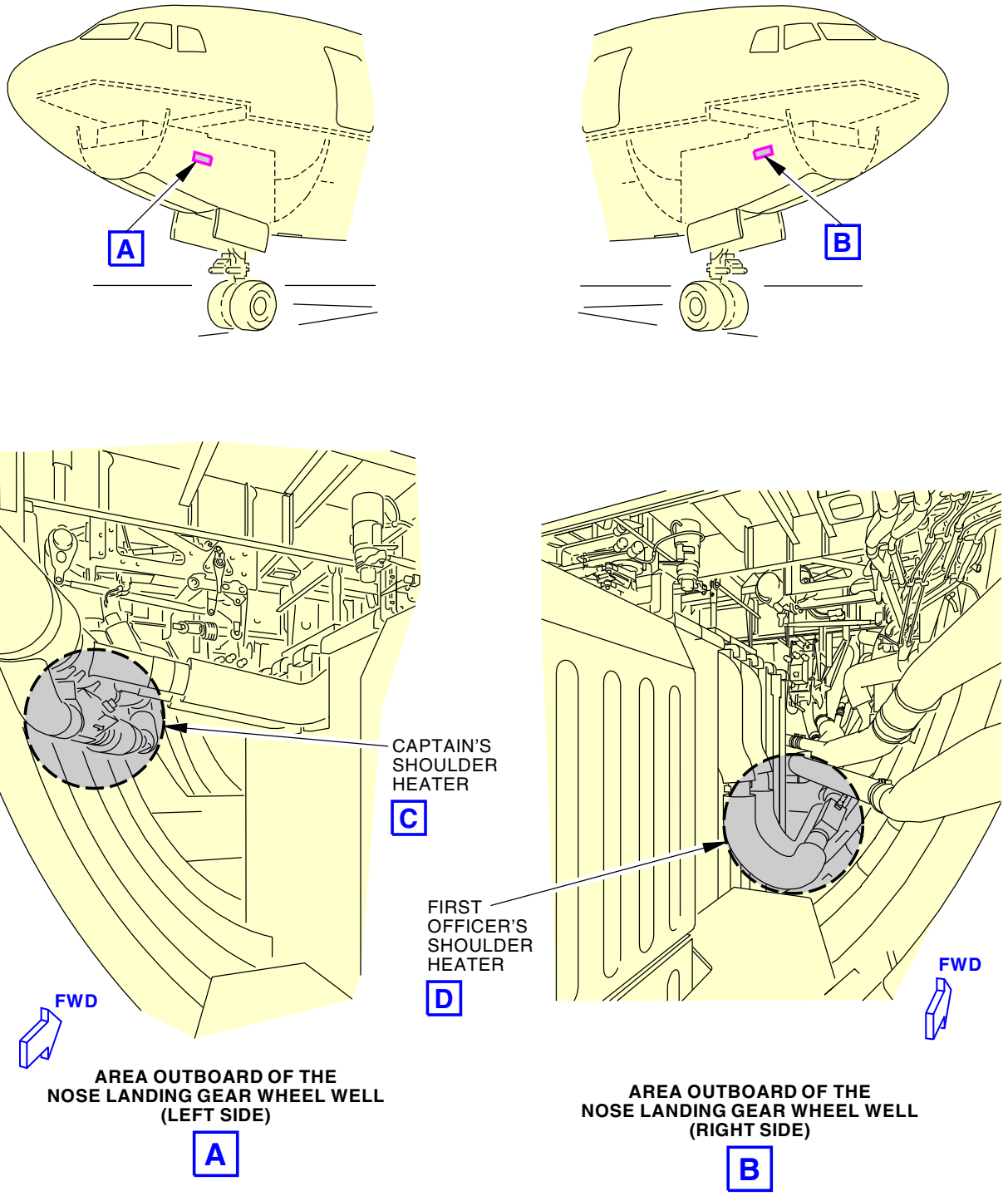

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Captain's and First Officer's Shoulder Heater Installation
Figure 401/21-45-02-990-801 (Sheet 1 of 2)

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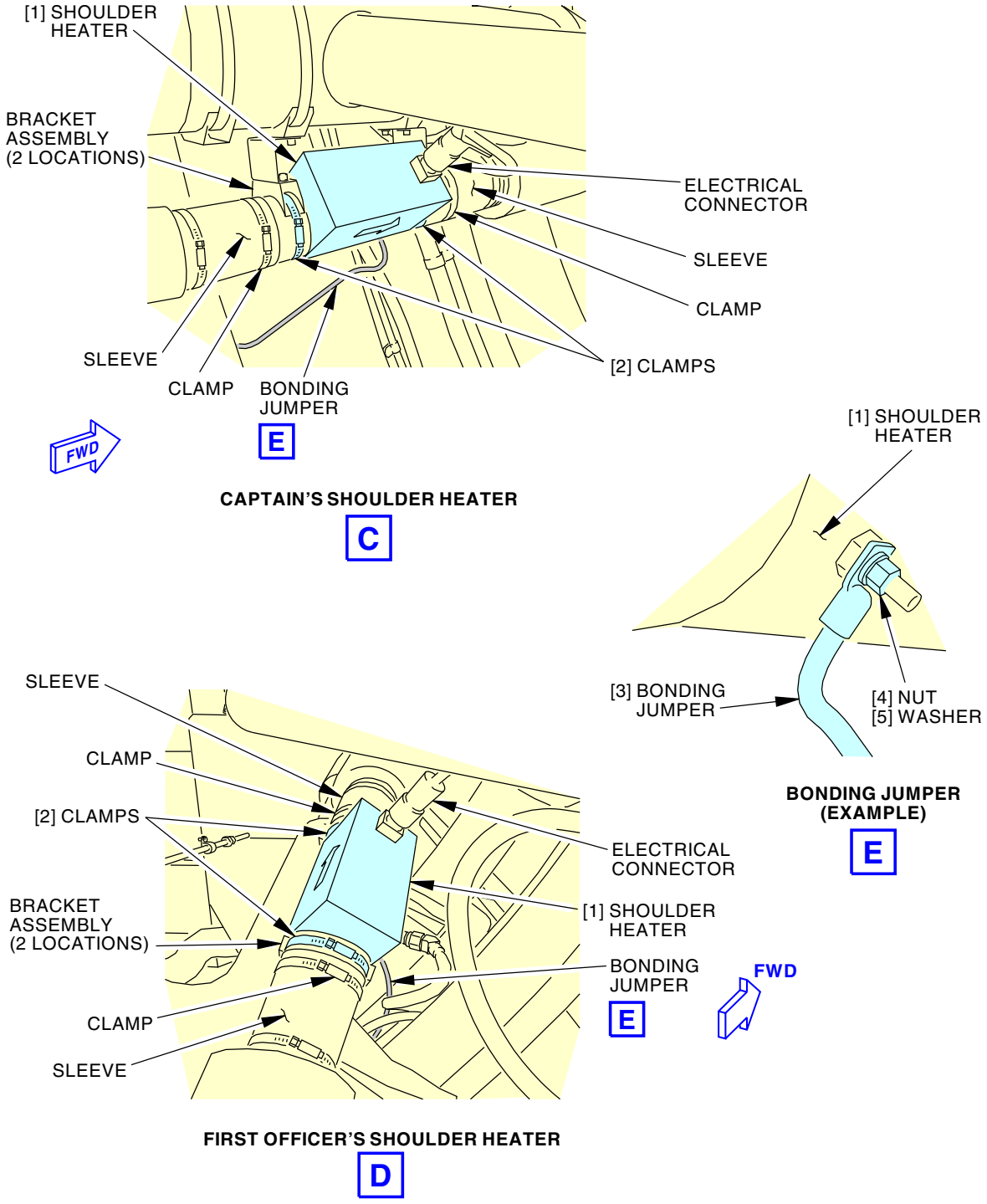

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Captain's and First Officer's Shoulder Heater Installation
Figure 401/21-45-02-990-801 (Sheet 2 of 2)

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TASK 21-45-02-400-801

3. Captain's and First Officer's Shoulder Heater Installation

(Figure 401)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Heater	21-45-02-01-090	ARO ALL
		21-45-02-05-050	ARO ALL

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Shoulder Heater Installation

SUBTASK 21-45-02-420-001

(1) Hold the shoulder heater [1] in its position against the bracket assemblies while you install the clamps [2].

(a) Make sure that the flow arrow on the shoulder heater [1] points in the forward direction.

(b) Tighten the clamps [2] to 13-18 pound-inches.

SUBTASK 21-45-02-420-002

(2) Move the sleeves and the clamps onto the shoulder heater [1].

(a) Tighten the clamps to 13-18 pound-inches.

SUBTASK 21-45-02-020-005

(3) Do the steps that follow to install the bonding jumper [3].

(a) Make sure the bonding jumper [3], washer [5] and nut [4] are clean.

(b) Put the bonding jumper [3] in the correct position.

(c) Install the washer [5] and nut [4].

SUBTASK 21-45-02-420-003

(4) Connect the electrical connector to the shoulder heater [1].

SUBTASK 21-45-02-860-003

(5) For the Captain's shoulder heater [1];

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Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
A	5	C21321	CAPT FT & SHLDR HTR
H	20	C21654	CAPT FT & SHLDR HTR CTRL

SUBTASK 21-45-02-860-012

(6) For the First Officer's shoulder heater [1];

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
B	27	C21320	F/O FT & SHLDR HTR
H	5	C21653	F/O FT & SHLDR HTR CTRL

F. Captain's and First Officer's Shoulder Heater Installation Test

SUBTASK 21-45-02-860-004

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

SUBTASK 21-45-02-860-005

(2) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-45-02-860-006

WARNING OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Put the air/ground system in the air mode. To do this, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 21-45-02-200-001

(4) Do the steps that follow to make sure the applicable shoulder heater operates:

(a) Move the applicable HEATERS-SHOULDER selector to the HIGH position.

NOTE: The Captain's HEATERS-SHOULDER selector is found on the left Forward Panel Brightness/Heater Control panel, P13. The First Officer's HEATERS-SHOULDER selector is found on the right Forward Panel Brightness/Heater Control panel, P14.

(b) Make sure the air that exits at the flight compartment window outlets is warm.

(c) Move the HEATERS-SHOULDER selector to the OFF position.

(d) Make sure the air that exits at the flight compartment window outlets is cool.

(e) Make sure there is no air leakage at the shoulder heater connections.

1) If there is air leakage, tighten the clamps at the shoulder heater connections until there is no air leakage.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-45-02-860-007

(1) Put the air/ground system in the ground mode. To do this, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

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SUBTASK 21-45-02-860-008

(2) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-45-02-010-002

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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DOOR AREA HEATERS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Door area heaters - deactivation.

(2) Door area heaters - activation.

TASK 21-45-03-040-801

2. Door Area Heaters - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the door area heaters.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Tools/Equipment

Reference	Description
STD-85	Ammeter - Clamp-on
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
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
233	Area Above Passenger Compartment Ceiling, Left - Section 43
253	Area Above Passenger Compartment Ceiling, Left - Section 46
254	Area Above Passenger Compartment Ceiling, Right - Section 46
263	Area Above Passenger Compartment Ceiling, Left - Section 47
264	Area Above Passenger Compartment Ceiling, Right - Section 47

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Procedure

SUBTASK 21-45-03-860-034

(1) Do the steps that follow to make sure that conditioned air is not supplied to the passenger compartment:

NOTE: This will make sure that there is no air flow in the ducts when you remove the door area heater.

(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

(b) Do not operate a ground conditioned air source which can supply conditioned air to the airplane through the ground conditioned air connector.

(c) Do not operate the upper and lower recirculation fans.

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1) Make sure that the UPPER and LOWER RECIRC FANS switches on the Pilot's Overhead Panel, P5, are in the OFF position.

2) Install DO NOT OPERATE tags, STD-858 to the UPPER and LOWER RECIRC FANS switches.

SUBTASK 21-45-03-010-007

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-03-020-012

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	7	C21444	L DR 1 HTR
B	7	C21446	L DR 2 HTR
C	7	C21448	L DR 3 HTR
C	8	C21450	L DR 4 HTR
C	9	C21454	L DR 5 HTR

Right Power Management Panel, P210

Row	Col	Number	Name
A	24	C21447	R DR 2 HTR
A	25	C21445	R DR 1 HTR
B	21	C21455	R DR 5 HTR
B	25	C21451	R DR 4 HEATER
D	28	C21449	R DR 3 HEATER

G. Door Area Heaters - Tryout

NOTE: This tryout is to make sure that the door area heaters are in a zero energy state.

SUBTASK 21-45-03-860-030

(1) Access applicable heater at the locations in the table below:

777-300ER

	Left Door	Right Door
Door 1	STA 425, WL 301, LBL 58	STA 425, WL 301, RBL 58
Door 2	STA 771, WL 301, LBL 59	STA 741, WL 310, RBL 57
Door 3	STA 1129, WL 320, LBL 35	STA 1128, WL 320, RBL 39

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777-300ER (Continued)

Door 4	STA 1434+153, WL 305, LBL 62	STA 1434+153, WL 305, RBL 62
Door 5	STA 1994, WL 306, LBL 69	STA 1994, WL 306, LBL 69

SUBTASK 21-45-03-860-031

NOTE: Door heater control is fully automatic. There are no manual controls to turn heaters ON/OFF.

(2) At all applicable heaters, use a clamp-on ammeter, STD-85, to clamp around a single wire in the wire bundle.

(a) Make sure that the display shows 0 amps.

(b) Repeat for each wire in the wire bundle.

——— END OF TASK ———

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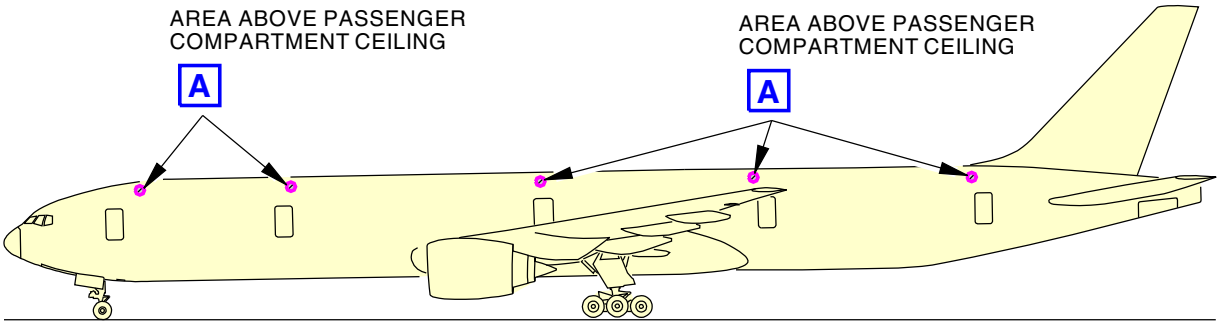
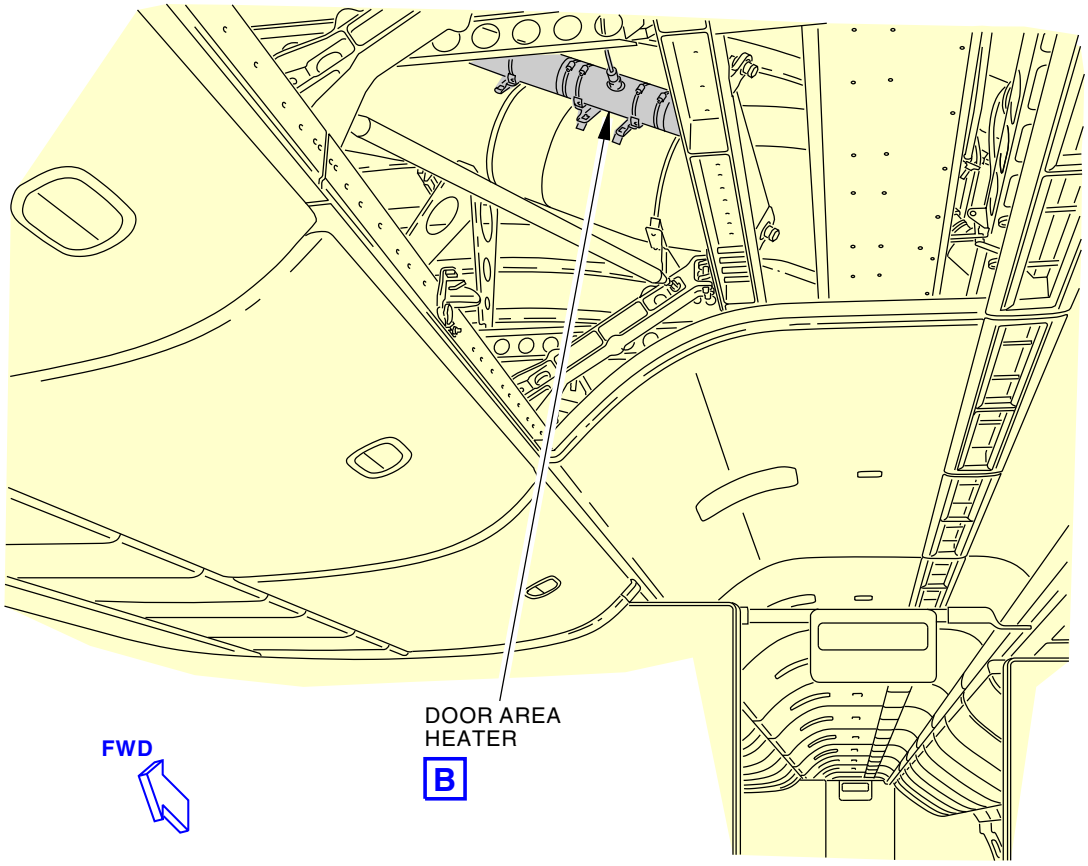


DOOR AREA HEATER LOCATIONS
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)



AREA ABOVE PASSENGER COMPARTMENT CEILING
(EXAMPLE)

A

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Door Area Heaters
Figure 201/21-45-03-990-804 (Sheet 1 of 2)

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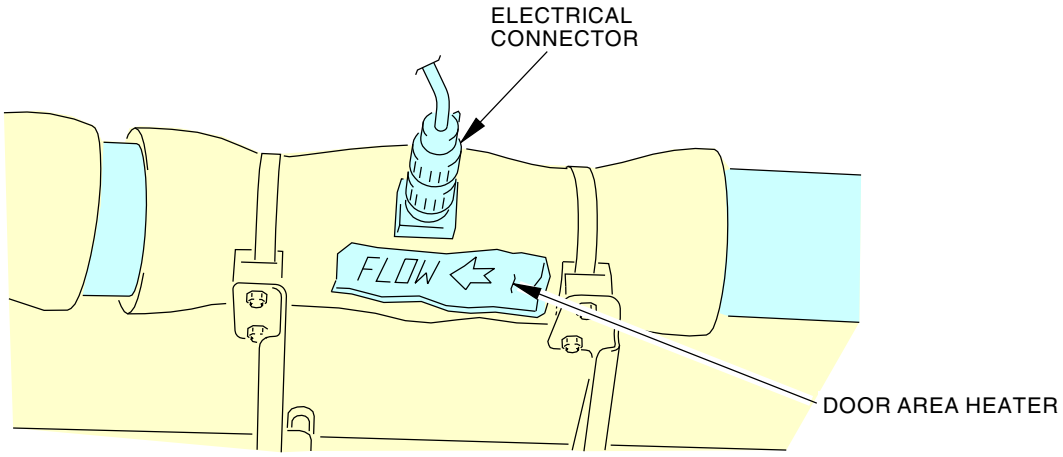

**DOOR AREA HEATER
(EXAMPLE)**

B

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**Door Area Heaters
Figure 201/21-45-03-990-804 (Sheet 2 of 2)**

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TASK 21-45-03-440-801

3. Door Area Heaters - Activation

(Figure 201)

A. General

(1) This task will activate the door area heaters.

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
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
233	Area Above Passenger Compartment Ceiling, Left - Section 43
253	Area Above Passenger Compartment Ceiling, Left - Section 46
254	Area Above Passenger Compartment Ceiling, Right - Section 46
263	Area Above Passenger Compartment Ceiling, Left - Section 47
264	Area Above Passenger Compartment Ceiling, Right - Section 47

D. Procedure

SUBTASK 21-45-03-420-016

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	7	C21444	L DR 1 HTR
B	7	C21446	L DR 2 HTR
C	7	C21448	L DR 3 HTR
C	8	C21450	L DR 4 HTR
C	9	C21454	L DR 5 HTR

Right Power Management Panel, P210

Row	Col	Number	Name
A	24	C21447	R DR 2 HTR
A	25	C21445	R DR 1 HTR
B	21	C21455	R DR 5 HTR

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(Continued)

Right Power Management Panel, P210

Row	Col	Number	Name
B	25	C21451	R DR 4 HEATER
D	28	C21449	R DR 3 HEATER

SUBTASK 21-45-03-860-036

(2) Remove the DO NOT OPERATE tags, STD-858 from the UPPER and LOWER RECIRC FANS switches on the Pilot's Overhead Panel, P5.

——— END OF TASK ———

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DOOR AREA HEATERS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the door area heaters

(2) An installation of the door area heaters.

B. The door area heaters will operate when these conditions are met:

(1) Airplane is in the air

(2) Total Air Temperature (TAT) is less than 35°F (1.7°C)

(3) Left and right cooling packs are operating at flow schedule 1 or 2, with two of the four recirculation fans operational

(4) One cooling pack is operating at flow schedule 1 or 2, with all four recirculation fans operational.

TASK 21-45-03-000-801

2. Door Area Heater Removal

(Figure 401 or Figure 402)

A. References

Reference	Title
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, 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
243	Area Above Passenger Compartment Ceiling, Left - Section 44
253	Area Above Passenger Compartment Ceiling, Left - Section 46
254	Area Above Passenger Compartment Ceiling, Right - Section 46
263	Area Above Passenger Compartment Ceiling, Left - Section 47
264	Area Above Passenger Compartment Ceiling, Right - Section 47

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-45-03-860-001

(1) Do the steps that follow to make sure that conditioned air is not supplied to the passenger compartment:

NOTE: This will make sure that there is no air flow in the ducts when you remove the door area heater.

(a) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

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(b) Do not operate a ground conditioned air source which can supply conditioned air to the airplane through the ground conditioned air connector.

(c) Do not operate the upper and lower recirculation fans.

1) Make sure that the UPPER and LOWER RECIRC FANS switches on the Pilot's Overhead Panel, P5, are in the OFF position.

SUBTASK 21-45-03-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-03-860-002

(3) For the door area heater at the left door No. 1,

Open this circuit breaker and install safety tag:

Left Power Management Panel, P110

Row	Col	Number	Name
A	7	C21444	L DR 1 HTR

SUBTASK 21-45-03-860-003

(4) For the door area heater at the right door No. 1,

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
A	25	C21445	R DR 1 HTR

SUBTASK 21-45-03-860-004

(5) For the door area heater at the left door No. 2,

Open this circuit breaker and install safety tag:

Left Power Management Panel, P110

Row	Col	Number	Name
B	7	C21446	L DR 2 HTR

SUBTASK 21-45-03-860-005

(6) For the door area heater at the right door No. 2,

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
A	24	C21447	R DR 2 HTR

SUBTASK 21-45-03-860-006

(7) For the door area heater at the left door No. 3,

Open this circuit breaker and install safety tag:

Left Power Management Panel, P110

Row	Col	Number	Name
C	7	C21448	L DR 3 HTR

SUBTASK 21-45-03-860-007

(8) For the door area heater at the right door No. 3,

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Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
D	28	C21449	R DR 3 HEATER

SUBTASK 21-45-03-860-008

(9) For the door area heater at the left door No. 4,

Open this circuit breaker and install safety tag:

Left Power Management Panel, P110

Row	Col	Number	Name
C	8	C21450	L DR 4 HTR

SUBTASK 21-45-03-860-009

(10) For the door area heater at the right door No. 4,

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
B	25	C21451	R DR 4 HEATER

SUBTASK 21-45-03-860-020

(11) For the door area heater at the left door No. 5,

Open this circuit breaker and install safety tag:

Left Power Management Panel, P110

Row	Col	Number	Name
C	9	C21454	L DR 5 HTR

SUBTASK 21-45-03-860-021

(12) For the door area heater at the right door No. 5,

Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

Row	Col	Number	Name
B	21	C21455	R DR 5 HTR

SUBTASK 21-45-03-010-004

(13) Remove the inboard main ceiling panel adjacent to the applicable entry door to get access to the door area heater (TASK 25-21-06-000-801).

NOTE: You can find the approximate location of the door area heaters on the Figure 401 or Figure 402.

E. Door Area Heater Removal

SUBTASK 21-45-03-020-001

(1) Disconnect the electrical connector [3] from the door area heater [4].

SUBTASK 21-45-03-020-002

(2) Remove the two clamps [2] around the insulation [1].

SUBTASK 21-45-03-020-006

(3) Remove and discard the tape from the insulation [1].

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SUBTASK 21-45-03-020-003

(4) Remove the insulation [1] from the door area heater [4].

SUBTASK 21-45-03-020-004

(5) Loosen the two clamps [5] and move them away from the door area heater [4] and onto the flex hoses.

SUBTASK 21-45-03-020-005

(6) Remove the door area heater [4] from the flex hoses.

END OF TASK

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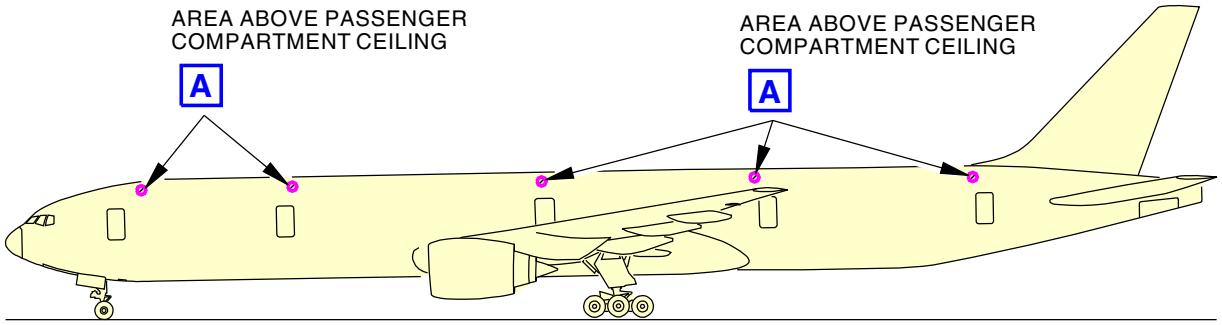
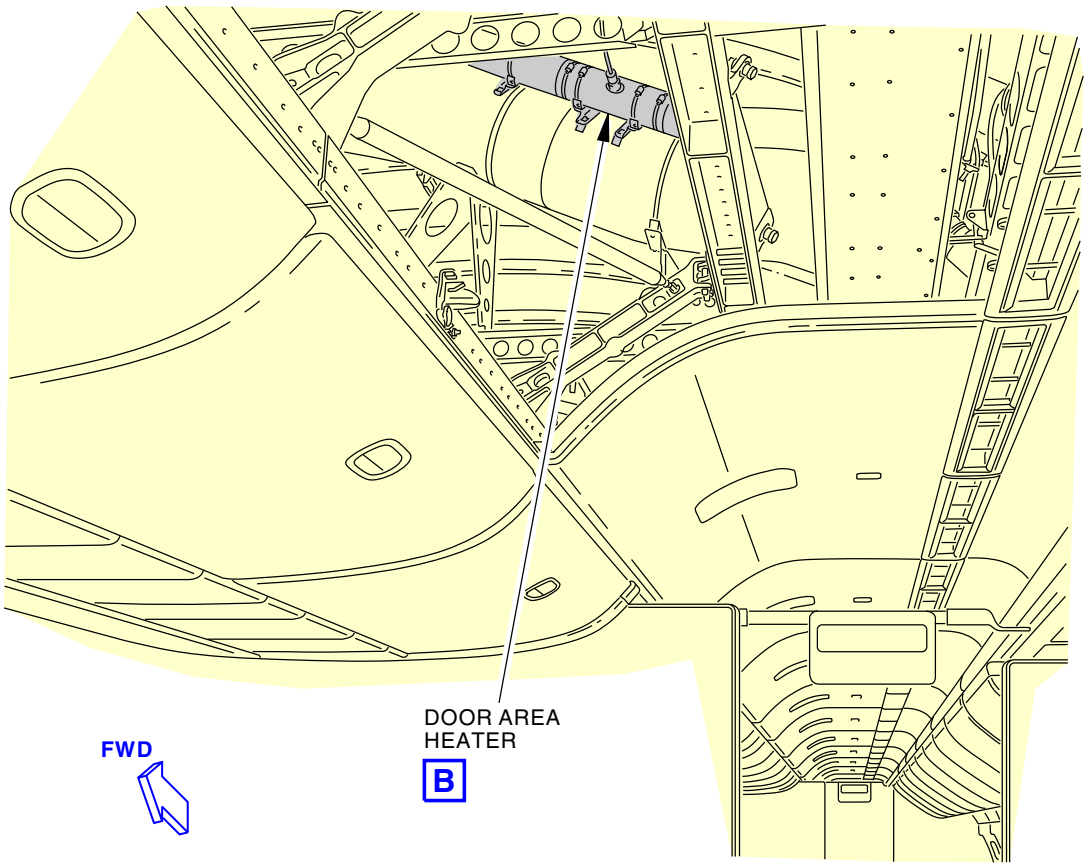


DOOR AREA HEATER LOCATIONS
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)



AREA ABOVE PASSENGER COMPARTMENT CEILING
(EXAMPLE)
A

N64797 S0006403861_V2

Door Area Heaters Installation
Figure 401/21-45-03-990-801 (Sheet 1 of 2)

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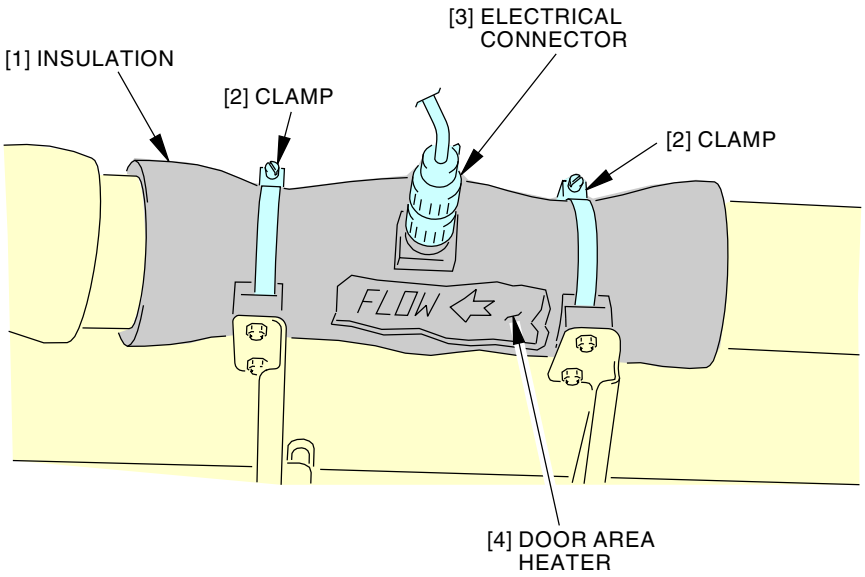
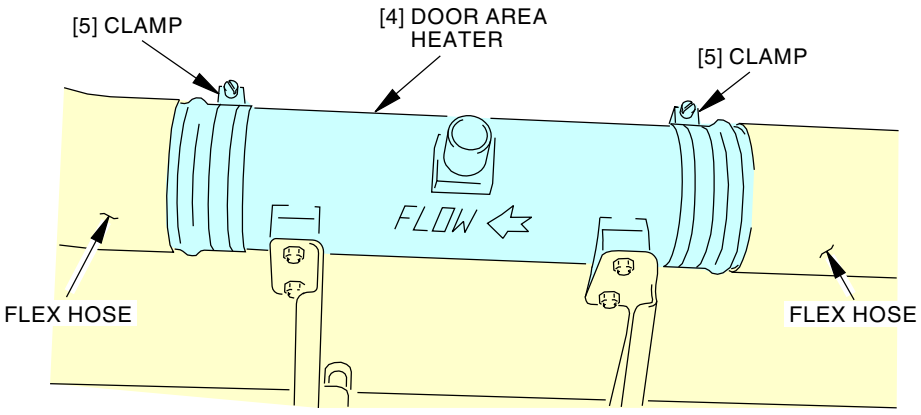


C

DOOR AREA HEATER

B



DOOR AREA HEATER
(WITHOUT INSULATION SHOWN)

C

N64825 S0006403862_V3

Door Area Heaters Installation
Figure 401/21-45-03-990-801 (Sheet 2 of 2)

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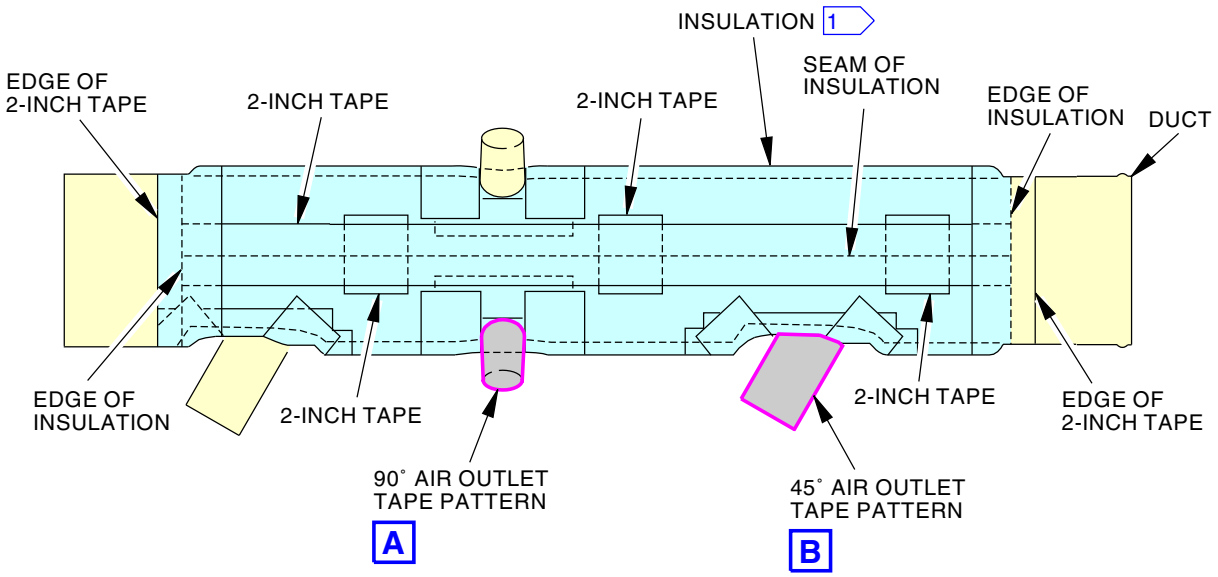
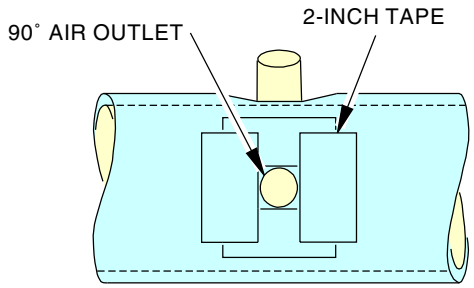
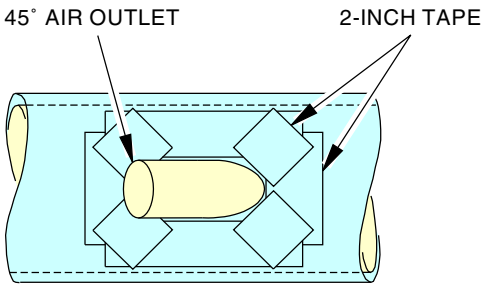


FOAM WRAPPED INSULATED DUCT (EXAMPLE)



90˚ AIR OUTLET TAPE PATTERN

A



45˚ AIR OUTLET TAPE PATTERN

B

1 FOR INSULATION DAMAGE APPLY A MINIMUM 2-INCH PATCH OF PRESSURE SENSITIVE ADHESIVE TAPE TO THE DAMAGED AREA. MAKE SURE YOU HAVE FULL COVERAGE OF THE DAMAGED OR TORN AREA WITH NO LESS THAN 1/2-INCH OVERLAP.

2583812 S0000623096_V1

Air Conditioning System Insulated Duct Repair (Foam Wrapped)
Figure 402/21-45-03-990-805 (Sheet 1 of 2)

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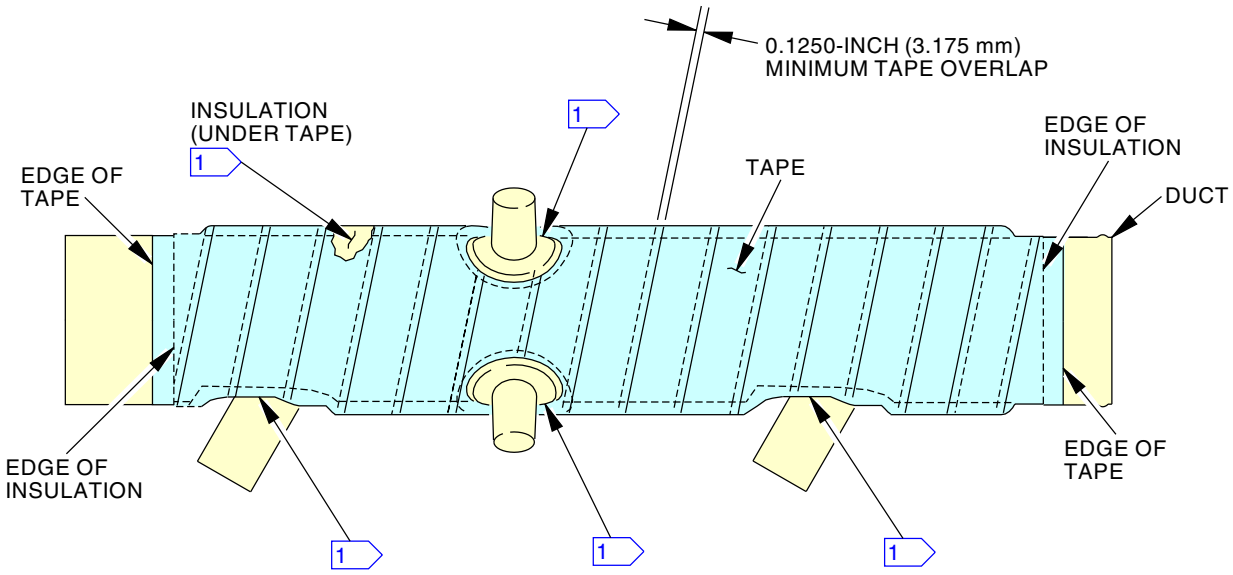

**REWORK POLYIMIDE FOAM INSULATED DUCT
(EXAMPLE)**

NOTE:

- 2-INCH WIDE, 3-INCH WIDE OR 12-INCH WIDE TAPE (BMS 5-157 TYPE I, CLASS 1, GRADE B) MUST COVER 100% OF THE BROWN HYPALON INSULATION SURFACE.
- TAPE MAY BE INSTALLED SPIRAL WRAPPED AS SHOWN OR LENGTHWISE DOWN THE DUCT DEPENDING ON THE INSTALLERS PREFERENCE.
- SHOWN PATTERN IS FOR REFERENCE ONLY. TAPE MAY BE APPLIED IN ANY CONFIGURATION AS LONG AS COMPLETE BMS 8-300 COVERAGE IS OBTAINED.
- WIDER TAPE MAY BE CUT INTO NARROWER STRIPS OR ANY UNIQUE SHAPE IF DESIRED TO ASSIST IN OBTAINING COMPLETE BMS 8-300 COVERAGE.
- MAINTAIN MINIMUM 0.1250-INCH (3.175 mm) OVERLAP OF TAPE.
- AVOID COMPRESSION OF BMS 8-300 INSULATION.
- WRINKLES IN TAPE ARE ACCEPTABLE IF PINCHED TOGETHER AND CONTAIN NO VOIDS.
- COVERING OF EXISTING BMS 5-157 TAPE IS NOT REQUIRED.
- TAPE MAY BE APPLIED TO THE BLANKET PRIOR TO THE BLANKET INSTALLATION ON THE DUCT IF DESIRED BY THE INSTALLER.
- FOR BLANKETS INSTALLED ON DUCT JOINTS, TAPE MAY BE APPLIED TO THE BLANKET BEFORE OR AFTER THE BLANKET IS INSTALLED OVER THE DUCT JOINT. TAPE ORIENTATION IS OPTIONAL.

1 COVER ALL EXPOSED INSULATION (BMS 8-300 TYPE II, GRADE 5) WITH TAPE (BMS 5-157 TYPE I, CLASS 1, GRADE B). CUT TAPE AS REQUIRED TO FIT AROUND AIR OUTLETS, BRANCHES AND INSULATION VENT HOLES.

2583814 S0000623097_V1

**Air Conditioning System Insulated Duct Repair (Foam Wrapped)
Figure 402/21-45-03-990-805 (Sheet 2 of 2)**

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TASK 21-45-03-400-801

3. Door Area Heater Installation

(Figure 401 or Figure 402)

A. General

(1) Some of the ducts in the air distribution system are wrapped with insulation material. CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

(a) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, BMS8-385 Type 4, is the preferred foam insulation material that meets the flame propagation requirement.

(c) The foam insulation, G51169 and foam insulation, G51170 are new, qualified materials optional to foam insulation, G50449.

(d) Do not use polyurethane foam, G50025 for repairs due to the degradation in flammability properties over time.

(e) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

(f) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327, tape, G51202, or tape, G50789 to meet the flammability/flame propagation requirement. Wrap the tape, G50327, tape, G51202, or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

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

C. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50025	Foam - Flexible Urethane	BMS8-39 Type 1 Grade 2.5 Class A-65
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK
G51169	Foam - Flexible Melamine,	BMS8-385 Type 6
G51170	Foam - Flexible Polyimide	BMS8-300 Type VIII

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(Continued)

Reference	Description	Specification
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Door area heater	21-45-03-11-390	ARO ALL
		21-45-03-13-365	ARO ALL
		21-45-03-14-380	ARO ALL
		21-45-03-16-320	ARO ALL
		21-45-03-17-260	ARO ALL

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
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
243	Area Above Passenger Compartment Ceiling, Left - Section 44
253	Area Above Passenger Compartment Ceiling, Left - Section 46
254	Area Above Passenger Compartment Ceiling, Right - Section 46
263	Area Above Passenger Compartment Ceiling, Left - Section 47
264	Area Above Passenger Compartment Ceiling, Right - Section 47

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

G. Door Area Heater Installation

SUBTASK 21-45-03-420-001

(1) Install the door area heater [4] into the flex hoses.

(a) Make sure that the flow arrow points in the same direction as the flow arrow on the support structure.

SUBTASK 21-45-03-420-002

(2) Move the two clamps [5] into position and tighten them from 15 in-lb (1.7 N·m) - 18 in-lb (2.03 N·m).

SUBTASK 21-45-03-420-003

(3) Install the insulation [1] onto the door area heater [4].

(a) If the insulation is replaced, then make sure the replacement insulation material meets the flame propagation requirement of CFR 14 Part 25.856.

NOTE: The existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

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(b) Melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

SUBTASK 21-45-03-420-009

(4) Install new tape, G50327, tape, G51202, or tape, G50789 on the seam of the insulation [1].

SUBTASK 21-45-03-420-010

(5) If the insulation material is polyimide foam insulation, G02470, then do the following steps to completely cover all exposed surfaces of the foam insulation, G02470 with the tape, G50327, tape, G51202, or tape, G50789 (Figure 401 or Figure 402).

NOTE: The polyimide foam insulation, G02470 must be covered with the tape, G50789 to meet the CFR 14 Part 25.856 flame propagation requirement.

(a) Cut tape, G50327, tape, G51202, or tape, G50789 as required to fit around the air outlets, branches and insulation vent holes.

(b) Apply the tape, G50327, tape, G51202, or tape, G50789 in any configuration as long as complete coverage of the foam insulation, G02470 insulation is obtained and there is a ⅛ in. (3.2 mm) overlap.

NOTE: The tape may be installed spiral wrapped or lengthwise down the duct as desired.

(c) Wrinkles in tape, G50327, tape, G51202, or tape, G50789 are acceptable if pinched together without voids and the foam insulation, G02470 insulation is not compressed.

(d) The tape, G50327, tape, G51202, or tape, G50789 can be applied to the outer surface of the foam insulation, G02470 insulation prior to installation on the duct if desired.

SUBTASK 21-45-03-420-005

(6) Install the two clamps [2] around the insulation [1].

SUBTASK 21-45-03-420-006

(7) Connect the electrical connector [3] to the door area heater [4].

SUBTASK 21-45-03-860-010

(8) For the door area heater at the left door No. 1,

Remove the safety tag and close this circuit breaker:

Left Power Management Panel, P110

Row	Col	Number	Name
A	7	C21444	L DR 1 HTR

SUBTASK 21-45-03-860-011

(9) For the door area heater at the right door No. 1,

Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
A	25	C21445	R DR 1 HTR

SUBTASK 21-45-03-860-012

(10) For the door area heater at the left door No. 2,

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Remove the safety tag and close this circuit breaker:

Left Power Management Panel, P110

Row	Col	Number	Name
B	7	C21446	L DR 2 HTR

SUBTASK 21-45-03-860-013

(11) For the door area heater at the right door No. 2,

Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
A	24	C21447	R DR 2 HTR

SUBTASK 21-45-03-860-014

(12) For the door area heater at the left door No. 3,

Remove the safety tag and close this circuit breaker:

Left Power Management Panel, P110

Row	Col	Number	Name
C	7	C21448	L DR 3 HTR

SUBTASK 21-45-03-860-015

(13) For the door area heater at the right door No. 3,

Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
D	28	C21449	R DR 3 HEATER

SUBTASK 21-45-03-860-016

(14) For the door area heater at the left door No. 4,

Remove the safety tag and close this circuit breaker:

Left Power Management Panel, P110

Row	Col	Number	Name
C	8	C21450	L DR 4 HTR

SUBTASK 21-45-03-860-017

(15) For the door area heater at the right door No. 4,

Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
B	25	C21451	R DR 4 HEATER

SUBTASK 21-45-03-860-022

(16) For the door area heater at the left door No. 5,

Remove the safety tag and close this circuit breaker:

Left Power Management Panel, P110

Row	Col	Number	Name
C	9	C21454	L DR 5 HTR

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SUBTASK 21-45-03-860-023

(17) For the door area heater at the right door No. 5,

Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

Row	Col	Number	Name
B	21	C21455	R DR 5 HTR

H. Door Area Heater Installation Test

SUBTASK 21-45-03-860-018

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

SUBTASK 21-45-03-860-024

(2) Put the UPPER and LOWER RECIRC FANS switches in the ON position.

NOTE: The UPPER and LOWER RECIRC FANS switches are on the pilot's overhead panel, P5.

SUBTASK 21-45-03-740-001

(3) Use a Maintenance Access Terminal (MAT) to do an LRU Replacement test of the Door Area Heater (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Environmental Control System
5) LRU REPLACEMENT TEST
6) Door Area Heater
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.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-45-03-410-001

(1) To install the inboard main ceiling panel, do this task: Main Ceiling Panel - Installation, TASK 25-21-06-400-801.

SUBTASK 21-45-03-010-003

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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GALLEY HEATERS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Galley heaters - deactivation.

(2) Galley heaters - activation.

TASK 21-45-04-040-801

2. Galley Heaters - Deactivation

(Figure 201, Figure 202, Figure 203)

A. General

(1) This task will deactivate the galley heaters.

B. Tools/Equipment

Reference	Description
STD-85	Ammeter - Clamp-on

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
224	Area Above Passenger Compartment Ceiling, Right - Section 41
254	Area Above Passenger Compartment Ceiling, Right - Section 46
263	Area Above Passenger Compartment Ceiling, Left - Section 47
264	Area Above Passenger Compartment Ceiling, Right - Section 47

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-45-04-010-015

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-04-860-024

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(2) Do this step to deactivate the forward galley heater:

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	2	C21303	FWD GLY HTR
H	22	C21649	FWD GLY HTR CTRL

SUBTASK 21-45-04-860-025

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(3) Do this step to deactivate the mid galley heater:

(a) These circuit breakers are inoperative and should remain open:

Left Power Management Panel, P110

Row	Col	Number	Name
D	5	C21328	MID GLY HTR (ZONE E) (INOP)
J	19	C21696	MID GLY HTR (ZONE E) CTRL (INOP)

SUBTASK 21-45-04-020-029

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(4) Do this step to deactivate the aft galley heater:

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	2	C21304	AFT GLY HTR 1
C	2	C21305	AFT GLY HTR 2
H	21	C21650	AFT GLY HTR 1 & 2 CTRL

F. Galley Heaters - Tryout

NOTE: This tryout is to make sure that the galley heaters are in a zero energy state.

SUBTASK 21-45-04-860-014

(1) Access applicable galley heater and temperature selector at the locations in the table:

	Heater Location	Temperature Selector Location
FWD Galley	STA 340, WL 291, RBL 64	STA 276, WL 301, RBL 3

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(Continued)

	Heater Location	Temperature Selector Location
MID Galley	STA 1434+155, WL 311, LBL 60	DOOR 4 Galley
AFT Galley 1	STA 2117, WL 294, RBL 31	STA 2108, WL 320, LBL 38
AFT Galley 2	STA 2117, WL 294, LBL 31	STA 2108, WL 320, LBL 38

SUBTASK 21-45-04-860-015

(2) At the applicable temperature selector, put the selector to HIGH.

SUBTASK 21-45-04-860-016

(3) At all applicable heaters, use a clamp-on ammeter, STD-85, to clamp around a single wire in the wire bundle.

(a) Make sure that the display shows 0 amps.

(b) Repeat for each wire in the wire bundle.

SUBTASK 21-45-04-860-017

(4) At the applicable temperature selector, put the selector to OFF.

——— END OF TASK ———

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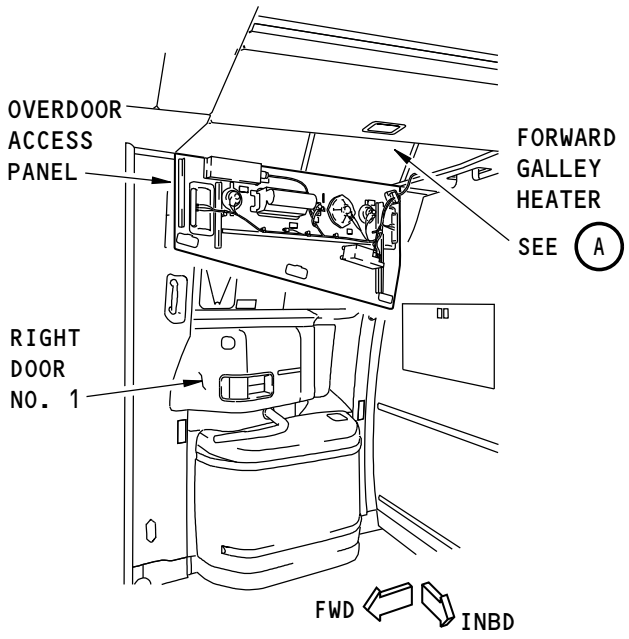
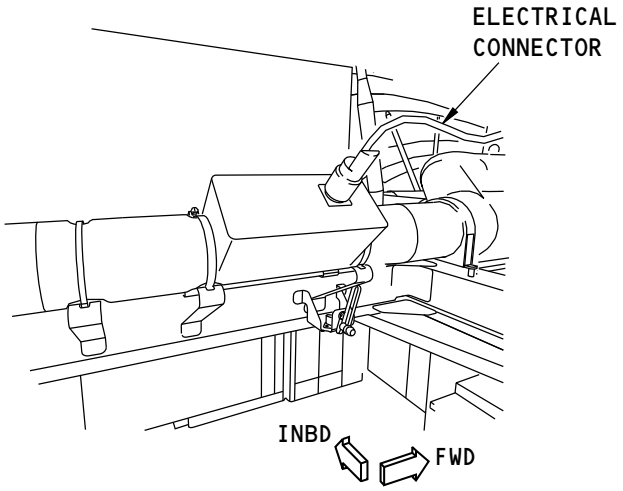


FORWARD GALLEY AREA



FORWARD GALLEY HEATER

A

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FWD Galley Heater
Figure 201/21-45-04-990-805

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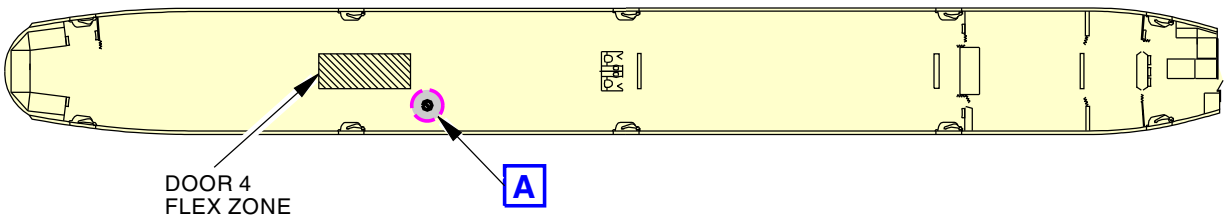
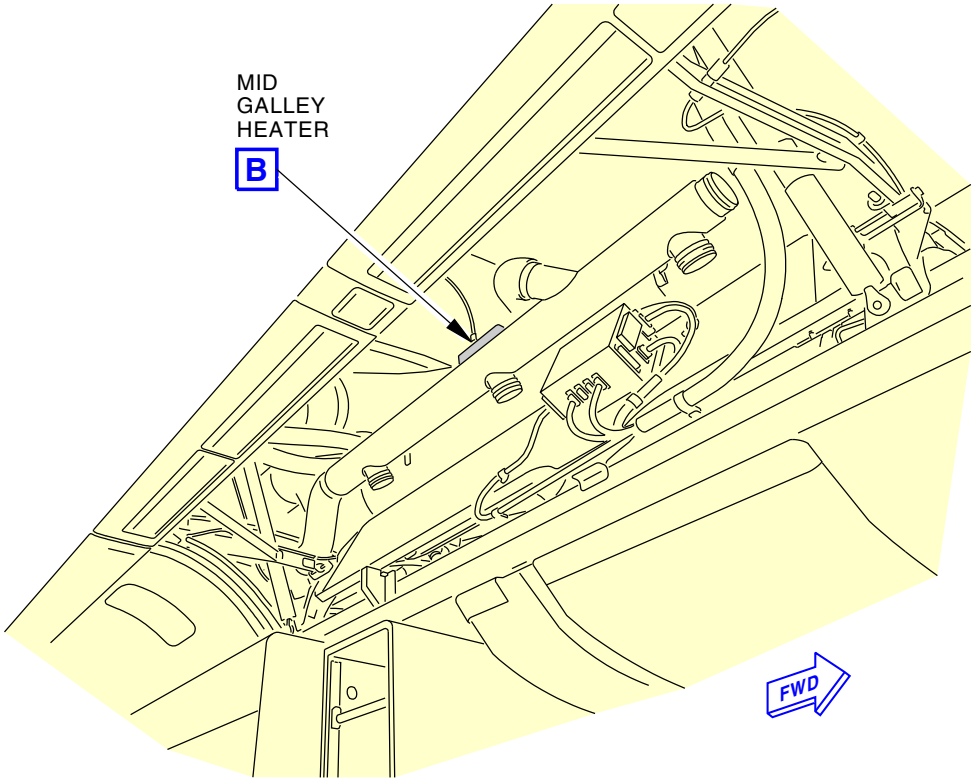


MID GALLEY HEATER LOCATION



AREA ABOVE PASSENGER COMPARTMENT CEILING

A

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MID Galley Heater
Figure 202/21-45-04-990-806 (Sheet 1 of 2)

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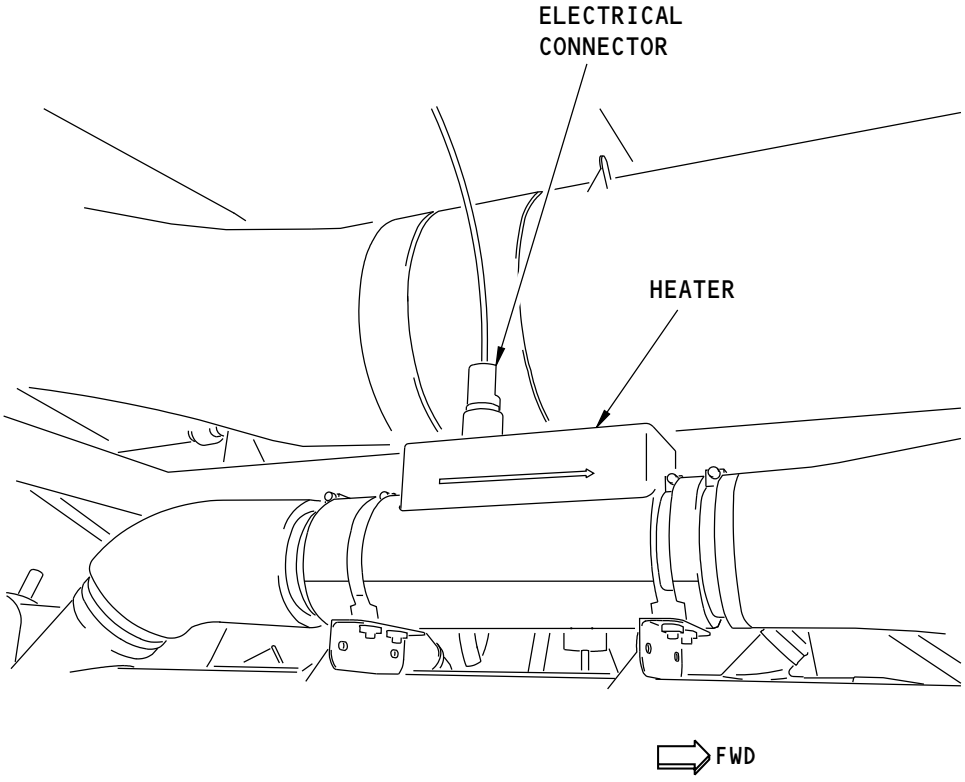

MID GALLEY HEATER

B

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MID Galley Heater
Figure 202/21-45-04-990-806 (Sheet 2 of 2)

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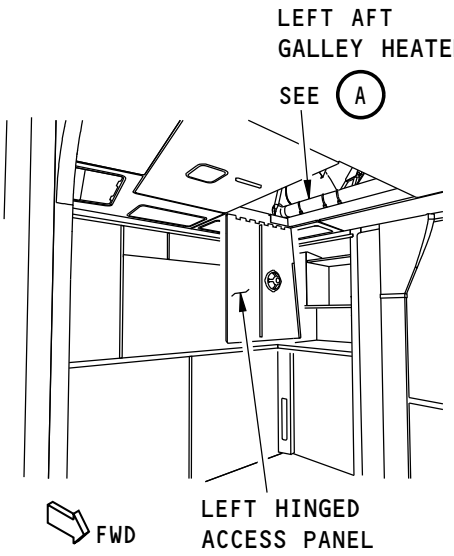
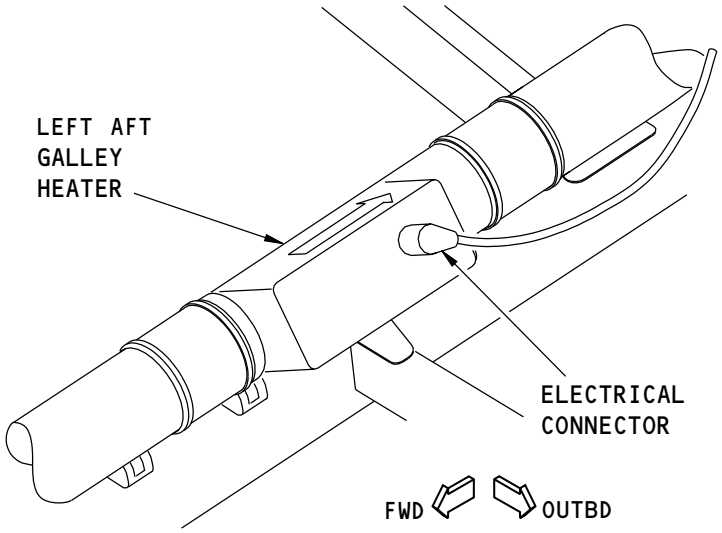


AFT GALLEY AREA



LEFT AFT GALLEY HEATER
(RIGHT AFT GALLEY HEATER IS EQUIVALENT)
A

2405870 S0000556752_V1

AFT Galley Heaters
Figure 203/21-45-04-990-807

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TASK 21-45-04-440-801

3. Galley Heaters - Activation

(Figure 201, Figure 202, Figure 203)

A. General

(1) This task will activate the galley heaters.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
224	Area Above Passenger Compartment Ceiling, Right - Section 41
254	Area Above Passenger Compartment Ceiling, Right - Section 46
263	Area Above Passenger Compartment Ceiling, Left - Section 47
264	Area Above Passenger Compartment Ceiling, Right - Section 47

C. Procedure

SUBTASK 21-45-04-420-032

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(1) Do this step to activate the forward galley heater:

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	2	C21303	FWD GLY HTR
H	22	C21649	FWD GLY HTR CTRL

SUBTASK 21-45-04-420-033

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(2) Do this step to activate the mid galley heater:

(a) These circuit breakers are inoperative and should remain open:

Left Power Management Panel, P110

Row	Col	Number	Name
D	5	C21328	MID GLY HTR (ZONE E) (INOP)

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
J	19	C21696	MID GLY HTR (ZONE E) CTRL (INOP)

SUBTASK 21-45-04-420-034

WARNING

KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING

BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(3) Do this step to activate the aft galley heater:

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	2	C21304	AFT GLY HTR 1
C	2	C21305	AFT GLY HTR 2
H	21	C21650	AFT GLY HTR 1 & 2 CTRL

END OF TASK

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GALLEY HEATERS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Forward Galley Heater Removal

(2) Forward Galley Heater Installation

(3) Aft Galley Heater Removal

(4) Aft Galley Heater Installation

(5) Mid Galley Heater Removal

(6) Mid Galley Heater Installation

B. The galley heaters supply warm air to the galley areas. The temperature of the air that comes out of the galley heaters is controlled by a galley heat switch on the galley control panel. The galley heaters will operate when the galley heat switch is selected on, and one of the cooling packs is in operation.

C. The forward galley heater is located above the forward galley ceiling.

D. There are two aft galley heaters located above the aft galley ceiling, one on the left side and one on the right side.

E. The mid galley heater is located above the passenger compartment ceiling, forward of the mid galley on the right side.

TASK 21-45-04-000-801

2. Forward Galley Heater Removal

(Figure 401 and Figure 402)

A. Location Zones

Zone	Area
117	Main Equipment Center, Left
224	Area Above Passenger Compartment Ceiling, Right - Section 41

B. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

C. Prepare for the Removal

SUBTASK 21-45-04-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-04-860-001

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	2	C21303	FWD GLY HTR
H	22	C21649	FWD GLY HTR CTRL

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D. Forward Galley Heater Removal

SUBTASK 21-45-04-010-002

(1) Open the overdoor access panel adjacent to the right door No. 1 to get access to the forward galley heater.

SUBTASK 21-45-04-020-001

(2) Disconnect the electrical connector [5] from the forward galley heater [4].

SUBTASK 21-45-04-020-002

(3) Remove the clamps [1].

SUBTASK 21-45-04-020-003

(4) Remove and discard the plastic strap [3] which holds the insulation [2] to the forward galley heater [4].

SUBTASK 21-45-04-020-004

(5) Remove and discard the tape which covers the seam of the insulation [2].

SUBTASK 21-45-04-020-005

(6) Remove the insulation [2] from the forward galley heater [4].

SUBTASK 21-45-04-020-006

(7) Remove and discard the plastic straps [3] to disconnect the flexible hose and the sleeve from the forward galley heater [4].

SUBTASK 21-45-04-020-007

(8) Move the sleeve away from the forward galley heater [4].

SUBTASK 21-45-04-020-008

(9) Remove the forward galley heater [4] from the flexible hose.

——— END OF TASK ———

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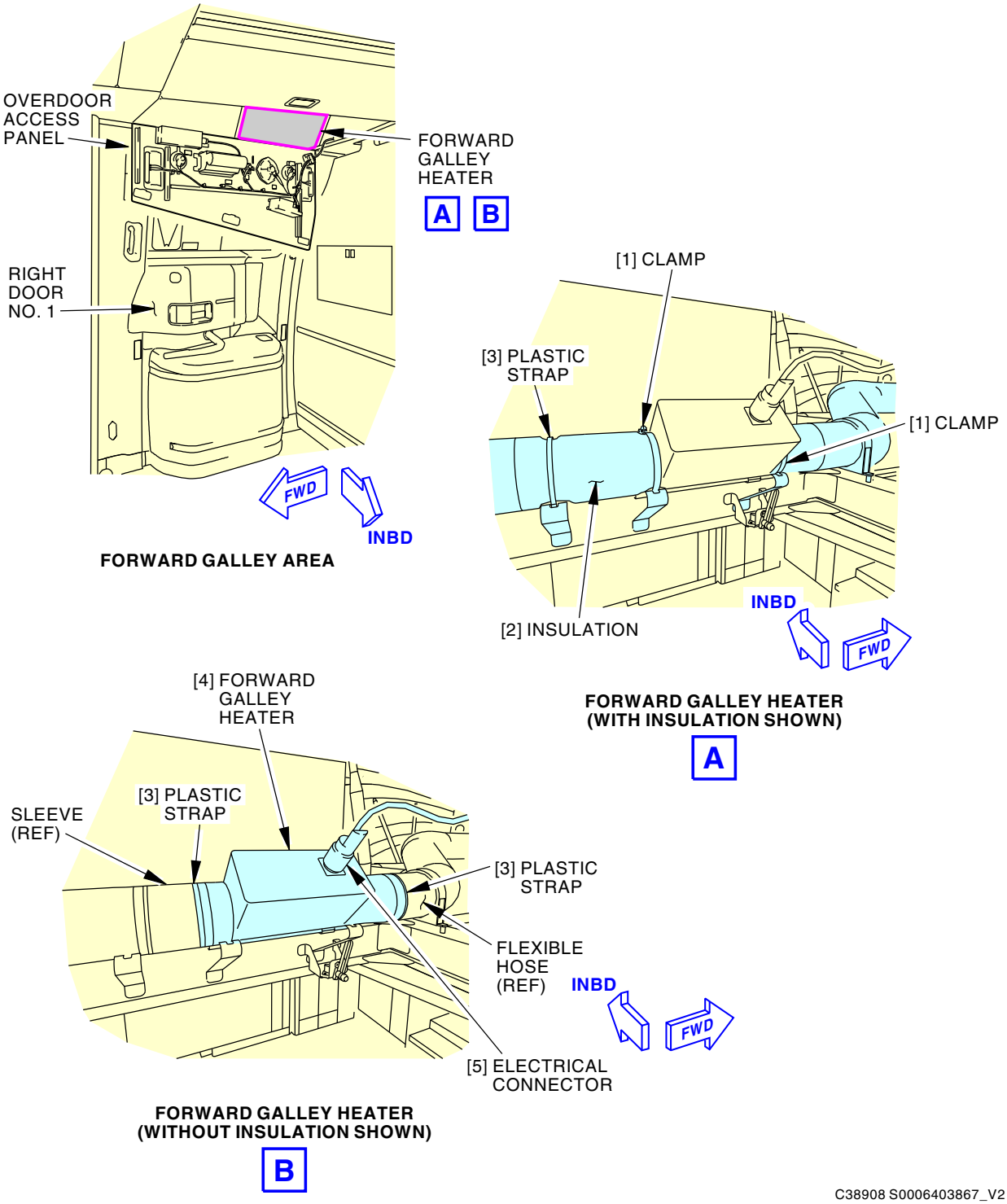

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Forward Galley Heater Installation
Figure 401/21-45-04-990-801

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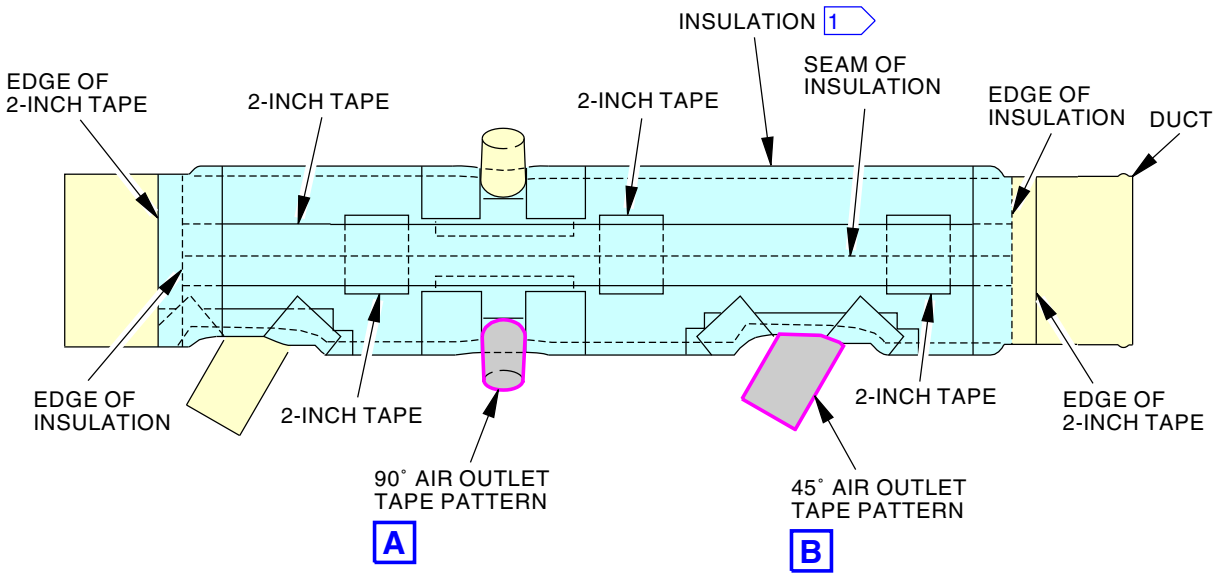
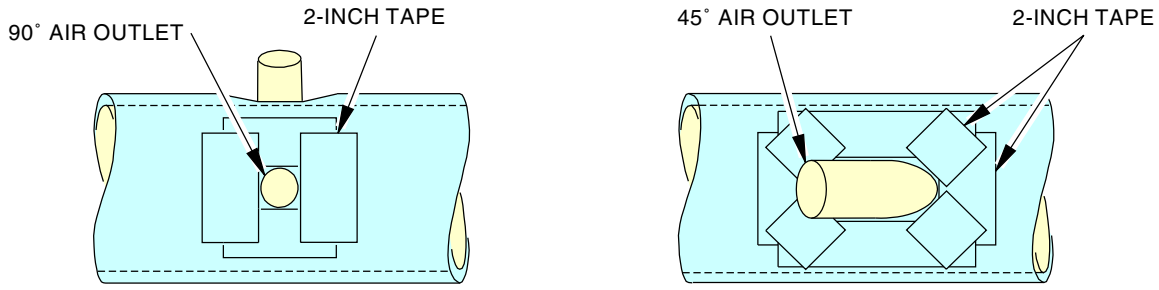


FOAM WRAPPED INSULATED DUCT (EXAMPLE)



90˚ AIR OUTLET TAPE PATTERN

A

45˚ AIR OUTLET TAPE PATTERN

B

1 FOR INSULATION DAMAGE APPLY A MINIMUM 2-INCH PATCH OF PRESSURE SENSITIVE ADHESIVE TAPE TO THE DAMAGED AREA. MAKE SURE YOU HAVE FULL COVERAGE OF THE DAMAGED OR TORN AREA WITH NO LESS THAN 1/2-INCH OVERLAP.

2583812 S0000623096_V1

Air Conditioning System Insulated Duct Repair (Foam Wrapped)
Figure 402/21-45-04-990-808 (Sheet 1 of 2)

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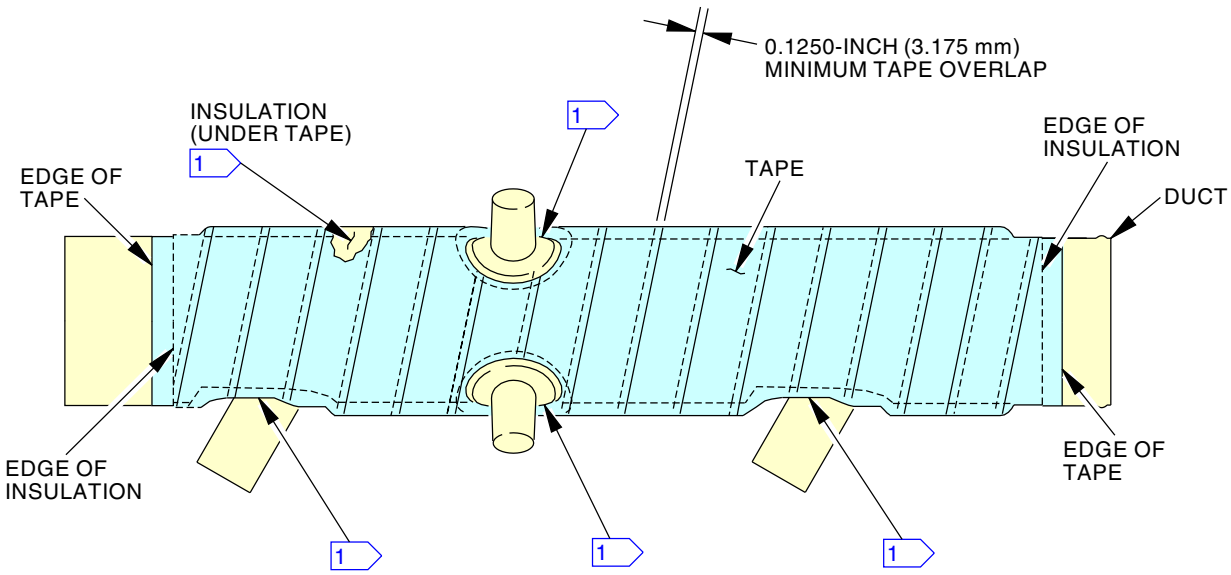

**REWORK POLYIMIDE FOAM INSULATED DUCT
(EXAMPLE)**

NOTE:

- 2-INCH WIDE, 3-INCH WIDE OR 12-INCH WIDE TAPE (BMS 5-157 TYPE I, CLASS 1, GRADE B) MUST COVER 100% OF THE BROWN HYPALON INSULATION SURFACE.
- TAPE MAY BE INSTALLED SPIRAL WRAPPED AS SHOWN OR LENGTHWISE DOWN THE DUCT DEPENDING ON THE INSTALLERS PREFERENCE.
- SHOWN PATTERN IS FOR REFERENCE ONLY. TAPE MAY BE APPLIED IN ANY CONFIGURATION AS LONG AS COMPLETE BMS 8-300 COVERAGE IS OBTAINED.
- WIDER TAPE MAY BE CUT INTO NARROWER STRIPS OR ANY UNIQUE SHAPE IF DESIRED TO ASSIST IN OBTAINING COMPLETE BMS 8-300 COVERAGE.
- MAINTAIN MINIMUM 0.1250-INCH (3.175 mm) OVERLAP OF TAPE.
- AVOID COMPRESSION OF BMS 8-300 INSULATION.
- WRINKLES IN TAPE ARE ACCEPTABLE IF PINCHED TOGETHER AND CONTAIN NO VOIDS.
- COVERING OF EXISTING BMS 5-157 TAPE IS NOT REQUIRED.
- TAPE MAY BE APPLIED TO THE BLANKET PRIOR TO THE BLANKET INSTALLATION ON THE DUCT IF DESIRED BY THE INSTALLER.
- FOR BLANKETS INSTALLED ON DUCT JOINTS, TAPE MAY BE APPLIED TO THE BLANKET BEFORE OR AFTER THE BLANKET IS INSTALLED OVER THE DUCT JOINT. TAPE ORIENTATION IS OPTIONAL.

1 COVER ALL EXPOSED INSULATION (BMS 8-300 TYPE II, GRADE 5) WITH TAPE (BMS 5-157 TYPE I, CLASS 1, GRADE B). CUT TAPE AS REQUIRED TO FIT AROUND AIR OUTLETS, BRANCHES AND INSULATION VENT HOLES.

2583814 S0000623097_V1

**Air Conditioning System Insulated Duct Repair (Foam Wrapped)
Figure 402/21-45-04-990-808 (Sheet 2 of 2)**

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TASK 21-45-04-400-801

3. Forward Galley Heater Installation

(Figure 401, Figure 402)

A. General

(1) Some of the ducts in the air distribution system are wrapped with insulation material. CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

(a) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

(c) The foam insulation, G51169 and foam insulation, G51170, are new qualified materials optional to foam insulation, G50449.

(d) Do not use polyurethane foam, G50025 for repairs due to the degradation in flammability properties over time.

(e) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

1) Tape specifications tape, G50327, tape, G51202, and tape, G50789, are qualified tapes used to secure insulation to ducts.

(f) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327, tape, G51202, or tape, G50789 to meet the flammability/flame propagation requirement. Wrap the tape, G50327, tape, G51202, or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

Reference	Title
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50025	Foam - Flexible Urethane	BMS8-39 Type 1 Grade 2.5 Class A-65
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK
G51169	Foam - Flexible Melamine,	BMS8-385 Type 6
G51170	Foam - Flexible Polyimide	BMS8-300 Type VIII

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(Continued)

Reference	Description	Specification
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Strap	21-45-04-02-010	ARO ALL
4	Heater	21-45-04-02-075	ARO ALL

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
224	Area Above Passenger Compartment Ceiling, Right - Section 41

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

G. Forward Galley Heater Installation

SUBTASK 21-45-04-420-001

(1) Install the forward galley heater [4] into the flexible hose.

(a) Make sure that the flow arrow points forward.

SUBTASK 21-45-04-420-002

(2) Install the sleeve onto the forward galley heater [4].

SUBTASK 21-45-04-420-003

(3) Install new plastic straps [3] around the sleeve and the flexible hose.

SUBTASK 21-45-04-420-004

(4) Install the insulation [2] around the forward galley heater [4].

(a) If the insulation is replaced, then make sure the replacement insulation material meets the flame propagation requirement of CFR 14 Part 25.856.

NOTE: The existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

1) The foam insulation, G51169 and foam insulation, G51170 are new qualified materials optional to foam insulation, G50449.

SUBTASK 21-45-04-410-002

(5) Install new tape, G50327, tape, G51202, or tape, G50789 on the seam of the insulation [2].

SUBTASK 21-45-04-420-029

(6) If the insulation material is polyimide foam insulation, G02470, then do the following steps to completely cover all exposed surfaces of the foam insulation, G02470 insulation with the tape, G50327, tape, G51202, or tape, G50789 (Figure 402).

NOTE: The polyimide foam insulation, G02470 must be covered with the tape, G50789 to meet the CFR 14 Part 25.856 flame propagation requirement.

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(a) Cut the tape, G50327, tape, G51202, or tape, G50789 as required to fit around the air outlets, branches and insulation vent holes.

(b) Apply the tape, G50327, tape, G51202, or tape, G50789 in any configuration as long as complete coverage of the foam insulation, G02470 insulation is obtained and there is a ⅛ in. (3.2 mm) overlap.

1) Install the type spiral wrapped or lengthwise down the duct as desired.

(c) Wrinkles in the tape are acceptable if pinched together without voids and the foam insulation, G02470 insulation is not compressed.

(d) The tape, G50327, tape, G51202, or tape, G50789 can be applied to the outer surface of the foam insulation, G02470 insulation prior to installation on the duct if desired.

SUBTASK 21-45-04-420-005

(7) Install a new plastic strap [3] around the insulation [2].

SUBTASK 21-45-04-420-006

(8) Install the clamps [1].

SUBTASK 21-45-04-420-007

(9) Connect the electrical connector [5] to the forward galley heater [4].

SUBTASK 21-45-04-860-002

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

Left Power Management Panel, P110

Row	Col	Number	Name
A	2	C21303	FWD GLY HTR
H	22	C21649	FWD GLY HTR CTRL

H. Forward Galley Heater Installation Test

SUBTASK 21-45-04-860-003

(1) Do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-45-04-200-001

(2) Do the steps that follow to do a test of the forward galley heater:

(a) Put the galley heat switch in the LOW or HI position.

NOTE: The galley heat switch is found on the forward galley control panel.

(b) Make sure the air that comes out of the galley heat outlet grill is warm.

NOTE: The galley heat outlet grill is found near the floor.

(c) Put the galley heat switch in the OFF position.

(d) Make sure the air that comes out of the galley heat outlet grill is cool.

(e) Make sure there is no air leakage around the insulation that covers the forward galley heater.

(f) If you find a problem with the forward galley heater, then do the procedures in the FIM to correct the fault.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-45-04-010-003

(1) Close the overdoor access panel adjacent to the right door No. 1.

SUBTASK 21-45-04-860-004

(2) Do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

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SUBTASK 21-45-04-010-004

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-45-04-000-802

4. Aft Galley Heater Removal

(Figure 403)

A. Location Zones

Zone	Area
117	Main Equipment Center, Left
263	Area Above Passenger Compartment Ceiling, Left - Section 47
264	Area Above Passenger Compartment Ceiling, Right - Section 47

B. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

C. Prepare for the Removal

SUBTASK 21-45-04-010-005

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-04-860-005

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	2	C21304	AFT GLY HTR 1
C	2	C21305	AFT GLY HTR 2
H	21	C21650	AFT GLY HTR 1 & 2 CTRL

D. Aft Galley Heater Removal

SUBTASK 21-45-04-010-006

(1) Open the left or right hinged access panel in the aft galley ceiling to get access to the applicable aft galley heater.

SUBTASK 21-45-04-020-010

(2) Disconnect the electrical connector [24] from the aft galley heater [25].

SUBTASK 21-45-04-020-011

(3) Remove the clamps [23] that hold the heater [25] to the support bracket.

SUBTASK 21-45-04-020-012

(4) Remove and discard the plastic strap [22] which holds the insulation [21] to the aft galley heater [25].

SUBTASK 21-45-04-020-013

(5) Remove and discard the tape which covers the seam of the insulation [21].

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SUBTASK 21-45-04-020-014

(6) Remove the insulation [21] from the aft galley heater [25].

SUBTASK 21-45-04-020-015

(7) Remove and discard the plastic straps [22] that hold the sleeves to the aft galley heater [25].

SUBTASK 21-45-04-020-016

(8) Move the sleeves away from the aft galley heater [25].

SUBTASK 21-45-04-020-017

(9) Remove the aft galley heater [25].

——— END OF TASK ———

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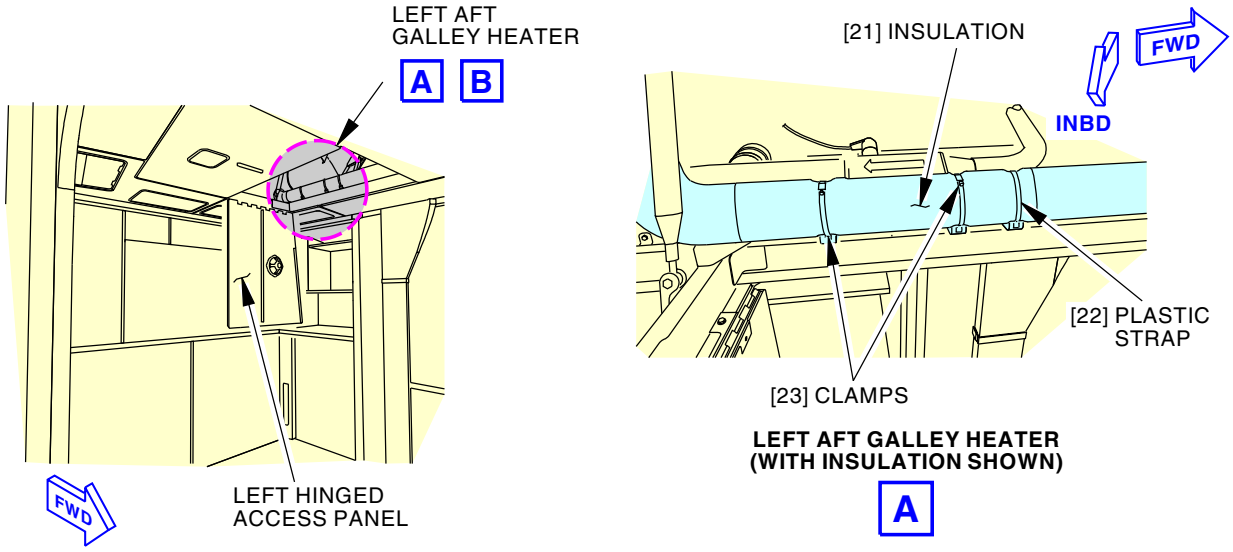
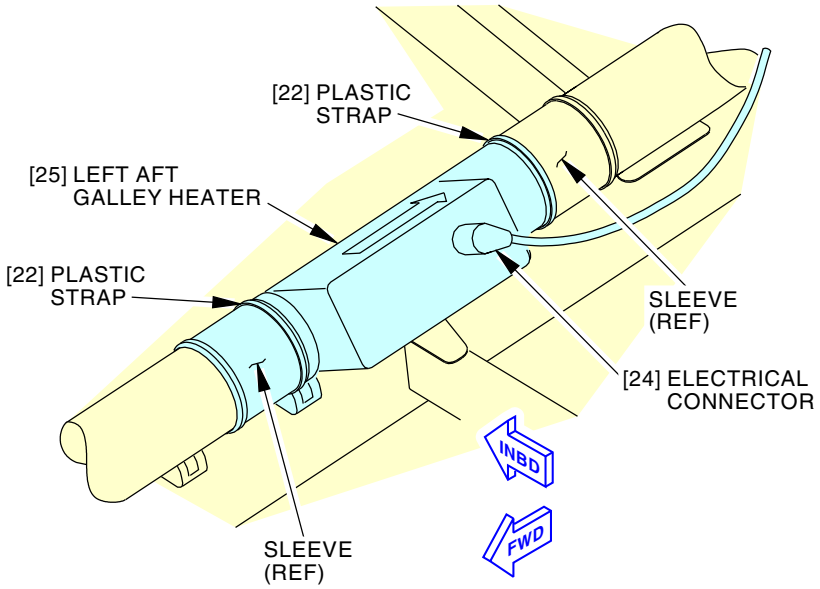


AFT GALLEY AREA

**LEFT AFT GALLEY HEATER
(WITH INSULATION SHOWN)**

A



**LEFT AFT GALLEY HEATER
(WITHOUT INSULATION SHOWN)**

B

NOTE:

THE LEFT AFT GALLEY HEATER IS SHOWN.
THE RIGHT AFT GALLEY HEATER IS EQUIVALENT.

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**Aft Galley Heaters Installation
Figure 403/21-45-04-990-802**

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TASK 21-45-04-400-802

5. Aft Galley Heater Installation

(Figure 402 and Figure 403)

A. General

(1) Some of the ducts in the air distribution system are wrapped with insulation material. CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

(a) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

(c) The foam insulation, G51169 and foam insulation, G51170, are new qualified materials optional to foam insulation, G50449.

(d) Do not use polyurethane foam, G50025 for repairs due to the degradation in flammability properties over time.

(e) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

1) Tape specifications tape, G50327, tape, G51202, and tape, G50789, are qualified tapes used to secure insulation to ducts.

(f) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327, tape, G51202, or tape, G50789 to meet the flammability/flame propagation requirement. Wrap the tape, G50327, tape, G51202, or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

Reference	Title
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50025	Foam - Flexible Urethane	BMS8-39 Type 1 Grade 2.5 Class A-65
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK
G51169	Foam - Flexible Melamine,	BMS8-385 Type 6
G51170	Foam - Flexible Polyimide	BMS8-300 Type VIII

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(Continued)

Reference	Description	Specification
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
22	Strap	21-45-04-06-005	ARO ALL
25	Heater	21-45-04-06-055	ARO ALL

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
263	Area Above Passenger Compartment Ceiling, Left - Section 47
264	Area Above Passenger Compartment Ceiling, Right - Section 47

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

G. Aft Galley Heater Installation

SUBTASK 21-45-04-420-008

(1) Put the aft galley heater [25] in the correct position.

(a) Make sure that the flow arrow points aft.

SUBTASK 21-45-04-420-009

(2) Install the two sleeves to the aft galley heater [25].

SUBTASK 21-45-04-420-010

(3) Install new plastic straps [22] around the two sleeves.

SUBTASK 21-45-04-420-011

(4) Install the insulation [21] around the aft galley heater [25].

(a) If the insulation is replaced, then make sure the replacement insulation material meets the flame propagation requirement of CFR 14 Part 25.856.

NOTE: The existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

1) The foam insulation, G51169 and foam insulation, G51170 are new qualified materials optional to foam insulation, G50449.

SUBTASK 21-45-04-410-003

(5) Install new tape, G50327, tape, G51202, or tape, G50789 on the seam of the insulation [21].

SUBTASK 21-45-04-420-030

(6) If the insulation material is polyimide foam insulation, G02470, then do the following steps to completely cover all exposed surfaces of the foam insulation, G02470 insulation with the tape, G50327, tape, G51202, or tape, G50789 (Figure 402).

NOTE: The polyimide foam insulation, G02470 must be covered with the tape, G50789 to meet the CFR 14 Part 25.856 flame propagation requirement.

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(a) Cut the tape, G50327, tape, G51202, or tape, G50789 as required to fit around the air outlets, branches and insulation vent holes.

(b) Apply the tape, G50327, tape, G51202, or tape, G50789 in any configuration as long as complete coverage of the foam insulation, G02470 insulation is obtained and there is a ⅛ in. (3.2 mm) overlap.

1) Install the type spiral wrapped or lengthwise down the duct as desired.

(c) Wrinkles in the tape are acceptable if pinched together without voids and the foam insulation, G02470 insulation is not compressed.

(d) The tape, G50327, tape, G51202, or tape, G50789 can be applied to the outer surface of the foam insulation, G02470 insulation prior to installation on the duct if desired.

SUBTASK 21-45-04-420-027

(7) Install a new plastic strap [22] around the insulation [21].

SUBTASK 21-45-04-420-013

(8) Install the clamps [23] that hold the heater [25] to the support bracket and tighten to 15 in-lb (1.7 N·m) - 18 in-lb (2.0 N·m).

SUBTASK 21-45-04-420-035

(9) Connect the electrical connector [24] to the aft galley heater [25].

SUBTASK 21-45-04-860-006

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

Left Power Management Panel, P110

Row	Col	Number	Name
B	2	C21304	AFT GLY HTR 1
C	2	C21305	AFT GLY HTR 2
H	21	C21650	AFT GLY HTR 1 & 2 CTRL

H. Aft Galley Heater Installation Test

SUBTASK 21-45-04-860-007

(1) Do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-45-04-200-002

(2) Do the steps that follow to do a test of the aft galley heater:

(a) Put the galley heat switch in the LOW or HI position.

NOTE: The galley heat switch is found on the aft galley control panel.

(b) Make sure the air that comes out of the galley heat outlet grill is warm.

NOTE: The galley heat outlet grill is found near the floor.

(c) Put the galley heat switch in the OFF position.

(d) Make sure the air that comes out of the galley heat outlet grill is cool.

(e) Make sure there is no air leakage around the insulation that covers the aft galley heater.

(f) If you find a problem with the aft galley heater, then do the procedures in the FIM to correct the fault.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-45-04-010-007

(1) Close the hinged access panel in the aft galley ceiling.

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SUBTASK 21-45-04-860-008

(2) Do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-45-04-010-008

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-45-04-000-803

6. Mid Galley Heater Removal

(Figure 404)

A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
254	Area Above Passenger Compartment Ceiling, Right - Section 46

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Prepare for the Removal

SUBTASK 21-45-04-010-009

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-45-04-860-009

(2) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

NOTE: This will make sure that there is no air flow in the ducts when you remove the galley heater.

SUBTASK 21-45-04-010-010

(3) Remove the main ceiling panel that is immediately forward of the mid galley location on the inboard side of the right aisle (TASK 25-21-06-000-801).

E. Mid Galley Heater Removal

SUBTASK 21-45-04-020-019

(1) Disconnect the electrical connector [44] from the mid galley heater [45].

SUBTASK 21-45-04-020-020

(2) Remove the clamp [46] which holds the hose assembly [41] to the mid galley heater [45].

SUBTASK 21-45-04-020-021

(3) Remove the clamp [46] which holds the hose assembly [47] to the mid galley heater [45].

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SUBTASK 21-45-04-020-022

(4) Remove the clamps [46] which hold the mid galley heater [45] to the support brackets.

SUBTASK 21-45-04-020-023

(5) Remove the mid galley heater [45].

SUBTASK 21-45-04-020-024

(6) Remove and discard the tape [43] which covers the seam of the insulation [42].

SUBTASK 21-45-04-020-025

(7) Remove the insulation [42] from the mid galley heater [45].

NOTE: Keep the insulation for the installation.

——— END OF TASK ———

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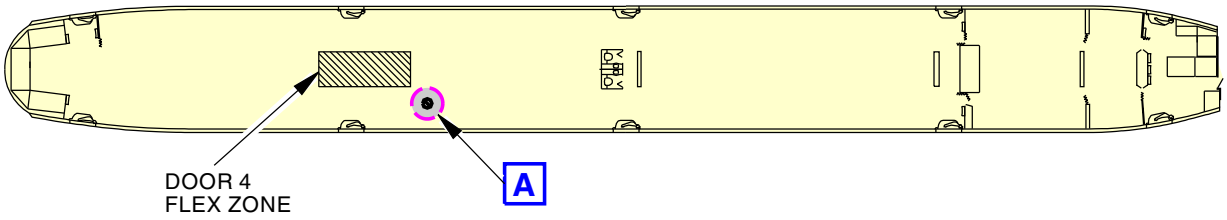
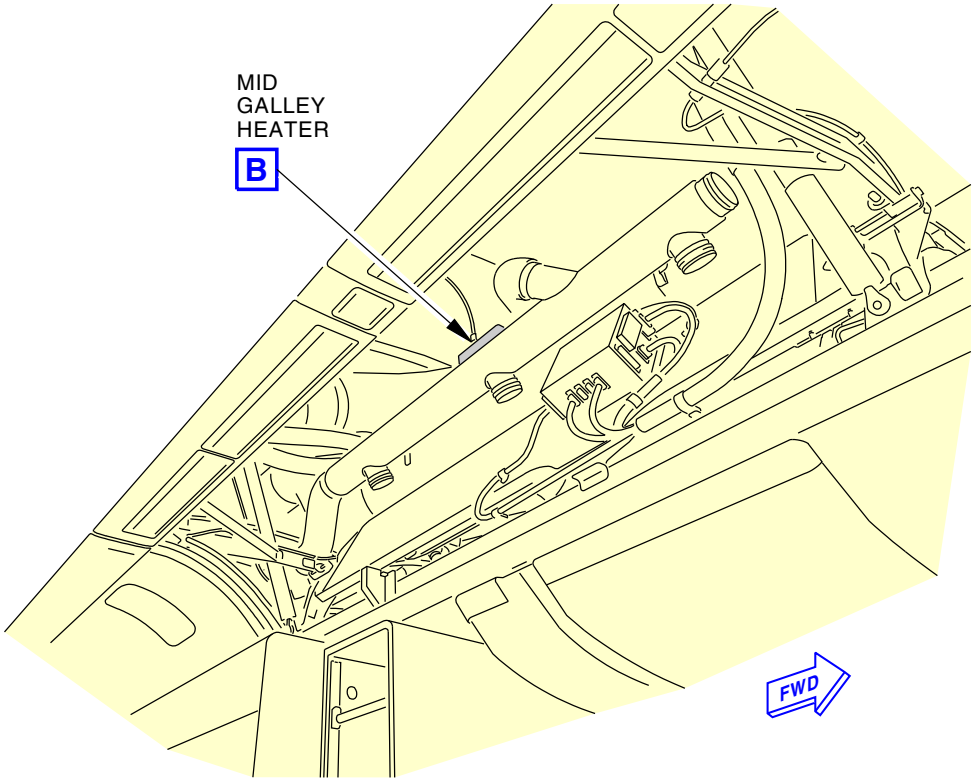


MID GALLEY HEATER LOCATION



AREA ABOVE PASSENGER COMPARTMENT CEILING

A

G76601 S0006403878_V2

Mid Galley Heater Installation
Figure 404/21-45-04-990-803 (Sheet 1 of 2)

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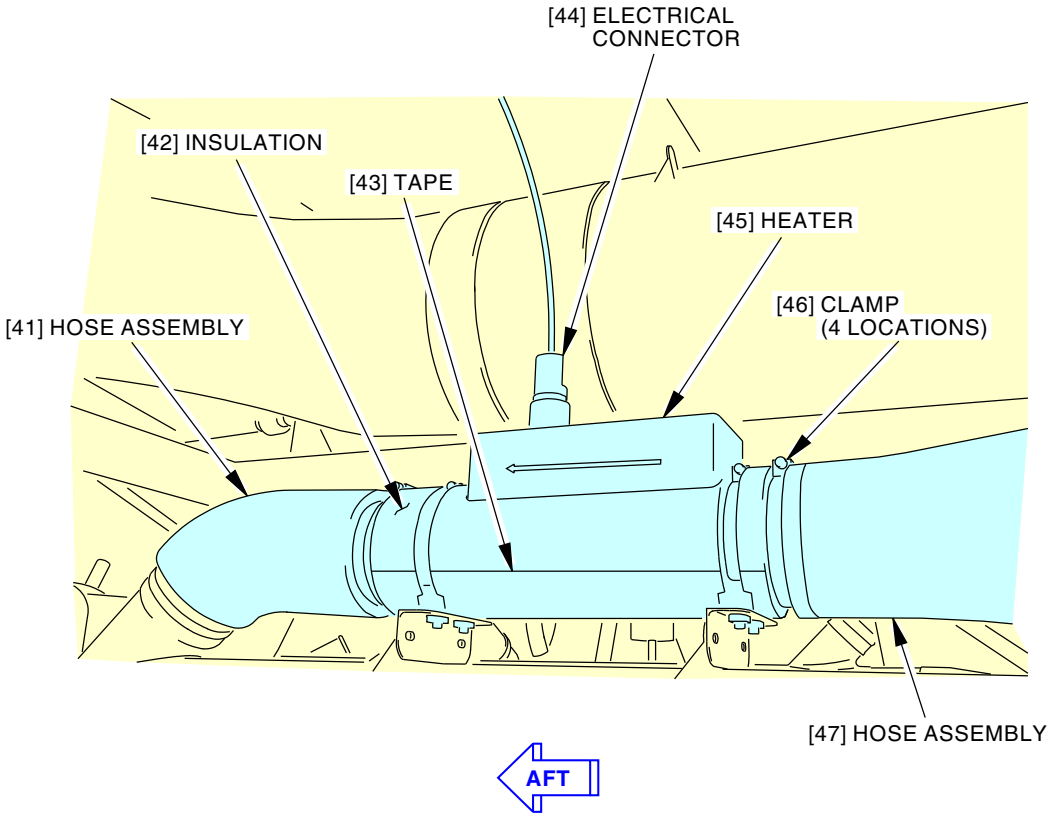

MID GALLEY HEATER

B

G42042 S0006403880_V3

Mid Galley Heater Installation
Figure 404/21-45-04-990-803 (Sheet 2 of 2)

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TASK 21-45-04-400-803

7. Mid Galley Heater Installation

(Figure 404, Figure 402)

A. General

(1) Some of the ducts in the air distribution system are wrapped with insulation material. CFR 14 Part 121.312 mandates that insulation material installed in the fuselage as a replacement after September 2, 2005 must meet the flame propagation requirements of CFR 14 Part 25.856, effective September 2, 2003.

(a) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

(c) The foam insulation, G51169 and foam insulation, G51170, are new qualified materials optional to foam insulation, G50449.

(d) Do not use polyurethane foam, G50025 for repairs due to the degradation in flammability properties over time.

(e) When insulation material is removed and re-installed, any existing tape that does not meet the flame propagation requirement must be removed or completely covered with tape that does meet the requirement.

1) Tape specifications tape, G50327, tape, G51202, and tape, G50789, are qualified tapes used to secure insulation to ducts.

(f) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327, tape, G51202, or tape, G50789 to meet the flammability/flame propagation requirement. Wrap the tape, G50327, tape, G51202, or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

Reference	Title
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)
25-21-06-400-801	Main Ceiling Panel - Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50025	Foam - Flexible Urethane	BMS8-39 Type 1 Grade 2.5 Class A-65
G50327	Tape - Advanced Insulation Blanket (use until stock depleted)	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK
G51169	Foam - Flexible Melamine,	BMS8-385 Type 6
G51170	Foam - Flexible Polyimide	BMS8-300 Type VIII

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(Continued)

Reference	Description	Specification
G51202	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade A Composition MPVF

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
45	Heater	Not Specified	

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
254	Area Above Passenger Compartment Ceiling, Right - Section 46

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

G. Mid Galley Heater Installation

SUBTASK 21-45-04-420-014

(1) Install the insulation [42] around the mid galley heater [45].

(a) If the insulation is replaced, then make sure the replacement insulation material meets the flame propagation requirement of CFR 14 Part 25.856.

NOTE: The existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(b) Melamine foam insulation, G50449, is the preferred foam insulation material that meets the flame propagation requirement.

1) The foam insulation, G51169 and foam insulation, G51170, are new qualified materials optional to foam insulation, G50449.

SUBTASK 21-45-04-410-004

(2) Install new tape, G50327, tape, G51202, or tape, G50789 on the seam of the insulation [42].

(a) Do not overlap the tape onto the adjacent hose assemblies.

SUBTASK 21-45-04-420-028

(3) If the insulation material is foam insulation, G02470, then do the following steps to completely cover all exposed surfaces of the foam insulation, G02470 insulation with the tape, G50327, tape, G51202, or tape, G50789 (Figure 402).

NOTE: The polyimide foam insulation, G02470 must be covered with the tape, G50789 to meet the CFR 14 Part 25.856 flame propagation requirement.

(a) Cut the tape, G50327, tape, G51202, or tape, G50789 as required to fit around the air outlets, branches and insulation vent holes.

(b) Apply the tape, G50327, tape, G51202, or tape, G50789 in any configuration as long as complete coverage of the foam insulation, G02470 insulation is obtained and there is a ⅛ in. (3.2 mm) overlap.

1) Install the tape spiral wrapped or lengthwise down the duct as desired.

(c) Wrinkles in the tape are acceptable if pinched together without voids and the foam insulation, G02470 insulation is not compressed.

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(d) The tape, G50327, tape, G51202, or tape, G50789 can be applied to the outer surface of the foam insulation, G02470 insulation prior to installation on the duct if desired.

SUBTASK 21-45-04-420-016

(4) Put the mid galley heater [45] into its position between the hose assemblies.

NOTE: Make sure the flow arrow points aft.

SUBTASK 21-45-04-420-017

(5) Install the clamps [46] that hold the mid galley heater [45] to the support brackets and tighten to 15 in-lb (1.7 N·m) - 18 in-lb (2.0 N·m).

SUBTASK 21-45-04-420-018

(6) Install the clamp [46] which holds the hose assembly [47] to the mid galley heater [45] and tighten to 15 in-lb (1.7 N·m) - 18 in-lb (2.0 N·m).

SUBTASK 21-45-04-420-019

(7) Install the clamp [46] which holds the hose assembly [41] to the mid galley heater [45] and tighten to 15 in-lb (1.7 N·m) - 18 in-lb (2.0 N·m).

SUBTASK 21-45-04-420-020

(8) Reconnect the electrical connector [44] to the mid galley heater [45].

H. Mid Galley Heater Test

SUBTASK 21-45-04-860-011

(1) Do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-45-04-710-001

(2) Do these steps to do an operational test of the mid galley heater:

(a) Put the galley heat switch in the HIGH position.

NOTE: The galley heat switch is found on the galley control panel.

(b) Make sure the air that comes out of the galley heat outlet grill is warm.

NOTE: The galley heat outlet grill is found near the floor.

(c) Put the galley heat switch in the OFF position.

(d) Make sure the air that comes out of the galley heat outlet grill is cool.

(e) Make sure there is no air leakage around the insulation that covers the galley heater.

(f) If you find a problem with the mid galley heater, then do the procedures in the FIM to correct the fault.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-45-04-860-012

(1) Do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-45-04-010-011

(2) Reinstall the main ceiling panel that is immediately forward of the mid galley on the inboard side of the right aisle (TASK 25-21-06-400-801).

SUBTASK 21-45-04-410-001

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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PACK FLOW CONTROL - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Operational Test - Pack Flow Control Pneumatic Actuated Components

(2) Operational Test - Pack Flow Control Temperature Sensors

(3) Operational Test - Pack Switches

(4) Operational Test - Pack Low Flow

B. To do a complete system test of the pack flow control system, you must do each of the above tasks.

TASK 21-51-00-740-801

2. Pack Flow Control Pneumatic Actuated Components - Operational Test

A. General

(1) This test makes sure that the (left, right) cabin temperature controller (CTC) and the (left, right) air supply and cabin temperature controller (ASCPC) can control the upper flow control valve, lower flow control valve and the flow sensor for the pack flow control system.

(2) The same sequence of steps is used to do the operational test of the pneumatic actuated components for the left and right pack flow control system.

(3) A maintenance access terminal (MAT) 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
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (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. Prepare for the Test

SUBTASK 21-51-00-860-001

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-51-00-860-018

(2) To supply pneumatic power with the APU, do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802

NOTE: It is necessary to use the APU during the ASCPC torque motor check.

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SUBTASK 21-51-00-860-019

(3) Do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

E. Procedure

SUBTASK 21-51-00-740-001

(1) Use a maintenance access terminal (MAT) to do the operational test of the pneumatic actuated components for the pack flow control system.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) OPERATIONAL TEST
6) (Left, Right) System Air On
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 21-51-00-740-006

(2) Do this check of the control of the FCV by the air supply and cabin pressure controller (ASCPC):

NOTE: This check will test the ASCPC torque motor on the flow control valve.

(a) Make sure that the ADIRU switch is in the ON position.

(b) Make sure the L ENG BLEED AIR and the R ENG BLEED AIR switches are OFF.

(c) Make sure the L and R engine START/IGNITION switches are in the NORM position.

1) Put a DO-NOT-OPERATE placard on the L and R engine START/IGNITION switches.

(d) Set the left and right engine FUEL CONTROL switches, (P10 control stand), to RUN.

(e) Wait approximately 6 minutes.

(f) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(g) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable flow control and shutoff valve.

(h) If 21 Cabin Temperature Control System shows, do these steps:

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1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable flow control and shutoff valve.
4) If a maintenance message for the applicable flow control and shutoff valve shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(i) Put the left and right engine FUEL CONTROL switches, to CUTOFF.

(j) Remove the DO-NOT-OPERATE placard on the L and R engine START/IGNITION switches.

SUBTASK 21-51-00-740-002

(3) Do the steps which follow to do a check for existing faults of the Air Supply Control System:

(a) Make these selections on the MAT:
1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 36 Air Supply Control System.

NOTE: If 36 Air Supply Control System does not show, then there are no maintenance messages in existing faults for the air supply control system.

(c) If 36 Air Supply Control System shows, do these steps:
1) Select 36 Air Supply Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the pack flow control system components.
4) If a maintenance message for the pack flow control system components shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-00-860-020

(1) Do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-51-00-860-021

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

——— END OF TASK ———

TASK 21-51-00-740-802

3. Pack Flow Control Temperature Sensors - Operational Test

A. General

(1) This test makes sure that the primary heat exchanger inlet temperature sensors for the pack flow control system operate correctly.

(2) A maintenance access terminal (MAT) 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.

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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 21-51-00-860-034

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-51-00-740-003

(2) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the pack flow control system temperature sensors:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the pack flow control system temperature sensors.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the pack flow control system temperature sensors.
4) If a maintenance message for the pack flow control system temperature sensors 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 21-51-00-740-803

4. Pack Switches - Operational Test

A. General

(1) This test makes sure that the L PACK switch and the R PACK switch operates correctly.

(2) A maintenance access terminal (MAT) 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.

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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. Prepare for the Test

SUBTASK 21-51-00-860-035

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-51-00-860-014

(2) Make sure the L PACK switch and the R PACK switch are set to the OFF position.

NOTE: The L PACK switch and the R PACK switch are on the pilot's overhead panel, P5.

E. Procedure

SUBTASK 21-51-00-740-004

(1) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the left or right pack switches:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 23 Overhead panel ARINC 629 System.

NOTE: If 23 Overhead panel ARINC 629 System does not show, then there are no maintenance messages in existing faults for the left or right pack switches.

(c) If 23 Overhead panel ARINC 629 System shows do these steps:

1) Select 23 Overhead panel ARINC 629 System
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the left or right pack switches.
4) If a maintenance message for the left or right pack switch shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 21-51-00-860-015

(2) Push the L PACK switch and the R PACK switch to the AUTO position.

SUBTASK 21-51-00-740-005

(3) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the left or right pack switches:

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(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 23 Overhead panel ARINC 629 System.

NOTE: If 23 Overhead panel ARINC 629 System does not show, then there are no maintenance messages in existing faults for the left or right pack switches.

(c) If 23 Overhead panel ARINC 629 System shows do these steps:

1) Select 23 Overhead panel ARINC 629 System
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the left or right pack switches.
4) If a maintenance message for the left or right pack switch shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-00-860-016

(1) Set the L PACK switch and R PACK switch to the OFF position.

——— END OF TASK ———

TASK 21-51-00-740-804

5. Pack Low Flow - Operational Test

A. General

(1) This test makes sure that the air conditioning packs do not have restricted air flow.

(2) A maintenance access terminal (MAT) 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
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (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. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

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E. Prepare for the Test

SUBTASK 21-51-00-860-037

> **WARNING** MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

F. Procedure

SUBTASK 21-51-00-860-023

(1) Supply pneumatic power with the APU. To supply pneumatic power with the APU, do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802

SUBTASK 21-51-00-860-024

(2) Supply conditioned air with the left and the right cooling packs. To operate the cooling packs, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-51-00-740-007

(3) Monitor the Air Conditioning Maintenance Page:

(a) Make sure that airflow for each left and right pack does not drop more than 10KG per minute (22 lb per minute).

(b) If the airflow for each left and right pack drop more than 10KG per minute (22 lb per minute), then do the steps that follow:

1) When the left cooling pack exhibits the low flow condition, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

2) When the right cooling pack exhibits the low flow condition, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

3) Look at the upper flow control valve on the cooling pack which exhibits the low flow condition.

> **CAUTION** DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE.

a) If the upper flow control valve is in the fully open position there may blockage in the pack.

SUBTASK 21-51-00-860-025

(4) Remove pneumatic power supplied with the APU. To remove pneumatic power, do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801

SUBTASK 21-51-00-860-026

(5) Remove conditioned air with the left and the right cooling packs. To remove conditioned air, do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-51-00-860-027

(6) Supply pneumatic power with the engine. To supply pneumatic power with the engine, do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802

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SUBTASK 21-51-00-860-028

(7) Supply conditioned air with the left and the right cooling packs. To operate the cooling packs, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-51-00-740-008

(8) Monitor the Air Conditioning Maintenance Page:

(a) Make sure the airflow on the left and right pack is within 10 KG per minute.

(b) If the airflow on the left and right pack is not within 10 KG per minute, do the steps that follow:

1) Make sure the inlet pressure on the left and right pack is within 2 PSIG.

2) Look at the upper flow control valve on the cooling pack that exhibits the low flow condition.

CAUTION DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE.

a) If the upper flow control valve is in the fully open position there may blockage in the pack.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-00-860-029

(1) Close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-00-860-030

(2) Close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-00-860-031

(3) Set the L PACK switch and R PACK switch to the OFF position.

SUBTASK 21-51-00-860-032

(4) Remove pneumatic power supplied with the engine. To remove pneumatic power, do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801

——— END OF TASK ———

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UPPER FLOW CONTROL AND SHUTOFF VALVE (FCSOV) AND FILTER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the upper flow control and shutoff valve (FCSOV).

(2) An installation of the upper flow control and shutoff valve (FCSOV).

(3) A removal of the upper flow control and shutoff valve (FCSOV) filter.

(4) An installation of the upper flow control and shutoff valve (FCSOV) filter.

B. The upper FCSOV is pneumatically operated. The upper FCSOV filter prevents unwanted material from entering the control side of the FCSOV.

TASK 21-51-01-000-801

2. Upper Flow Control and Shutoff Valve (FCSOV) Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-51-01-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-01-010-003

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-51-01-860-010

(3) For the upper flow control and shutoff valve [1] for the left cooling pack, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	23	C21645	L ECV FCV POS SNSR

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

SUBTASK 21-51-01-860-011

(4) For the upper flow control and shutoff valve [1] for the right cooling pack, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
H	4	C21646	R ECV/FCV POS SNSR
P	12	C36612	AIR SPLY R PRI

SUBTASK 21-51-01-010-001

(5) To get access to the upper flow control and shutoff valve [1] for the left cooling pack, do this step:

(a) Open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-01-010-002

(6) To get access to the upper flow control and shutoff valve [1] for the right cooling pack, do this step:

(a) Open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Upper Flow Control and Shutoff Valve Removal

SUBTASK 21-51-01-020-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the three electrical connectors [2] from the upper flow control and shutoff valve [1].

SUBTASK 21-51-01-020-002

(2) Remove the nut [7], two washers [6], washer [9], and bolt [4] to disconnect the bonding jumper [5] from the upper flow control and shutoff valve [1].

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SUBTASK 21-51-01-020-003

(3) Remove the coupling [3] and coupling [8].

SUBTASK 21-51-01-020-004

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(4) Remove the upper flow control and shutoff valve [1].

SUBTASK 21-51-01-530-001

(5) Install covers on the duct openings to prevent the entry of unwanted materials.

END OF TASK

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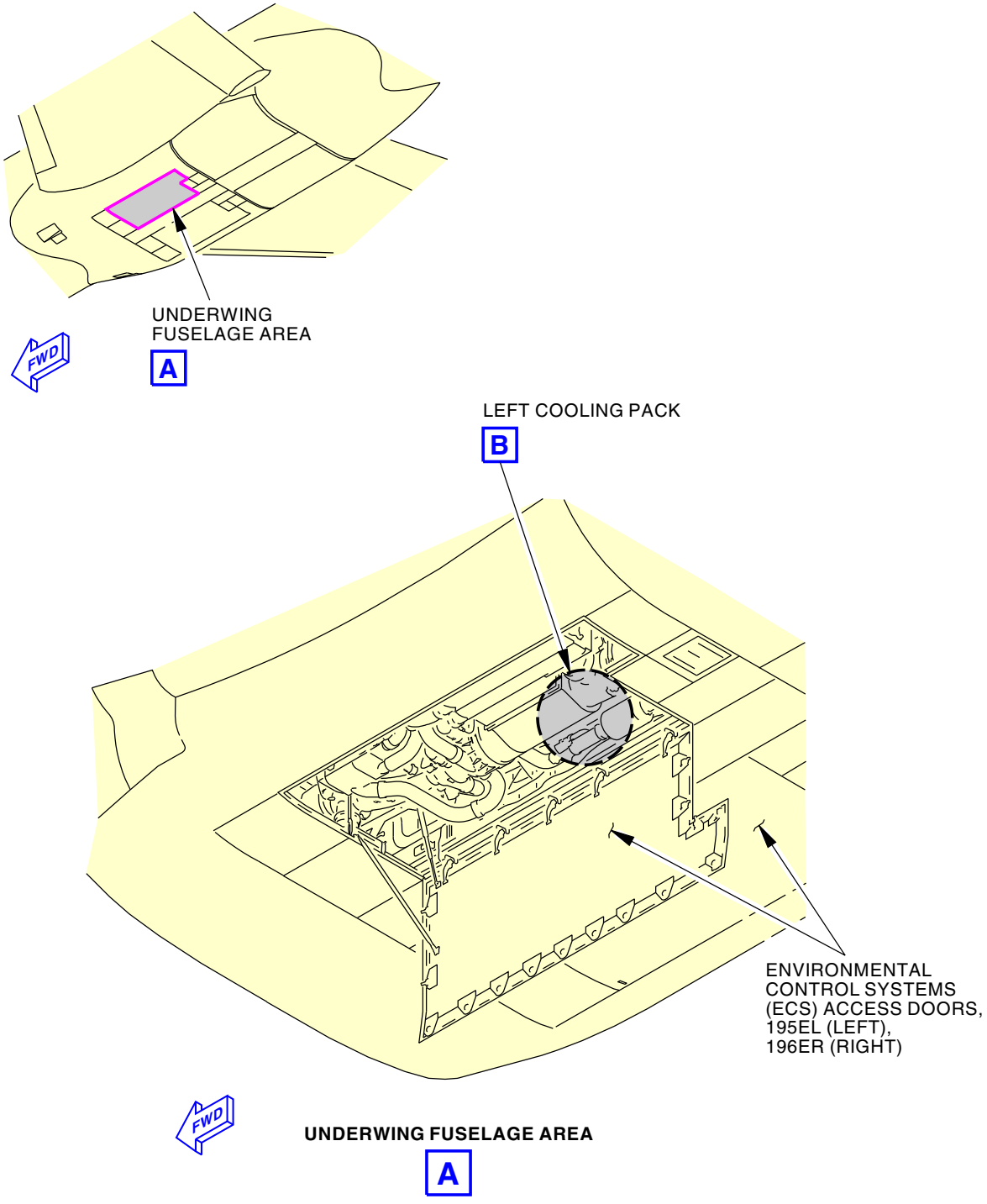

D20532 S0006403892_V2

Upper Flow Control and Shutoff Valve Installation
Figure 401/21-51-01-990-801 (Sheet 1 of 4)

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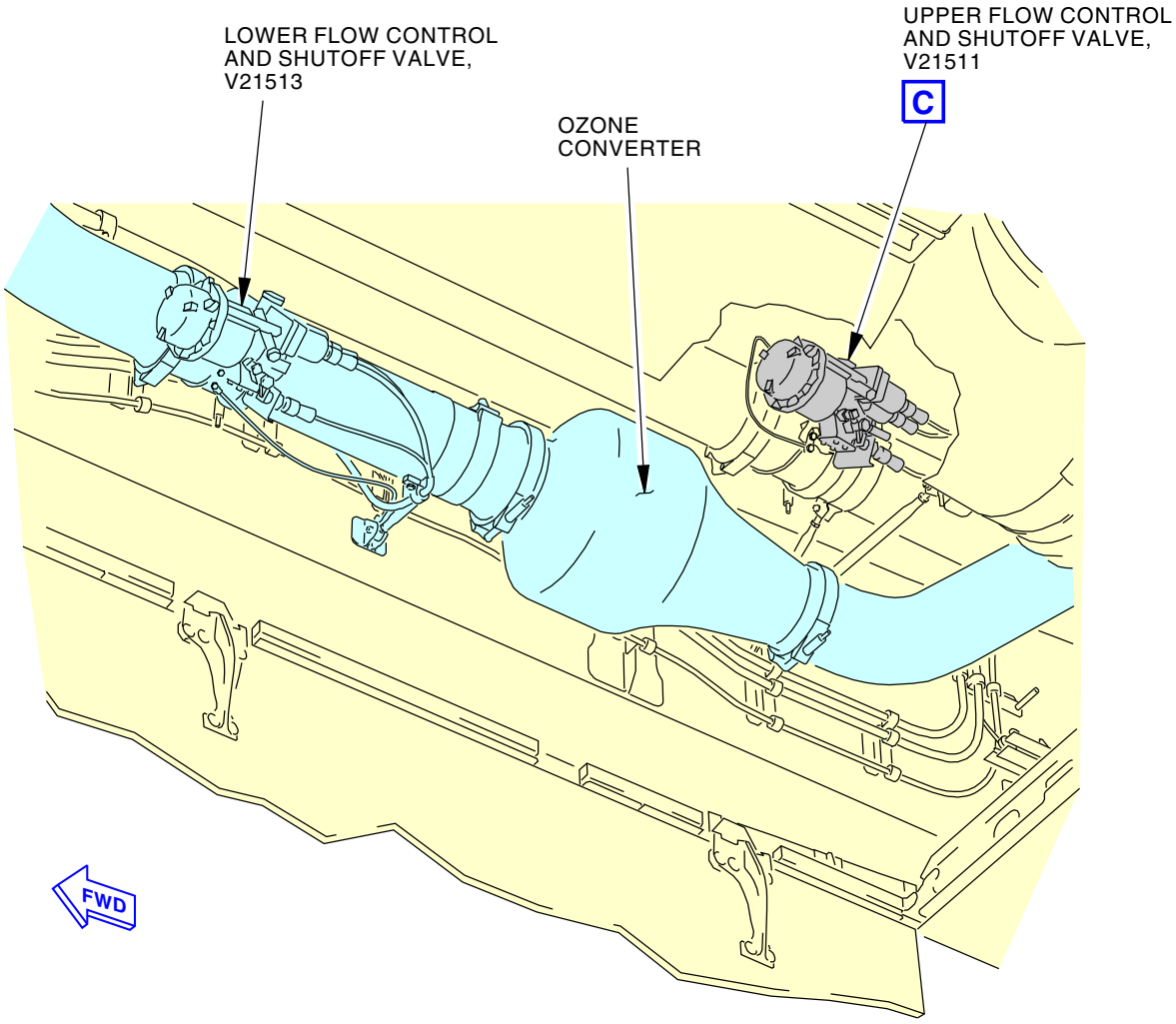

LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B

D20467 S0006403893_V3

Upper Flow Control and Shutoff Valve Installation
Figure 401/21-51-01-990-801 (Sheet 2 of 4)

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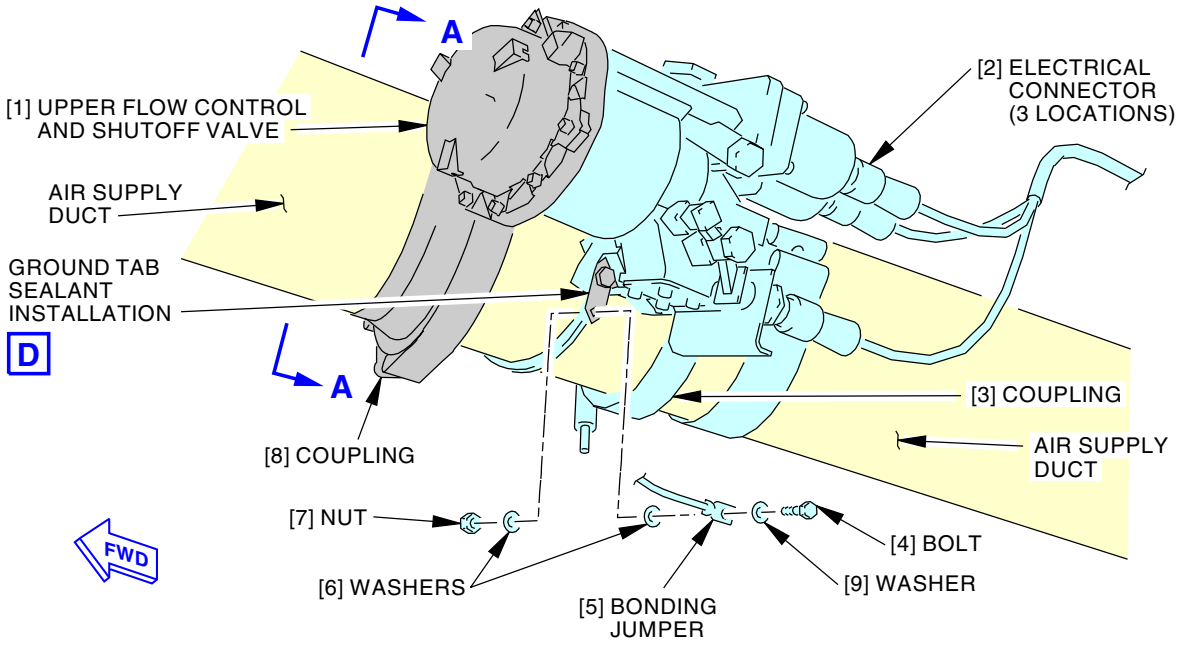
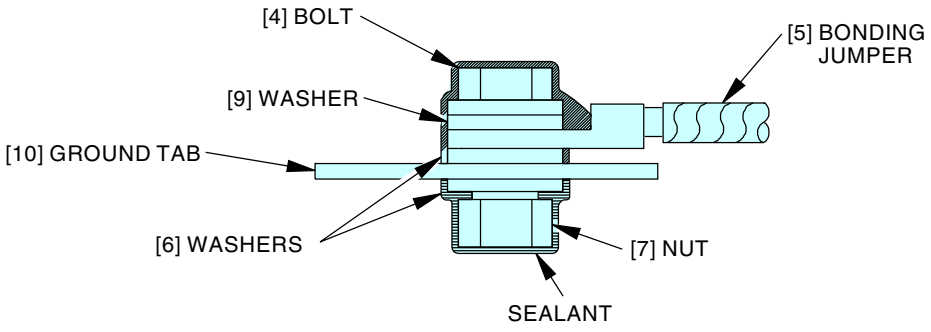


UPPER FLOW CONTROL AND SHUTOFF VALVE

C



GROUND TAB SEALANT INSTALLATION

D

L19567 S0006403894_V3

Upper Flow Control and Shutoff Valve Installation
Figure 401/21-51-01-990-801 (Sheet 3 of 4)

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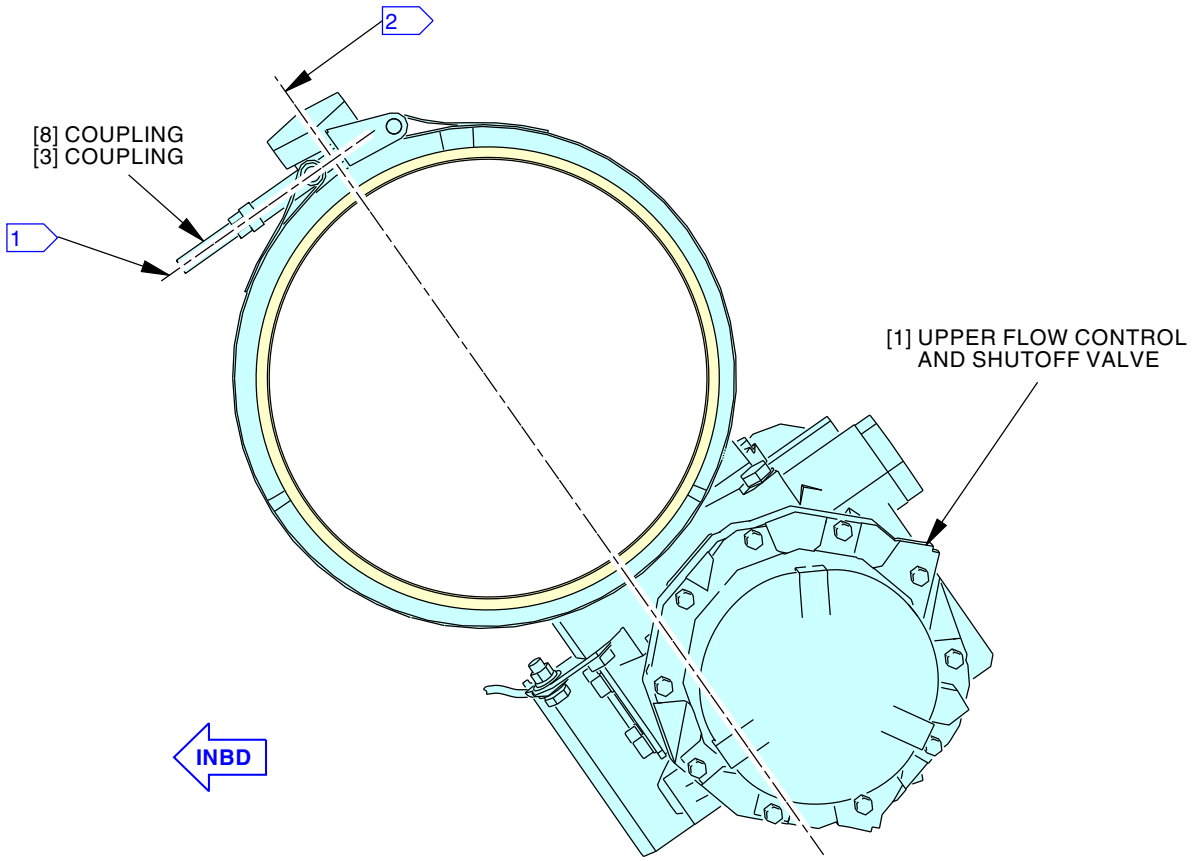

A-A

1 CENTER LINE OF COUPLING LEVER 90 DEGREES PLUS OR MINUS 5 DEGREES FROM CENTER LINE OF BUTTERFLY SHAFT.

2 CENTER LINE OF FCV BUTTERFLY SHAFT.

1908743 S0000353172_V2

Upper Flow Control and Shutoff Valve Installation
Figure 401/21-51-01-990-801 (Sheet 4 of 4)

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TASK 21-51-01-400-801

3. Upper Flow Control and Shutoff Valve (FCSOV) Installation

(Figure 401)

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)
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)
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)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
71-00-00-800-835-H00	Engine Start (Selection) (P/B 201)
71-00-00-800-837-H00	Usual Engine Stop (P/B 201)
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
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Upper flow control and shutoff valve	21-51-01-01-041	ARO ALL
		21-51-01-01-043	ARO ALL

E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left

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(Continued)

Zone	Area
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

G. Upper Flow Control and Shutoff Valve Installation

SUBTASK 21-51-01-540-001

(1) Remove the covers from the duct openings.

SUBTASK 21-51-01-420-001

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(2) Put the upper flow control and shutoff valve [1] between the two air supply ducts.

SUBTASK 21-51-01-420-002

(3) Do these steps to make sure the coupling [3] and coupling [8] are properly installed on the duct flanges:

(a) Make sure the duct flanges make full contact, with no gaps around the circumference of the flanges.

(b) Make sure the ducts are aligned along their centerlines with no more than 0.06 in. (1.52 mm) misalignment.

(c) Install coupling [3] and coupling [8] with the coupling T-bolt on the inboard side of the duct.

(d) Make sure the coupling [3] and coupling [8] T-bolts are positioned 90 degrees, plus or minus 5 degrees, to the upper flow control and shutoff valve [1] butterfly shaft.

CAUTION

DO NOT TIGHTEN THE COUPLINGS UNTIL ALL OF THE DUCTS ARE INSTALLED AND ALIGNED. IF THE DUCTS ARE NOT ALIGNED CORRECTLY LEAKS CAN OCCUR AND CAUSE DAMAGE TO EQUIPMENT.

(e) Tighten the 5.5-inch coupling [3] and the coupling [8] to 50 in-lb (5.6 N·m) - 60 in-lb (6.8 N·m).

(f) Lightly tap around the coupling [3] and coupling [8] with a rubber mallet.

1) Start at a point opposite of the T-bolt and tap in the direction of the T-bolt on one side. Repeat for the other side.

NOTE: The coupling will seat on the flanges and the lock-nut will loosen. This will make sure that you engage the coupling and flanges correctly.

(g) Tighten the 5.5-inch coupling [3] and the coupling [8] to 50 in-lb (5.6 N·m) - 60 in-lb (6.8 N·m).

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(h) Repeat the above steps until the locking nut on the coupling requires less than a half turn to get the recommended torque.

1) Make sure that the length of the exposed threads on the T-bolt is a minimum of 0.5 in. (12.7 mm).

a) If less than 0.5 in. (12.7 mm) of thread is exposed, retorque and reseat, or replace the coupling.

SUBTASK 21-51-01-100-002

(4) Clean the bond surfaces of the ground tab [10] (TASK 20-10-22-110-802).

SUBTASK 21-51-01-100-003

(5) Clean the bond surfaces of the bonding jumper [5] and washers [6] (TASK 20-10-22-110-802).

SUBTASK 21-51-01-420-007

(6) To install the bonding jumper [5], do the steps that follow:

(a) Put a washer [6] on the ground tab [10].

(b) Put the bonding jumper [5] on the washer [6].

(c) Install the bolt [4] and washer [9] on the bonding jumper terminal.

(d) Install the washer [6] and nut [7] on the bolt [4].

1) Tighten the nut [7] to 25 in-lb (2.8 N·m) - 35 in-lb (4.0 N·m).

(e) With the intrinsically safe approved bonding meter, COM-1550, make sure the resistance between the ground tab [10] and the airplane structure is less than 0.025 ohm (SWPM 20-20-00).

NOTE: Do not put the probe on the bracket to which the bonding jumper attaches.

SUBTASK 21-51-01-390-001

(7) Apply a thin, continuous layer of sealant, A00247, on the bonding jumper terminal connections (View D, Figure 401).

SUBTASK 21-51-01-420-004

(8) Connect the electrical connectors [2] to the upper flow control and shutoff valve [1].

SUBTASK 21-51-01-860-012

(9) If you replaced the upper flow control and shutoff valve [1] for the left cooling pack, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	23	C21645	L ECV FCV POS SNSR
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

SUBTASK 21-51-01-860-013

(10) If you replaced the upper flow control and shutoff valve [1] for the right cooling pack, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
H	4	C21646	R ECV/FCV POS SNSR
P	12	C36612	AIR SPLY R PRI

H. Upper Flow Control and Shutoff Valve Installation Test

SUBTASK 21-51-01-860-015

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-51-01-860-003

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-51-01-860-004

(3) Do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-51-01-740-001

(4) Do the steps that follow to do a LRU replacement test and an air leakage check of the applicable upper flow control and shutoff valve:

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(a) Use a Maintenance Access Terminal (MAT) to do the LRU Replacement Test of the upper flow control and shutoff valve (TASK 45-10-00-740-808).

NOTE: While the MAT test is in operation, the cooling pack valves will open. Use the ECS maintenance page to determine when the applicable flow control and shutoff valve is open. A second person should put their hand approximately six inches away from the applicable upper flow control and shutoff valve to feel for air leakage. If air leakage is felt, the applicable upper flow control and shutoff valve and couplings must be adjusted until air leakage is not felt.

1) Make these selections on the MAT:
   a) ONBOARD MAINTENANCE
   b) LINE MAINTENANCE
   c) GROUND TESTS
   d) 21 Cabin Temperature Control System
   e) LRU Replacement Test
   f) System Air On Test (Left or Right as appropriate)
   g) CONTINUE

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2) Do the instructions that show on the MAT and then make these selections:
   a) CONTINUE
   b) START TEST
3) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
4) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.
5) Make these selections on the MAT:
   a) EXTENDED MAINTENANCE
   b) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable flow control and shutoff valve.

(c) If 21 Cabin Temperature Control System shows, do these steps:
1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable flow control and shutoff valve.
4) If a maintenance message for the applicable flow control and shutoff valve shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 21-51-01-740-002

(5) Do a check of the control of the FCV by the air supply and cabin pressure controller (ASCPC).

There are two procedures to initiate the ASCPC preflight BIT test. One method is to operate the Right (Left) engine, the other is to simulate the Right and Left engine operation. Do one of the two following procedures to complete the ASCPC preflight BIT:

NOTE: This check will verify that the ASCPC can control its associated torque motor on the flow control valve.

(a) Do the steps that follow for the Right (Left) engine operation procedure:
1) Start the Right (Left) engine (TASK 71-00-00-800-835-H00).
2) Make sure that the ADIRU switch is in the ON position.
3) Make sure the L ENG BLEED AIR and the R ENG BLEED AIR switches are in the OFF position.
4) Let the engines operate for 1 minute and 30 seconds.

NOTE: The ASCPC preflight BIT occurs during the first minute after the engines have started.

5) Make these selections on the MAT:
   a) ONBOARD MAINTENANCE
   b) EXTENDED MAINTENANCE
   c) EXISTING FAULTS

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6) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable flow control and shutoff valve.

7) If 21 Cabin Temperature Control System shows, do these steps:

a) Select 21 Cabin Temperature Control System.

b) Select CONTINUE.

c) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable flow control and shutoff valve.

d) If a maintenance message for the applicable flow control and shutoff valve shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

8) Stop the Right (Left) engine (TASK 71-00-00-800-837-H00).

(b) Do the steps that follow for the simulated engine operation procedure:

1) Make sure that the ADIRU switch is in the ON position.

2) Make sure the L ENG BLEED AIR and the R ENG BLEED AIR switches are in the OFF position.

3) Make sure the L and R engine START/IGNITION switches are in the NORM position.

a) Put a DO-NOT-OPERATE placard on the L and R engine START/IGNITION switches.

4) Set the left and right engine FUEL CONTROL switches to the CUTOFF position.

5) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

6) To use the ground air source to supply pneumatic power, do these steps:

a) Supply pneumatic pressure with the ground air source (TASK 36-00-00-860-802).

b) Set the left engine FUEL CONTROL switch, on the P10 control stand, to the RUN position.

NOTE: The right engine FUEL CONTROL switch must stay in the CUTOFF position.

c) Cycle the airplane between the air mode and the ground mode.

NOTE: This cycle action will allow the Air Supply and Cabin Pressure Controller (ASCPC) to think that the ground cart is disconnected even though it is connected and providing pneumatic pressure.

<1> Put the airplane in the air mode (TASK 32-09-00-040-801).

<2> To put the airplane back to the ground mode, do the steps that follow:

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<a> Do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

<b> Do this task: Air Mode Simulation - Restoration, TASK 32-09-00-440-801.

d) Set the right engine FUEL CONTROL switch, on the P10 control stand, to the RUN position.

7) To use the APU to supply pneumatic power, do these steps:

a) Supply pneumatic pressure with the APU (TASK 36-00-00-860-802).

b) Set the left and right engine FUEL CONTROL switches, on the P10 control stand, to the RUN position.

8) Wait approximately 6 minutes.

NOTE: The ASCPC preflight BIT occurs 5 minutes after the simulated engines operation.

9) Make these selections on the MAT:

a) ONBOARD MAINTENANCE

b) EXTENDED MAINTENANCE

c) EXISTING FAULTS

10) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable flow control and shutoff valve.

11) If 21 Cabin Temperature Control System shows, do these steps:

a) Select 21 Cabin Temperature Control System.

b) Select CONTINUE.

c) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable flow control and shutoff valve.

d) If a maintenance message for the applicable flow control and shutoff valve shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

12) Set the left and right engine FUEL CONTROL switches on the P10 control stand to the CUTOFF position.

13) Remove the DO-NOT-OPERATE placard on the L and R engine START/IGNITION switches.

14) Remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

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I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-01-860-017

(1) Set the ADIRU switch on the P5 overhead panel to the OFF position.

SUBTASK 21-51-01-860-007

(2) Do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-51-01-860-014

(3) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-01-410-001

(4) If the upper flow control and shutoff valve [1] for the right cooling pack was installed, do this step:

(a) Close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-01-410-002

(5) If the upper flow control and shutoff valve [1] for the left cooling pack was installed, do this step:

(a) Close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-01-410-003

(6) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-51-01-000-803

4. Upper Flow Control and Shutoff Valve (FCSOV) Filter Removal

(Figure 402)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

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D. Prepare for the Removal

SUBTASK 21-51-01-840-001

> **WARNING** REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-01-010-004

(2) To remove the left FCSOV filter, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-01-010-005

(3) To remove the right FCSOV filter, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-01-010-006

> **CAUTION** DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(4) If you cannot get access to the FCSOV filter [4], then do these steps:

(a) Make a note of the position of the valve.

(b) Loosen the two couplings that hold the valve to the duct.

> **CAUTION** DO NOT DAMAGE THE O-RING PACKING WHEN YOU ROTATE THE VALVE. THE DAMAGE CAN CAUSE LEAKAGE OF THE DUCT CONNECTIONS.

(c) Carefully rotate the valve until you can get access to the filter [4].

E. Remove the Filter

SUBTASK 21-51-01-020-006

> **WARNING** DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Do these steps to remove the FCSOV filter [4]:

(a) Remove the threaded plug [1].

(b) Remove the compression spring [3].

(c) Remove the air filter [4].

END OF TASK

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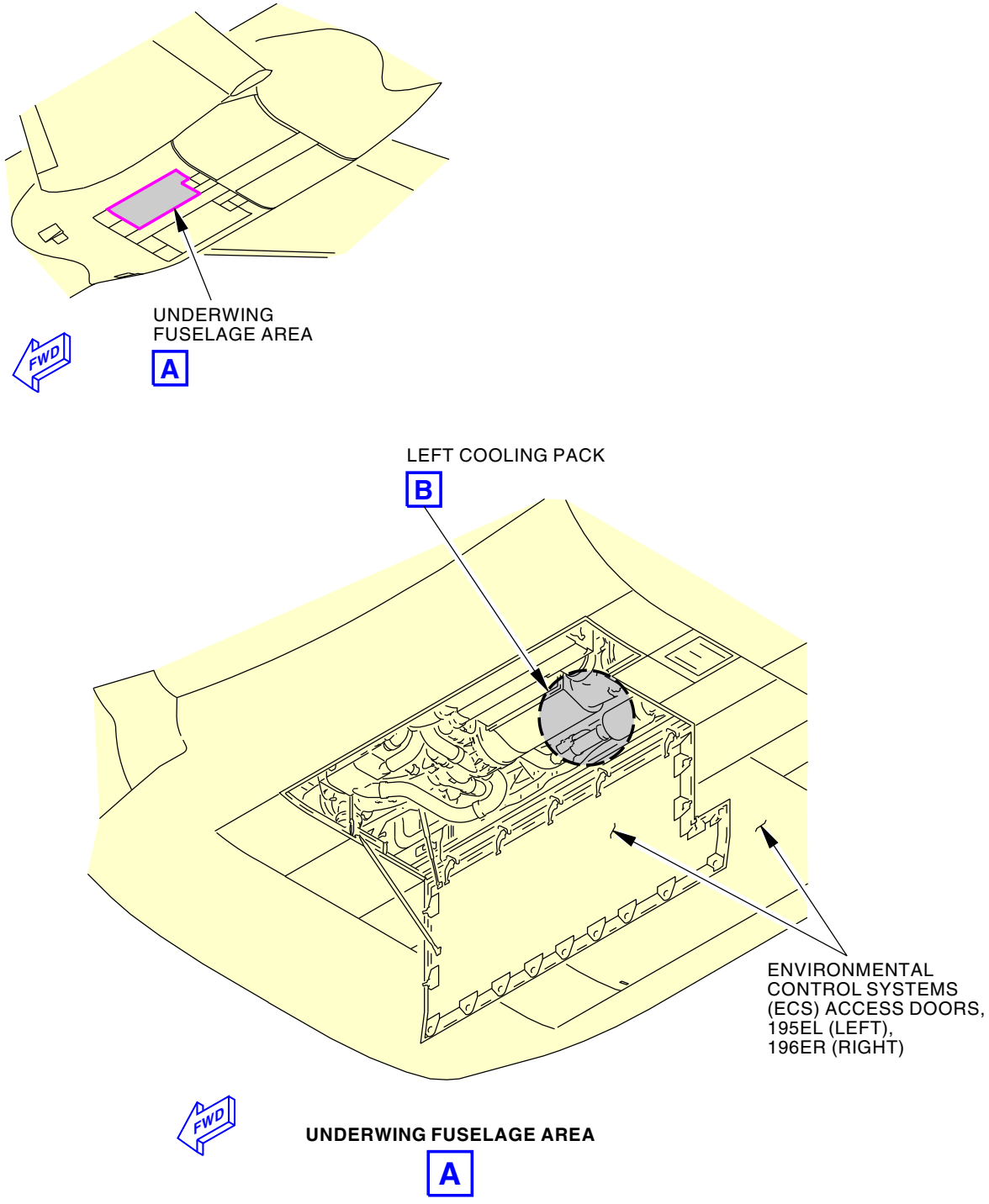

Upper Flow Control and Shutoff Valve Filter Installation
Figure 402/21-51-01-990-803 (Sheet 1 of 2)

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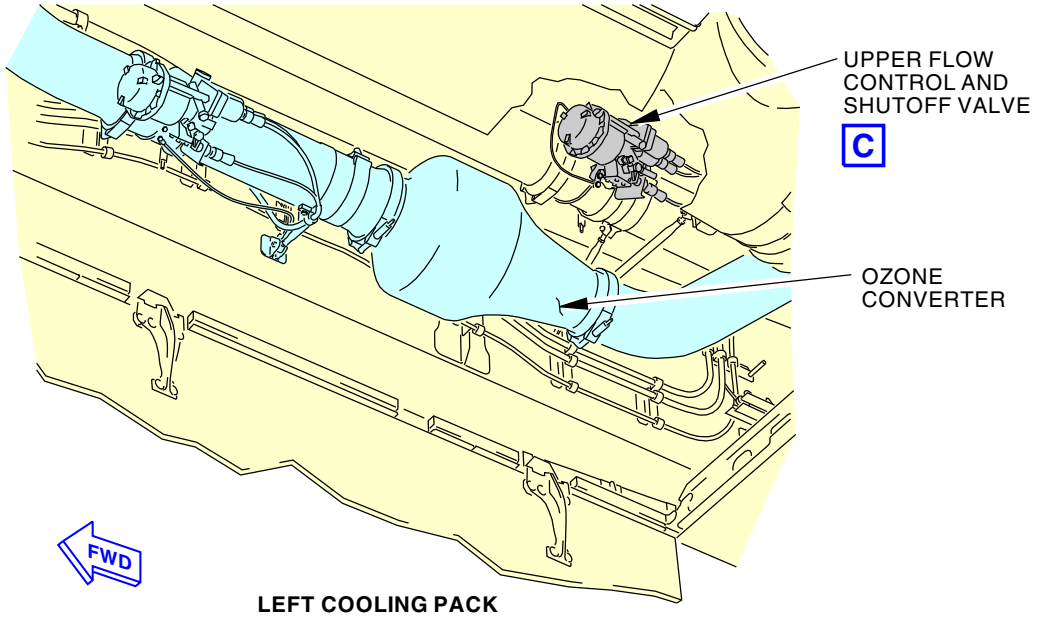
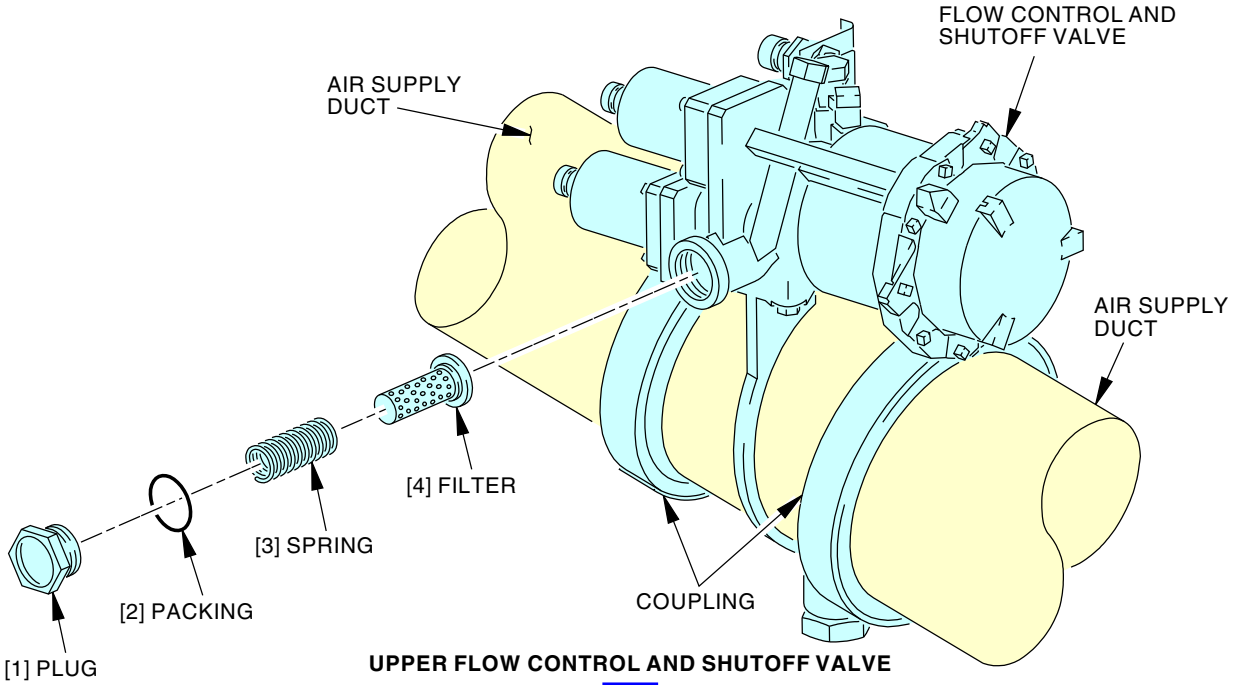


LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B



UPPER FLOW CONTROL AND SHUTOFF VALVE

C

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Upper Flow Control and Shutoff Valve Filter Installation
Figure 402/21-51-01-990-803 (Sheet 2 of 2)

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TASK 21-51-01-400-802

5. Upper Flow Control and Shutoff Valve (FCSOV) Filter Installation

(Figure 402)

A. Consumable Materials

Reference	Description	Specification
D00669	Multi-Purpose, Moly-Lithium Type, Lubriplate Mo-Lith No. 2	
D50104	Grease - Molykote 44 High Temperature Bearing Grease (Medium) (Formerly Dow Corning DC-44)	

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	21-51-01-01-047	ARO ALL
4	Filter	21-51-01-01-049	ARO ALL

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Install the Filter

SUBTASK 21-51-01-420-006

(1) Do these steps to install the FCSOV filter [4]:

(a) Inspect the air filter [4] for a damaged screen.

(b) If the screen is damaged, then discard the filter [4] and get a new air filter [4].

(c) Install the air filter [4].

(d) Reinstall the compression spring [3].

(e) Inspect the packing [2] for damage or deterioration.

(f) If you find any damage or deterioration, then discard the packing [2] and get a new preformed packing [2].

1) Put a thin layer of grease, Molykote 44 grease, medium, D50104, on the packing [2].

2) Install the packing [2] onto the plug [1].

(g) Put a thin layer of lubricant, Lubriplate Mo-Lith No. 2 Lubricant, D00669, on the threads of the plug [1].

(h) Reinstall the threaded plug [1].

(i) Tighten the plug [1] to 35 in-lb (4 N·m) - 45 in-lb (5 N·m).

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SUBTASK 21-51-01-010-007

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(2) If you loosened the two valve couplings to get access to the valve filter [4], then do these steps:

CAUTION

DO NOT DAMAGE THE O-RING PACKING WHEN YOU ROTATE THE VALVE. THE DAMAGE CAN CAUSE LEAKAGE OF THE DUCT CONNECTIONS.

(a) Carefully rotate the valve back to its original position.

(b) Tighten the nut on each of the two valve couplings to 50 in-lb (6 N·m) - 60 in-lb (7 N·m).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-01-010-008

(1) If you installed the left FCSOV filter, then close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-01-010-009

(2) If you installed the right FCSOV filter, then close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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UPPER FLOW CONTROL AND SHUTOFF VALVE (FCSOV) AND FILTER - CLEANING/PAINTING

1. General

A. This procedure contains one task:

(1) Cleaning the upper flow control and shutoff valve (FCSOV) filter.

B. The upper FCSOV is pneumatically operated. The upper FCSOV filter prevents unwanted material from entering the control side of the FCSOV.

TASK 21-51-01-000-802

2. Upper Flow Control and Shutoff Valve (FCSOV) Filter Cleaning

(Figure 701)

A. References

Reference	Title
21-51-01-000-803	Upper Flow Control and Shutoff Valve (FCSOV) Filter Removal (P/B 401)
21-51-01-400-802	Upper Flow Control and Shutoff Valve (FCSOV) Filter Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-182	Cleaner - Ultrasonic

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

D. Prepare for Cleaning the Filter

SUBTASK 21-51-01-020-005

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE.

(1) Remove the filter from the upper FCSOV. To remove the filter, do this task: Upper Flow Control and Shutoff Valve (FCSOV) Filter Removal, TASK 21-51-01-000-803.

E. Clean the Filter

SUBTASK 21-51-01-100-001

(1) Do these steps to clean the filter:

WARNING

USE GOGGLES AND RUBBER GLOVES WHEN YOU CLEAN THE FILTER. CLEAN THE FILTER IN AN AREA WITH A GOOD FLOW OF AIR. THE CLEANER CAN IRRITATE YOUR EYES, SKIN, THROAT, AND LUNGS.

(a) Clean the filter in an ultrasonic cleaner, STD-182, or equivalent, as follows:

1) Ultrasonic clean with a mild alkaline cleaner such as Blue Gold FO 2085M heated to a temperature of 140 to 150 °F (60 to 65 °C) at an agitation frequency of 40 KHz for a maximum of 15 to 20 minutes.

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2) If you use an equivalent mild alkaline aqueous cleaner recommended by the manufacturer of your ultrasonic cleaner, use these guidelines:

a) Use the recommended cleaner for the substrate you are cleaning.

b) Use the recommended cleaning temperature from the manufacturer of the ultrasonic cleaner, STD-182.

c) Clean at an agitation frequency of 40 KHz for a maximum of 15 to 20 minutes

(b) Blow dry, filtered, compressed air through the air filter to remove any contamination.

(c) Dry the filter with the compressed air:

1) Use air pressure of 25 psig or less to clean and dry the filter.

2) Direct the flow of the air pressure away from personnel.

F. Restore the Airplane to Its Usual Condition

SUBTASK 21-51-01-420-005

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE.

(1) Re-install the filter in the upper FCSOV. To install the filter, do this task: Upper Flow Control and Shutoff Valve (FCSOV) Filter Installation, TASK 21-51-01-400-802.

——— END OF TASK ———

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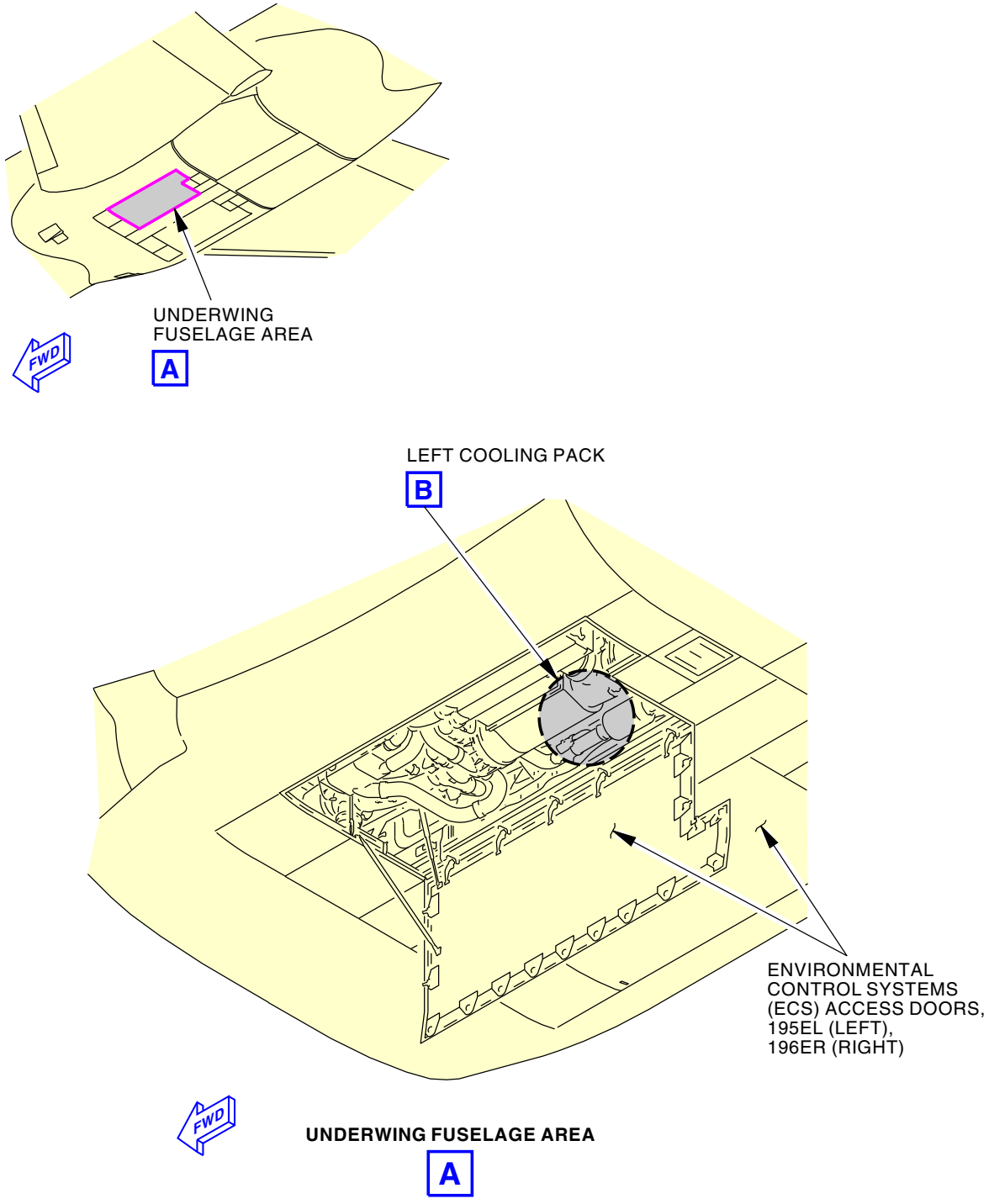

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Upper Flow Control and Shutoff Valve Filter Installation
Figure 701/21-51-01-990-802 (Sheet 1 of 2)

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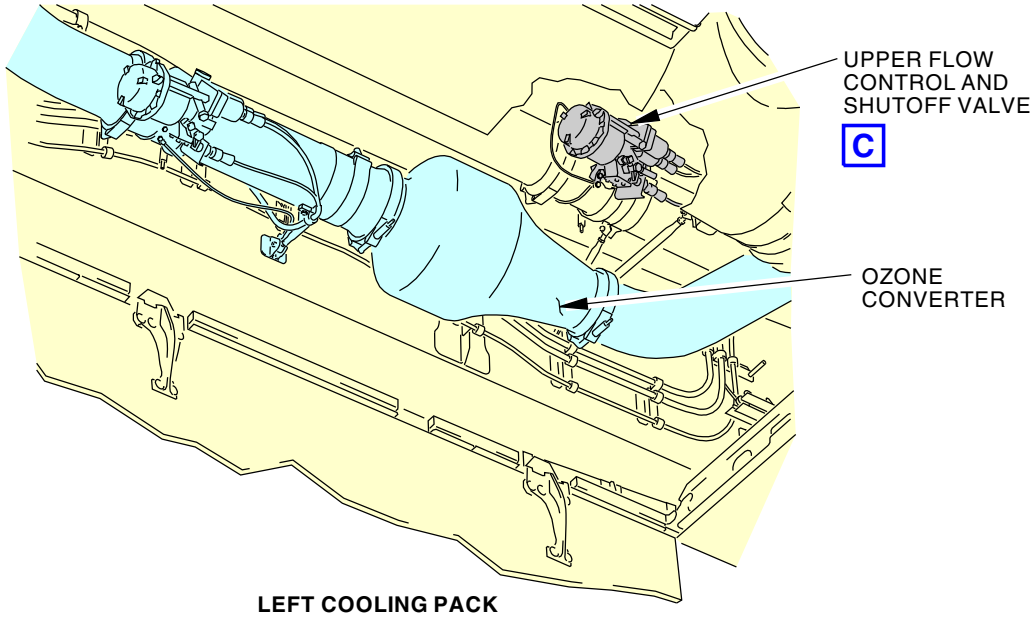
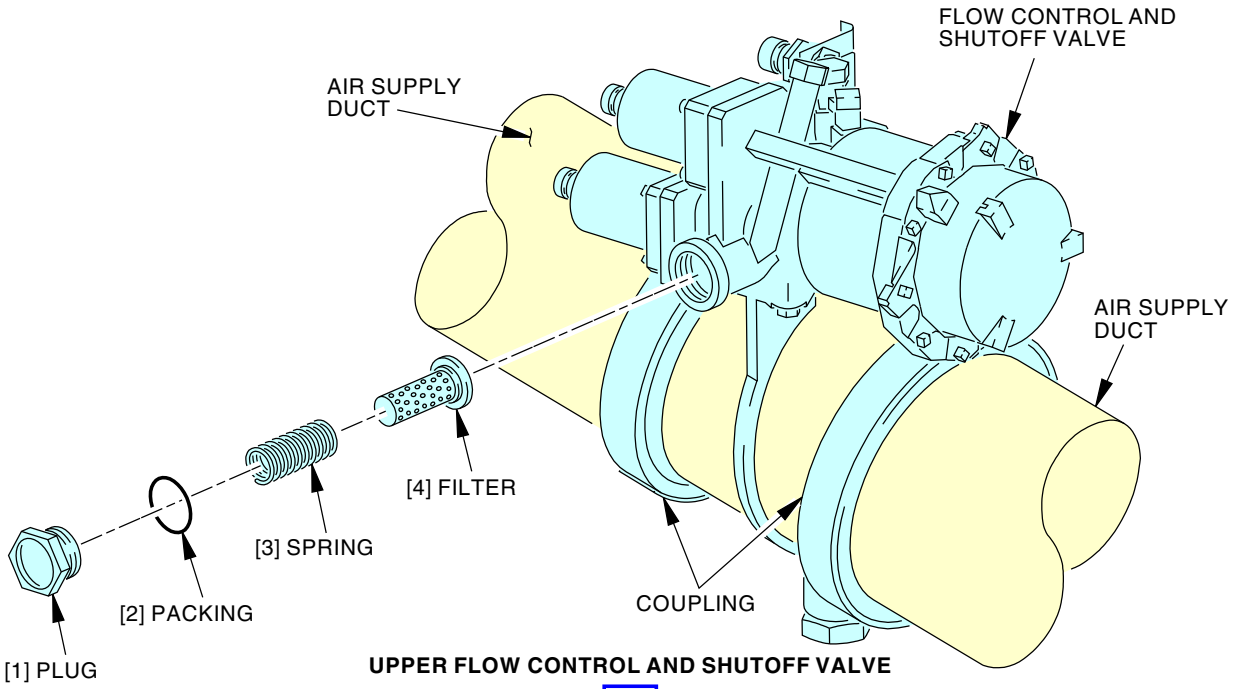


LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B



UPPER FLOW CONTROL AND SHUTOFF VALVE

C

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Upper Flow Control and Shutoff Valve Filter Installation
Figure 701/21-51-01-990-802 (Sheet 2 of 2)

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LOWER FLOW CONTROL AND SHUTOFF VALVE (FCSOV) AND FILTER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the lower flow control and shutoff valve (FCSOV).

(2) An installation of the lower flow control and shutoff valve (FCSOV).

(3) A removal of the lower flow control and shutoff valve (FCSOV) filter.

(4) An installation of the lower flow control and shutoff valve (FCSOV) filter.

B. The lower FCSOV is pneumatically operated. The lower FCSOV filter prevents unwanted material from entering the control side of the FCSOV.

TASK 21-51-02-000-801

2. Lower Flow Control and Shutoff Valve (FCSOV) Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-51-02-860-007

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-02-010-003

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-51-02-860-008

(3) To remove the lower flow control and shutoff valve [1] for the left cooling pack, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	23	C21645	L ECV FCV POS SNSR

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

SUBTASK 21-51-02-860-009

(4) To remove the lower flow control and shutoff valve [1] for the right cooling pack, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
H	4	C21646	R ECV/FCV POS SNSR
P	12	C36612	AIR SPLY R PRI

SUBTASK 21-51-02-010-001

(5) To get access to the lower flow control and shutoff valve [1] for the left cooling pack, do this step:

(a) Open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-02-010-002

(6) To get access to the lower flow control and shutoff valve [1] for the right cooling pack, do this step:

(a) Open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Lower Flow Control and Shutoff Valve Removal

SUBTASK 21-51-02-020-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the electrical connectors [2] from the lower flow control and shutoff valve [1].

SUBTASK 21-51-02-020-002

(2) Do these steps to remove the bonding jumper [5]:

(a) Remove the nut [7], bolt [4], washer [9], and washers [6].

(b) Remove the bonding jumper [5] from the lower flow control and shutoff valve [1].

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SUBTASK 21-51-02-020-003

(3) Remove the coupling [3] and coupling [8].

SUBTASK 21-51-02-020-004

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(4) Remove the lower flow control and shutoff valve [1].

SUBTASK 21-51-02-420-008

(5) Install covers on the duct openings to prevent the entry of unwanted materials.

——— END OF TASK ———

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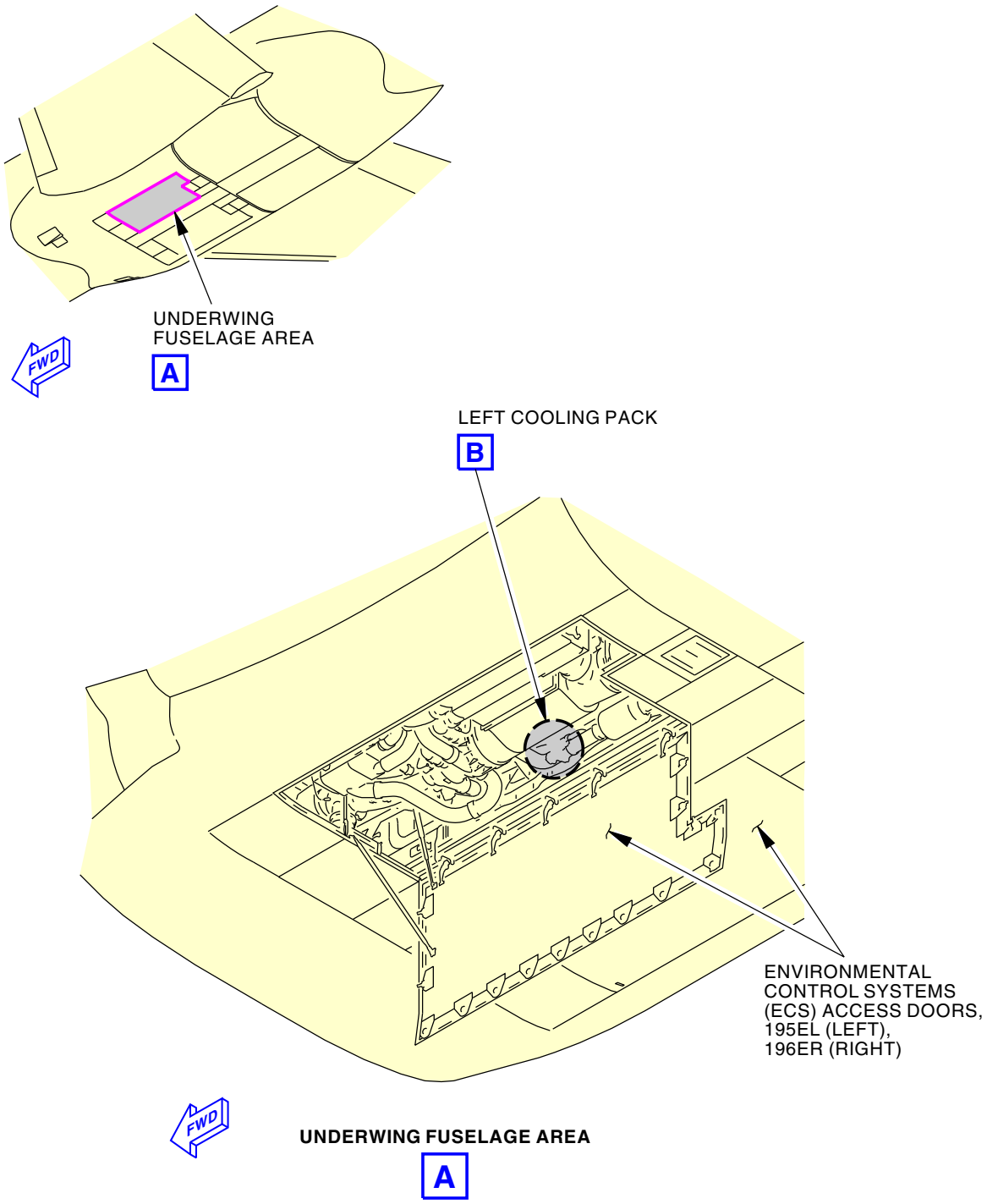

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Lower Flow Control and Shutoff Valve Installation
Figure 401/21-51-02-990-801 (Sheet 1 of 4)

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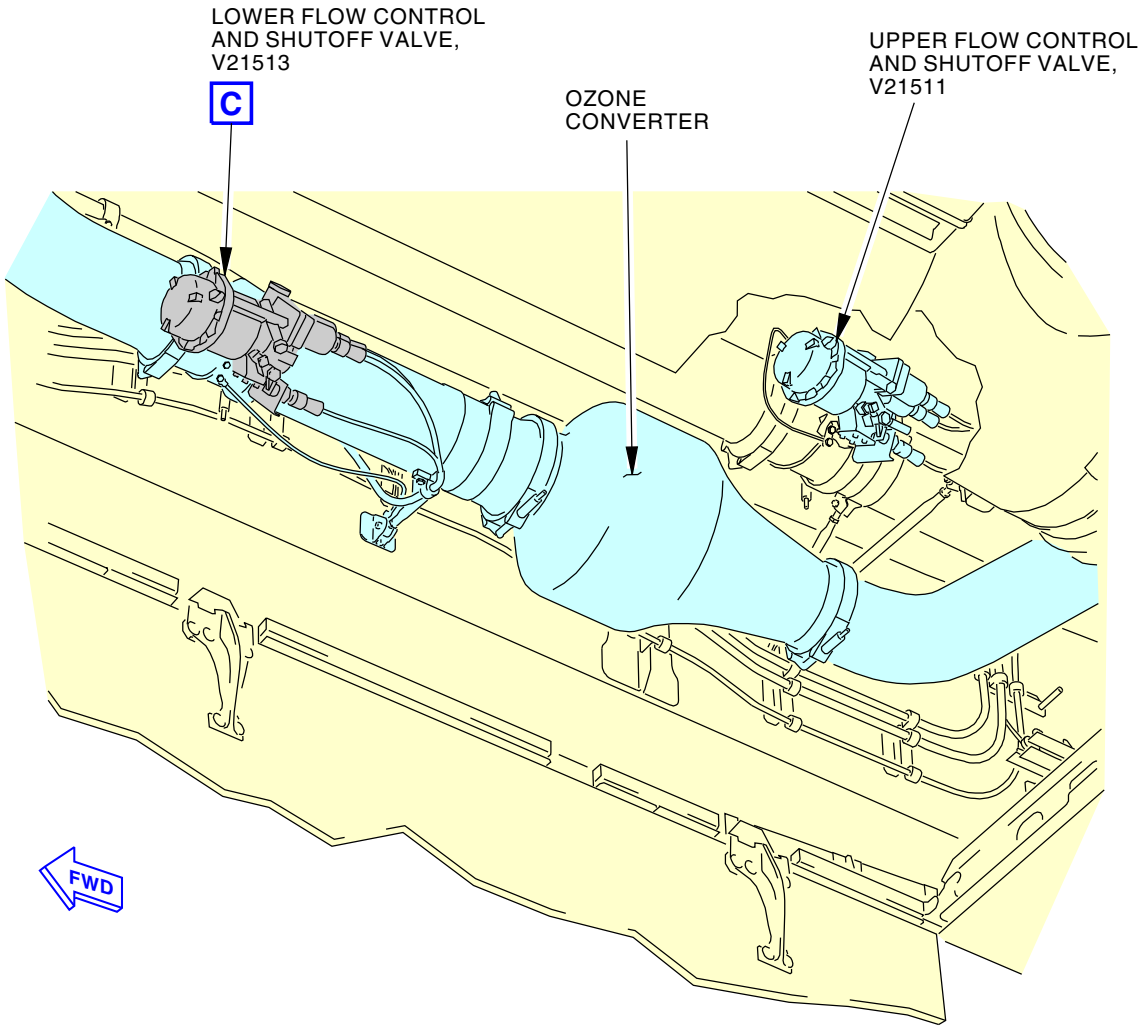

LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B

D21895 S0006403908_V3

Lower Flow Control and Shutoff Valve Installation
Figure 401/21-51-02-990-801 (Sheet 2 of 4)

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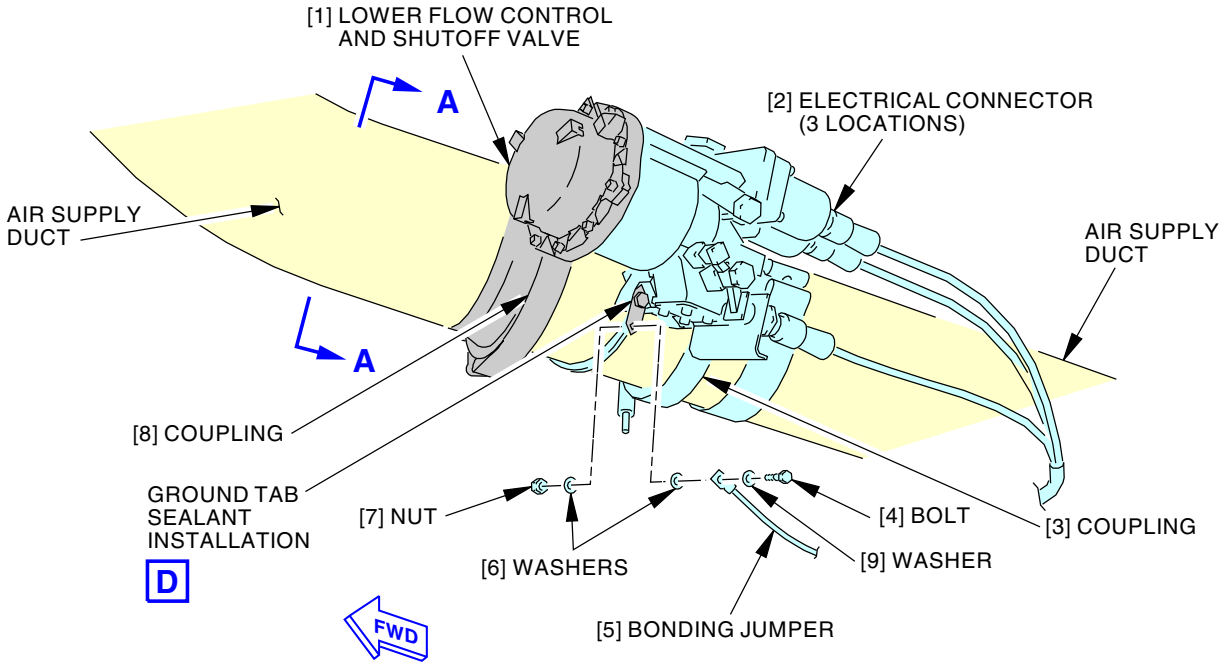
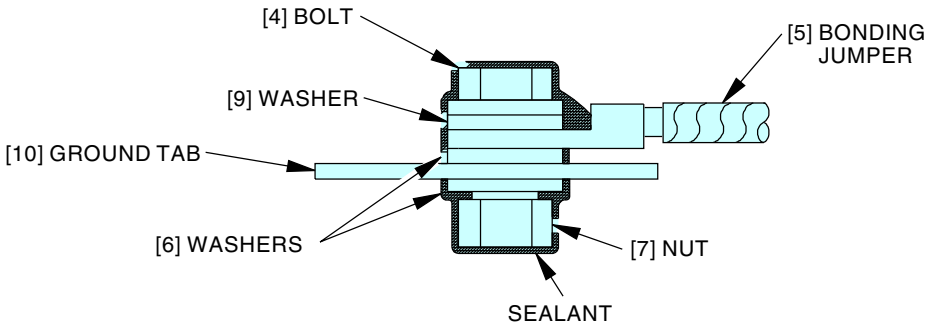


LOWER FLOW CONTROL AND SHUTOFF VALVE

C



GROUND TAB SEALANT INSTALLATION

D

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Lower Flow Control and Shutoff Valve Installation
Figure 401/21-51-02-990-801 (Sheet 3 of 4)

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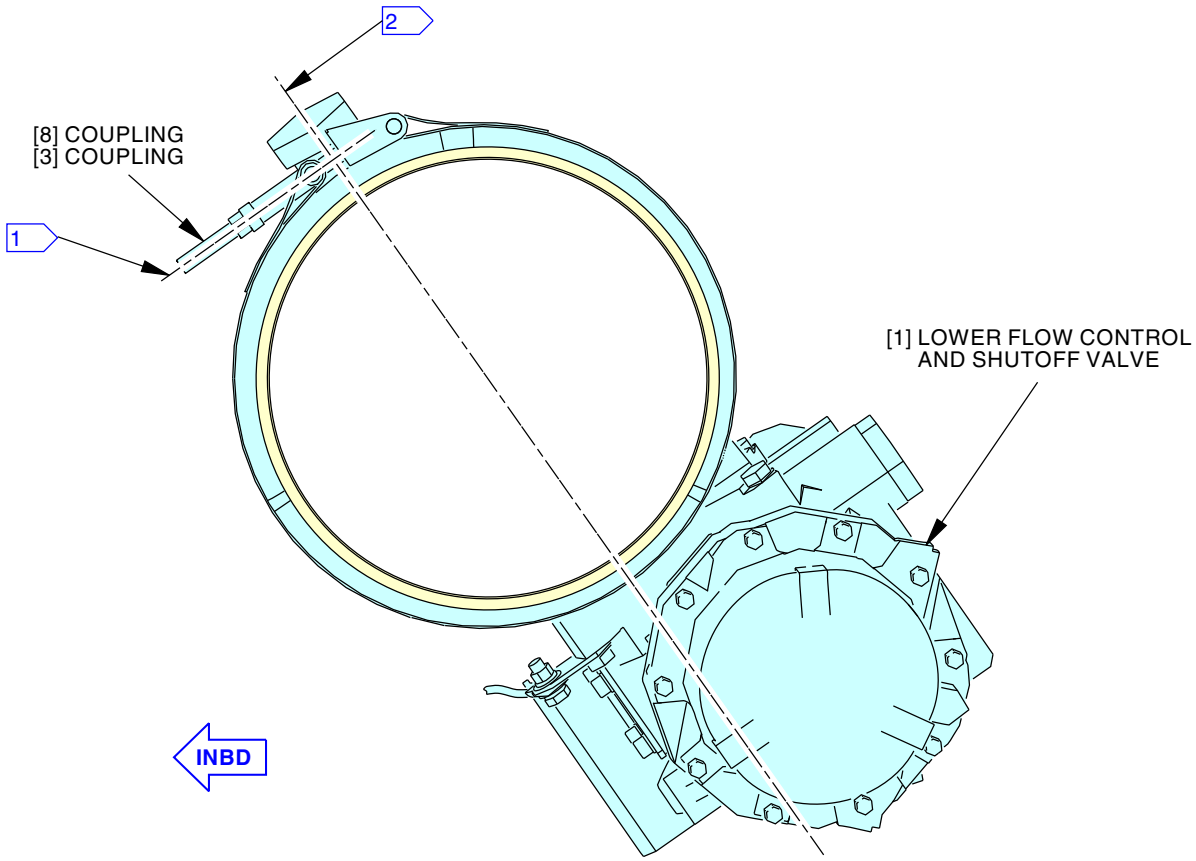

A-A

1 CENTER LINE OF COUPLING LEVER 90 DEGREES PLUS OR MINUS 5 DEGREES FROM CENTER LINE OF BUTTERFLY SHAFT.

2 CENTER LINE OF FCV BUTTERFLY SHAFT.

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Lower Flow Control and Shutoff Valve Installation
Figure 401/21-51-02-990-801 (Sheet 4 of 4)

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TASK 21-51-02-400-801

3. Lower Flow Control and Shutoff Valve (FCSOV) Installation

(Figure 401)

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)
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)
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)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
71-00-00-800-835-H00	Engine Start (Selection) (P/B 201)
71-00-00-800-837-H00	Usual Engine Stop (P/B 201)
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
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Lower flow control and shutoff valve	21-51-02-01-046	ARO ALL

E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

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(Continued)

Zone	Area
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

G. Lower Flow Control and Shutoff Valve Installation

SUBTASK 21-51-02-010-010

(1) Remove the covers from the duct openings.

SUBTASK 21-51-02-420-001

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(2) Put the lower flow control and shutoff valve [1] between the two air supply ducts.

SUBTASK 21-51-02-420-002

(3) Do these steps to make sure the coupling [3] and coupling [8] are properly installed on the duct flanges:

(a) Make sure the duct flanges make full contact, with no gaps around the circumference of the flanges.

(b) Make sure the ducts are aligned along their centerlines with no more than 0.06 in. (1.52 mm) misalignment.

(c) Install coupling [3] and coupling [8] with the coupling T-bolt on the inboard side of the duct.

(d) Make sure the coupling [3] and coupling [8] T-bolts are positioned 90 degrees, plus or minus 5 degrees, to the lower flow control and shutoff valve [1] butterfly shaft.

CAUTION

DO NOT TIGHTEN THE COUPLINGS UNTIL ALL OF THE DUCTS ARE INSTALLED AND ALIGNED. IF THE DUCTS ARE NOT ALIGNED CORRECTLY LEAKS CAN OCCUR AND CAUSE DAMAGE TO EQUIPMENT.

(e) Tighten the 5.5-inch coupling [3] and the coupling [8] to 50 in-lb (5.6 N·m) - 60 in-lb (6.8 N·m).

(f) Lightly tap around the coupling [3] and coupling [8] with a rubber mallet.

1) Start at a point opposite of the T-bolt and tap in the direction of the T-bolt on one side. Repeat for the other side.

NOTE: The coupling will seat on the flanges and the lock-nut will loosen. This will make sure that you engage the coupling and flanges correctly.

(g) Tighten the 5.5-inch coupling [3] and the coupling [8] to 50 in-lb (5.6 N·m) - 60 in-lb (6.8 N·m).

(h) Repeat the above steps until the locking nut on the coupling requires less than a half turn to get the recommended torque.

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1) Make sure that the length of the exposed threads on the T-bolt is a minimum of 0.5 in. (12.7 mm).
   a) If less than 0.5 in. (12.7 mm) of thread is exposed, retorque and reseat, or replace the coupling.

SUBTASK 21-51-02-100-002

(4) Clean the bond surfaces of the ground tab [10] (TASK 20-10-22-110-802).

SUBTASK 21-51-02-100-003

(5) Clean the bond surfaces of the bonding jumper [5] and washers [6] (TASK 20-10-22-110-802).

SUBTASK 21-51-02-420-007

(6) To install the bonding jumper [5], do the steps that follow:
   (a) Put a washer [6] on the ground tab [10].
   (b) Put the bonding jumper [5] on the washer [6].
   (c) Install the bolt [4] and washer [9] on the bonding jumper terminal.
   (d) Install the washer [6] and nut [7] on the bolt [4].
      1) Tighten the nut [7] to 25 in-lb (2.8 N·m) - 35 in-lb (4.0 N·m).
   (e) With the intrinsically safe approved bonding meter, COM-1550, make sure the resistance between the ground tab [10] and the airplane structure is less than 0.025 ohm (SWPM 20-20-00).

      NOTE: Do not put the probe on the bracket to which the bonding jumper attaches.

SUBTASK 21-51-02-390-001

(7) Apply a thin, continuous layer of sealant, A00247, on the bonding jumper terminal connections (View D, Figure 401).

SUBTASK 21-51-02-420-004

(8) Connect the electrical connectors [2] to the lower flow control and shutoff valve [1].

SUBTASK 21-51-02-860-010

(9) If you replaced the lower flow control and shutoff valve [1] for the left cooling pack, do this step:
   (a) Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	23	C21645	L ECV FCV POS SNSR
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

SUBTASK 21-51-02-860-011

(10) If you replaced the lower flow control and shutoff valve [1] for the right cooling pack, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
H	4	C21646	R ECV/FCV POS SNSR
P	12	C36612	AIR SPLY R PRI

H. Lower Flow Control and Shutoff Valve Installation Test

SUBTASK 21-51-02-860-019

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-51-02-860-016

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-51-02-860-017

(3) Do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-51-02-740-001

(4) Do the steps that follow to do a LRU replacement test and an air leakage check of the applicable lower flow control and shutoff valve:

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(a) Use a Maintenance Access Terminal (MAT) to do the LRU replacement test of the lower flow control and shutoff valve (TASK 45-10-00-740-808).

NOTE: While the MAT test is in operation, the cooling pack valves will open. Use the ECS maintenance page to determine when the applicable flow control and shutoff valve is open. A second person should put their hand approximately six inches away from the applicable lower flow control and shutoff valve to feel for air leakage. If air leakage is felt, the applicable lower flow control and shutoff valve and couplings must be adjusted until air leakage is not felt.

1) Make these selections on the MAT:
   a) ONBOARD MAINTENANCE
   b) LINE MAINTENANCE
   c) GROUND TESTS
   d) 21 Cabin Temperature Control System
   e) LRU Replacement Test
   f) System Air On Test (Left or Right as appropriate)
   g) CONTINUE

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2) Do the instructions that show on the MAT and then make these selections:
   a) CONTINUE
   b) START TEST
3) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
4) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.
5) Make these selections on the MAT:
   a) EXTENDED MAINTENANCE
   b) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable flow control and shutoff valve.

(c) If 21 Cabin Temperature Control System shows, do these steps:
1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable flow control and shutoff valve.
4) If a maintenance message for the applicable flow control and shutoff valve shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 21-51-02-740-002

(5) Do a check of the control of the FCV by the air supply and cabin pressure controller (ASCPC).

There are two procedures to initiate the ASCPC preflight BIT test. One method is to operate the Right (Left) engine, the other is to simulate the Right and Left engine operation. Do one of the two following procedures to complete the ASCPC preflight BIT:

NOTE: This check will verify that the ASCPC can control its associated torque motor on the flow control valve.

(a) Do the steps that follow for the Right (Left) engine operation procedure:
1) Start the Right (Left) engine (TASK 71-00-00-800-835-H00).
2) Make sure that the ADIRU switch is in the ON position.
3) Make sure the L ENG BLEED AIR and the R ENG BLEED AIR switches are in the OFF position.
4) Let the engine operate for 1 minute and 30 seconds.

   NOTE: The ASCPC preflight BIT occurs during the first minute after the engines have started.

5) Make these selections on the MAT:
   a) ONBOARD MAINTENANCE
   b) EXTENDED MAINTENANCE
   c) EXISTING FAULTS

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6) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable flow control and shutoff valve.

7) If 21 Cabin Temperature Control System shows, do these steps:

a) Select 21 Cabin Temperature Control System.

b) Select CONTINUE.

c) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable flow control and shutoff valve.

d) If a maintenance message for the applicable flow control and shutoff valve shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

8) Stop the Right (Left) engine (TASK 71-00-00-800-837-H00).

(b) Do the steps that follow for the simulated engine operation procedure:

1) Make sure that the ADIRU switch is in the ON position.

2) Make sure the L ENG BLEED AIR and the R ENG BLEED AIR switches are in the OFF position.

3) Make sure the L and R engine START/IGNITION switches are in the NORM position.

a) Put a DO-NOT-OPERATE placard on the L and R engine START/IGNITION switches.

4) Set the left and right engine FUEL CONTROL switches to the CUTOFF position.

5) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

6) To use the ground air source to supply pneumatic power, do these steps:

a) Supply pneumatic pressure with the ground air source (TASK 36-00-00-860-802).

b) Set the left engine FUEL CONTROL switch, on the P10 control stand, to the RUN position.

NOTE: The right engine FUEL CONTROL switch must stay in the CUTOFF position.

c) Cycle the airplane between the air mode and the ground mode.

NOTE: This cycle action will allow the Air Supply and Cabin Pressure Controller (ASCPC) to think that the ground cart is disconnected even though it is connected and providing pneumatic pressure.

<1> Put the airplane in the air mode (TASK 32-09-00-040-801).

<2> To put the airplane back to the ground mode, do the steps that follow:

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<a> Do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

<b> Do this task: Air Mode Simulation - Restoration, TASK 32-09-00-440-801.

d) Set the right engine FUEL CONTROL switch, on the P10 control stand, to the RUN position.

7) To use the APU to supply pneumatic power, do these steps:

a) Supply pneumatic pressure with the APU (TASK 36-00-00-860-802).

b) Set the left and right engine FUEL CONTROL switches, on the P10 control stand, to the RUN position.

8) Wait approximately 6 minutes.

NOTE: The ASCPC preflight BIT occurs 5 minutes after the simulated engine operation.

9) Make these selections on the MAT:

a) ONBOARD MAINTENANCE

b) EXTENDED MAINTENANCE

c) EXISTING FAULTS

10) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable flow control and shutoff valve.

11) If 21 Cabin Temperature Control System shows, do these steps:

a) Select 21 Cabin Temperature Control System.

b) Select CONTINUE.

c) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable flow control and shutoff valve.

d) If a maintenance message for the applicable flow control and shutoff valve shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

12) Set the left and right engine FUEL CONTROL switches on the P10 control stand to the CUTOFF position.

13) Remove the DO-NOT-OPERATE placard on the L and R engine START/IGNITION switches.

14) Remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	5	C28001	L ENGINE FUEL SPAR VALVE
A	19	C28002	R ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
B	19	C76600	R ENG FUEL VALVE

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I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-02-860-021

(1) Set the ADIRU switch on the P5 overhead panel to the OFF position.

SUBTASK 21-51-02-860-018

(2) Do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-51-02-860-014

(3) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-02-410-001

(4) If the lower flow control and shutoff valve [1] for the right cooling pack was installed, do this step:

(a) Close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-02-410-002

(5) If the lower flow control and shutoff valve [1] for the left cooling pack was installed, do this step:

(a) Close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-02-410-003

(6) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-51-02-000-802

4. Lower Flow Control and Shutoff Valve (FCSOV) Filter Removal

(Figure 402)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

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D. Prepare for the Removal

SUBTASK 21-51-02-840-001

WARNING REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-02-010-004

(2) To remove the left FCSOV filter, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-02-010-005

(3) To remove the right FCSOV filter, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-02-010-006

CAUTION DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(4) If you cannot get access to the FCSOV filter [4], then do these steps:

(a) Make a note of the position of the valve.

(b) Loosen the two couplings that hold the valve to the duct.

CAUTION DO NOT DAMAGE THE O-RING PACKING WHEN YOU ROTATE THE VALVE. THE DAMAGE CAN CAUSE LEAKAGE OF THE DUCT CONNECTIONS.

(c) Carefully rotate the valve until you can get access to the filter [4].

E. Remove the Filter

SUBTASK 21-51-02-020-005

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Do these steps to remove the FCSOV filter [4]:

(a) Remove the threaded plug [1].

(b) Remove the compression spring [3].

(c) Remove the air filter [4].

END OF TASK

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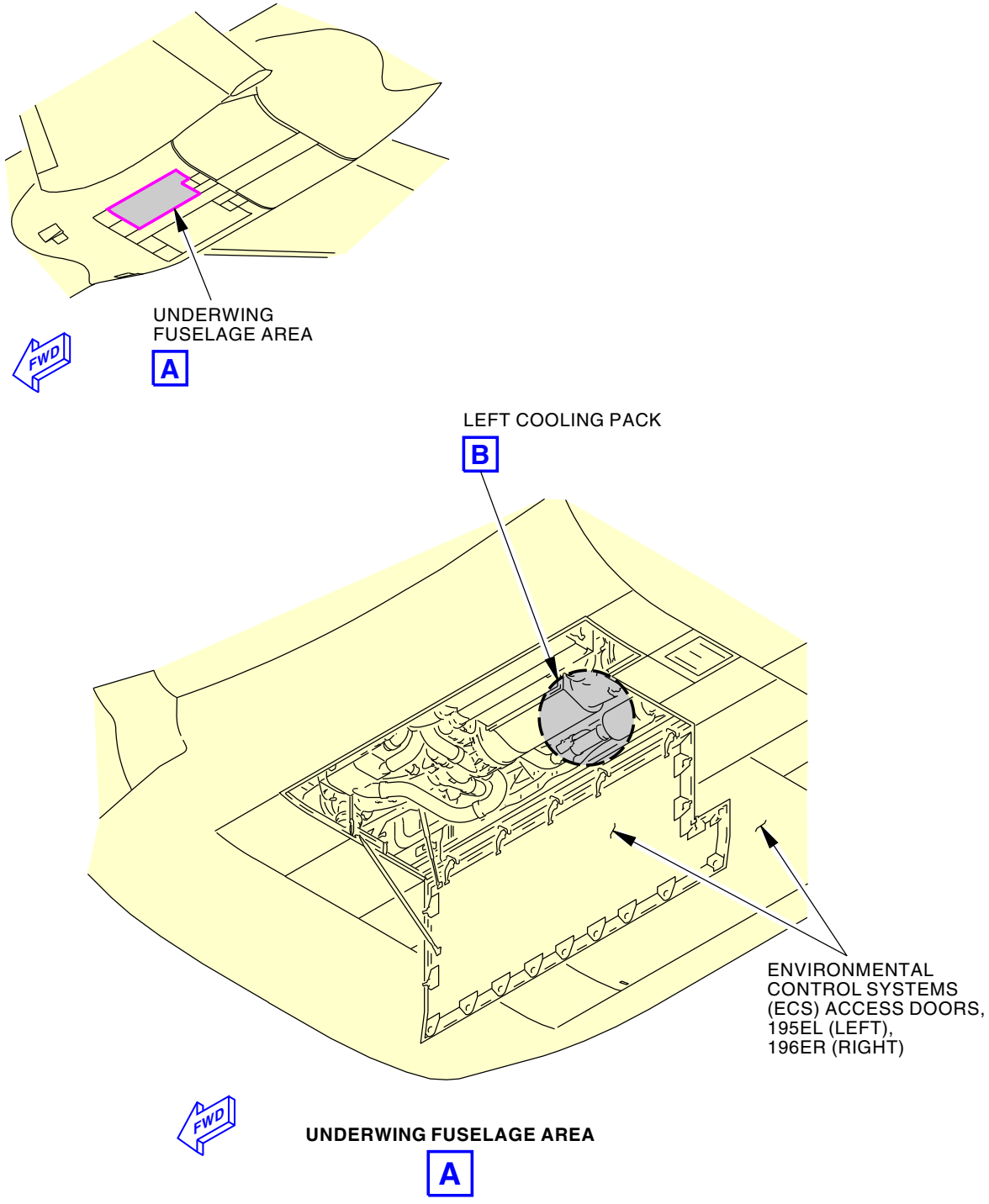

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Lower Flow Control and Shutoff Valve Filter Installation
Figure 402/21-51-02-990-802 (Sheet 1 of 2)

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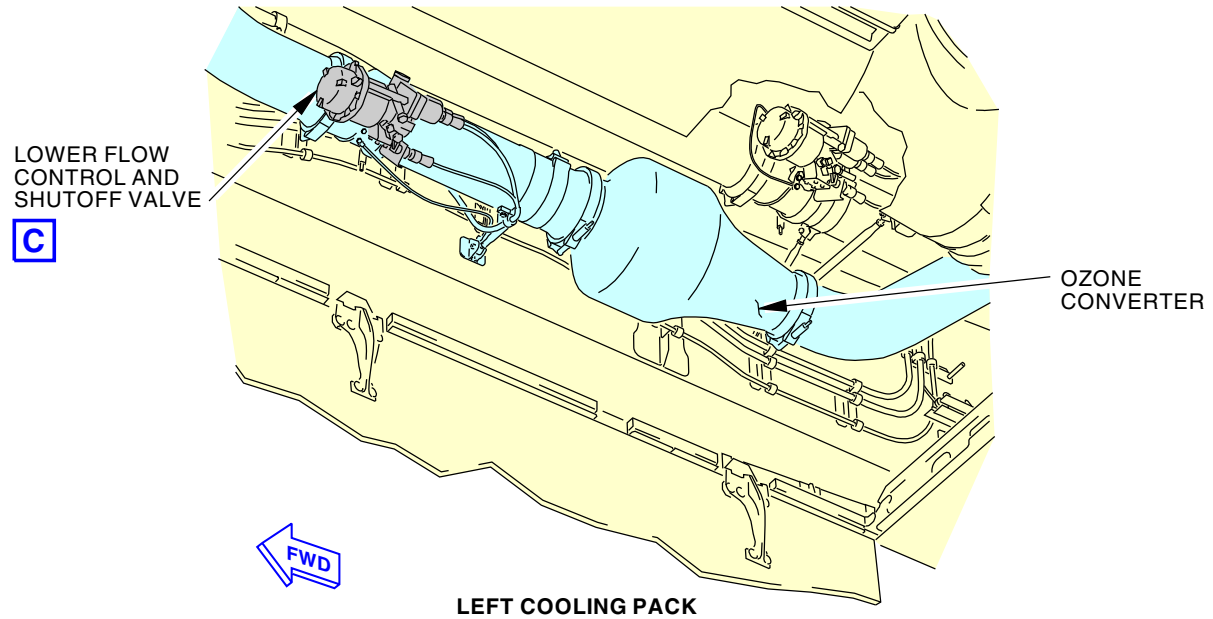
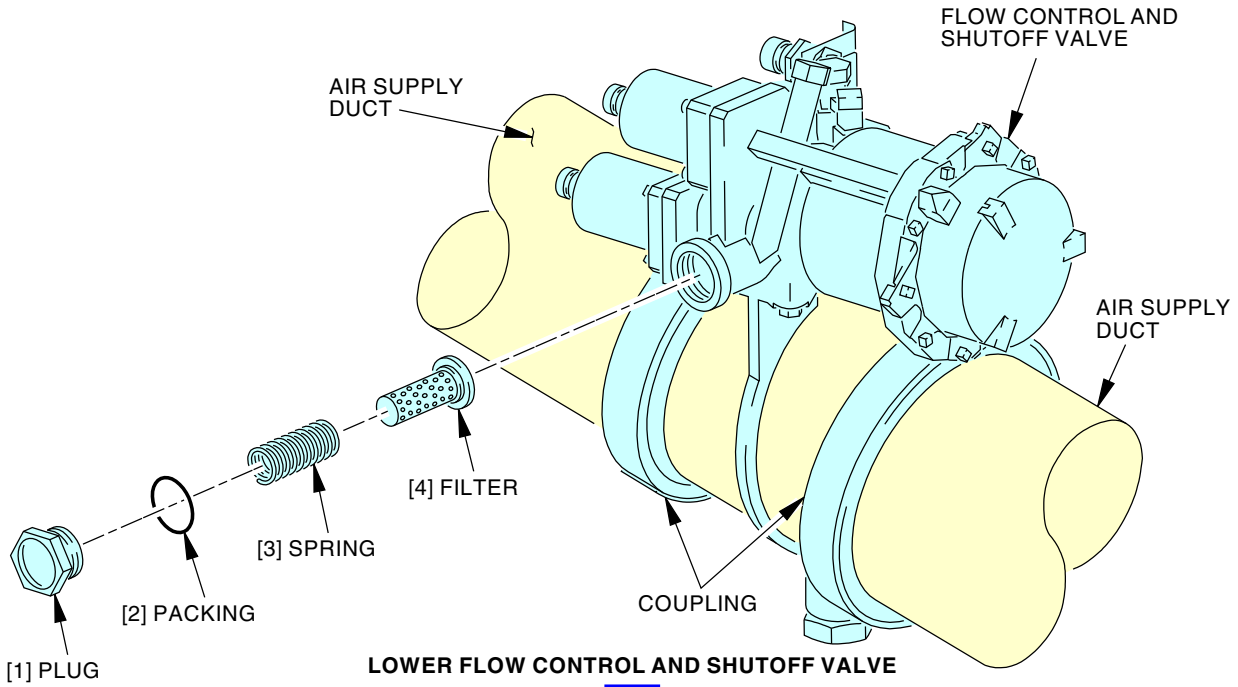


LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B



LOWER FLOW CONTROL AND SHUTOFF VALVE

C

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Lower Flow Control and Shutoff Valve Filter Installation
Figure 402/21-51-02-990-802 (Sheet 2 of 2)

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TASK 21-51-02-400-802

5. Lower Flow Control and Shutoff Valve (FCSOV) Filter Installation

(Figure 402)

A. Consumable Materials

Reference	Description	Specification
D00669	Multi-Purpose, Moly-Lithium Type, Lubriplate Mo-Lith No. 2	
D50104	Grease - Molykote 44 High Temperature Bearing Grease (Medium) (Formerly Dow Corning DC-44)	

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	21-51-02-01-052	ARO ALL
4	Filter	21-51-02-01-054	ARO ALL

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Install the Filter

SUBTASK 21-51-02-420-005

(1) Do these steps to install the FCSOV filter [4]:

(a) Inspect the air filter [4] for a damaged screen.

(b) If the screen is damaged, then discard the filter [4] and get a new air filter [4].

(c) Install the air filter [4].

(d) Reinstall the compression spring [3].

(e) Inspect the packing [2] for damage or deterioration.

(f) If you find any damage or deterioration, then discard the packing [2] and get a new preformed packing [2].

1) Put a thin layer of grease, Molykote 44 grease, medium, D50104, on the packing [2].

2) Install the packing [2] onto the plug [1].

(g) Put a thin layer of lubricant, Lubriplate Mo-Lith No. 2 Lubricant, D00669, on the threads of the plug [1].

(h) Reinstall the threaded plug [1].

(i) Tighten the plug [1] to 35 in-lb (4 N·m) - 45 in-lb (5 N·m).

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SUBTASK 21-51-02-010-007

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(2) If you loosened the two valve couplings to get access to the valve filter, then do these steps:

CAUTION

DO NOT DAMAGE THE O-RING PACKING WHEN YOU ROTATE THE VALVE. THE DAMAGE CAN CAUSE LEAKAGE OF THE DUCT CONNECTIONS.

(a) Carefully rotate the valve back to its original position.

(b) Tighten the nut on each of the two valve couplings to 50 in-lb (6 N·m) - 60 in-lb (7 N·m).

F. Restore the Airplane to Its Usual Condition

SUBTASK 21-51-02-010-008

(1) If you installed the left FCSOV filter, then close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-02-010-009

(2) If you installed the right FCSOV filter, then close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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LOWER FLOW CONTROL AND SHUTOFF VALVE (FCSOV) AND FILTER - CLEANING/PAINTING

1. General

A. This procedure contains one task:

(1) Cleaning the lower flow control and shutoff valve (FCSOV) filter.

B. The lower FCSOV is pneumatically operated. The lower FCSOV filter prevents unwanted material from entering the control side of the FCSOV.

TASK 21-51-02-000-803

2. Lower Flow Control and Shutoff Valve (FCSOV) Filter Cleaning

(Figure 701)

A. References

Reference	Title
21-51-02-000-802	Lower Flow Control and Shutoff Valve (FCSOV) Filter Removal (P/B 401)
21-51-02-400-802	Lower Flow Control and Shutoff Valve (FCSOV) Filter Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-182	Cleaner - Ultrasonic

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

D. Prepare for Cleaning the Filter

SUBTASK 21-51-02-020-006

CAUTION DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE.

(1) Remove the filter from the lower FCSOV. To remove the filter, do this task: Lower Flow Control and Shutoff Valve (FCSOV) Filter Removal, TASK 21-51-02-000-802.

E. Clean the Filter

SUBTASK 21-51-02-100-001

(1) Do these steps to clean the filter:

WARNING USE GOGGLES AND RUBBER GLOVES WHEN YOU CLEAN THE FILTER. CLEAN THE FILTER IN AN AREA WITH A GOOD FLOW OF AIR. THE CLEANER CAN IRRITATE YOUR EYES, SKIN, THROAT, AND LUNGS.

(a) Clean the filter in an ultrasonic cleaner, STD-182, or equivalent, as follows:

1) Ultrasonic clean with a mild alkaline cleaner such as Blue Gold FO 2085M heated to a temperature of 140 to 150 °F (60 to 65 °C) at an agitation frequency of 40 KHz for a maximum of 15 to 20 minutes.

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2) If you use an equivalent mild alkaline aqueous cleaner recommended by the manufacturer of your ultrasonic cleaner, use these guidelines:

a) Use the recommended cleaner for the substrate you are cleaning.

b) Use the recommended cleaning temperature from the manufacturer of the ultrasonic cleaner, STD-182.

c) Clean at an agitation frequency of 40 KHz for a maximum of 15 to 20 minutes.

(b) Blow dry, filtered, compressed air through the air filter to remove any contamination.

(c) Dry the filter with the compressed air:

1) Use air pressure of 25 psig or less to clean and dry the filter.

2) Direct the flow of the air pressure away from personnel.

F. Restore the Airplane to Its Usual Condition

SUBTASK 21-51-02-420-006

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE.

(1) Re-install the filter in the lower FCSOV. To install the filter, do this task: Lower Flow Control and Shutoff Valve (FCSOV) Filter Installation, TASK 21-51-02-400-802.

——— END OF TASK ———

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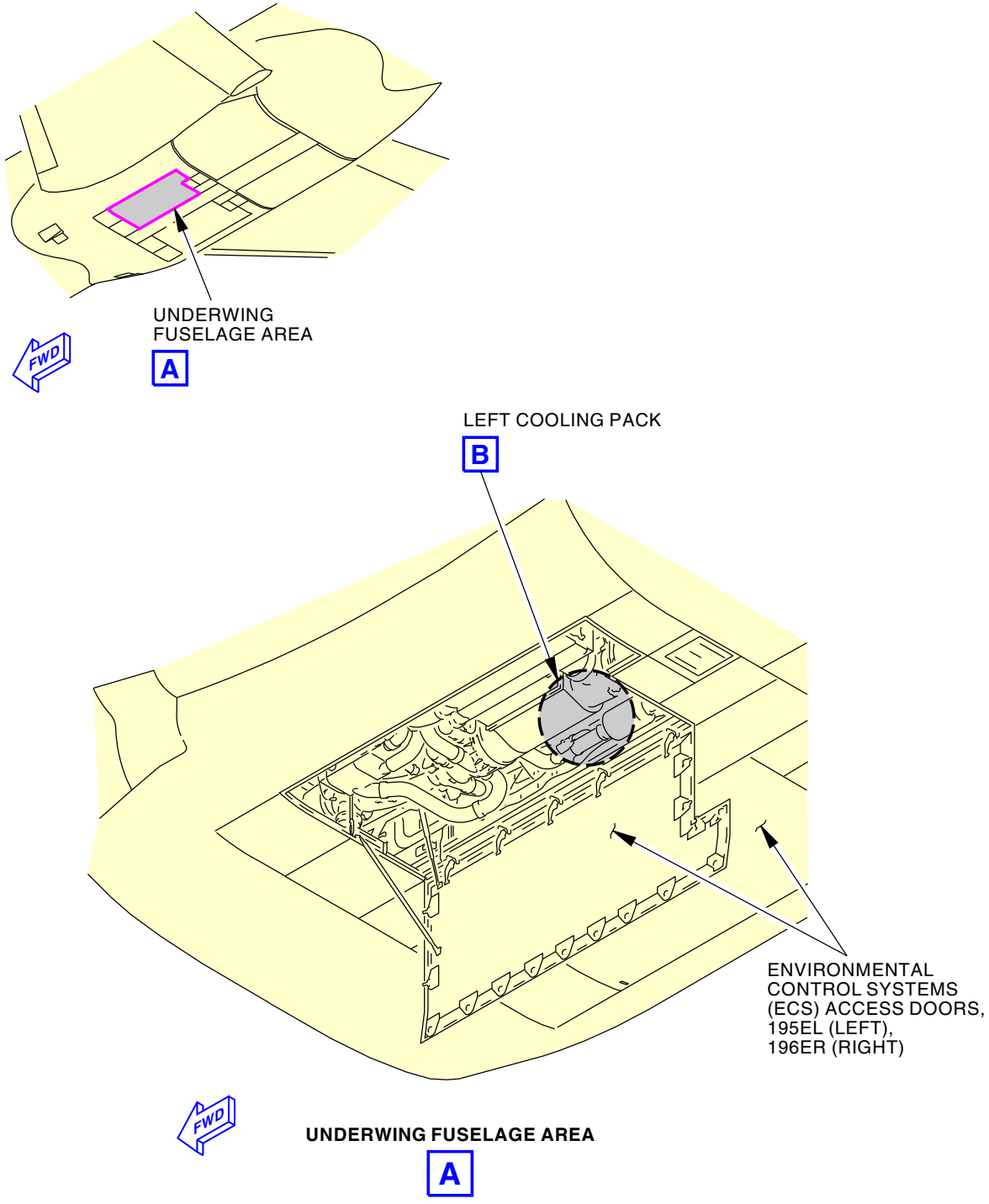

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Lower Flow Control and Shutoff Valve Filter Installation
Figure 701/21-51-02-990-803 (Sheet 1 of 2)

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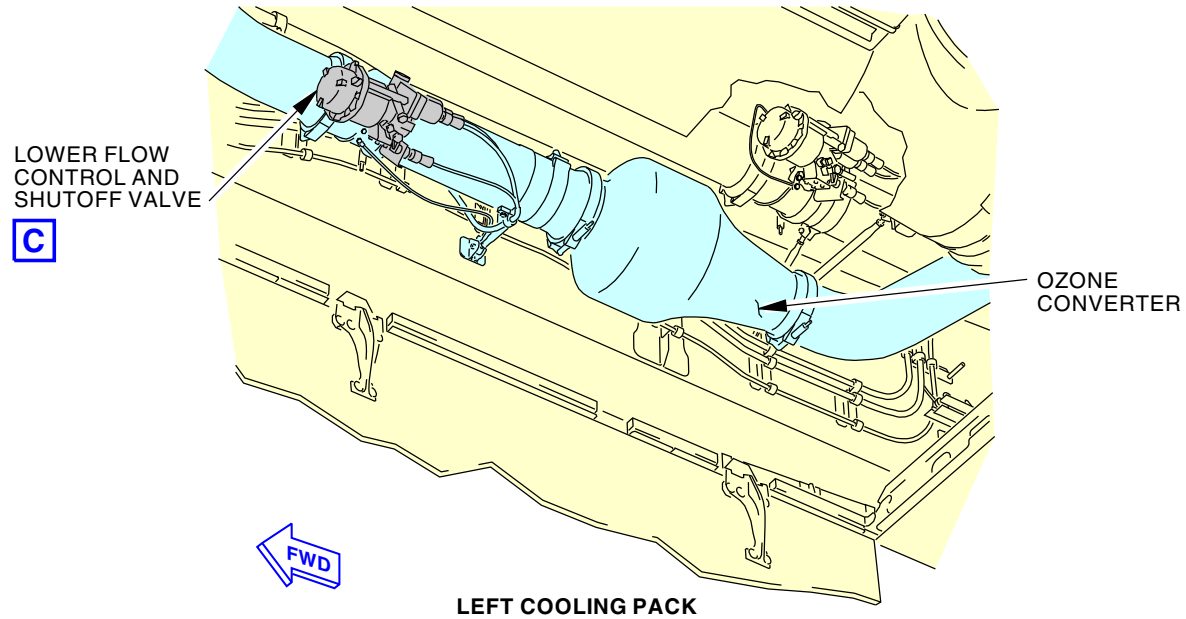
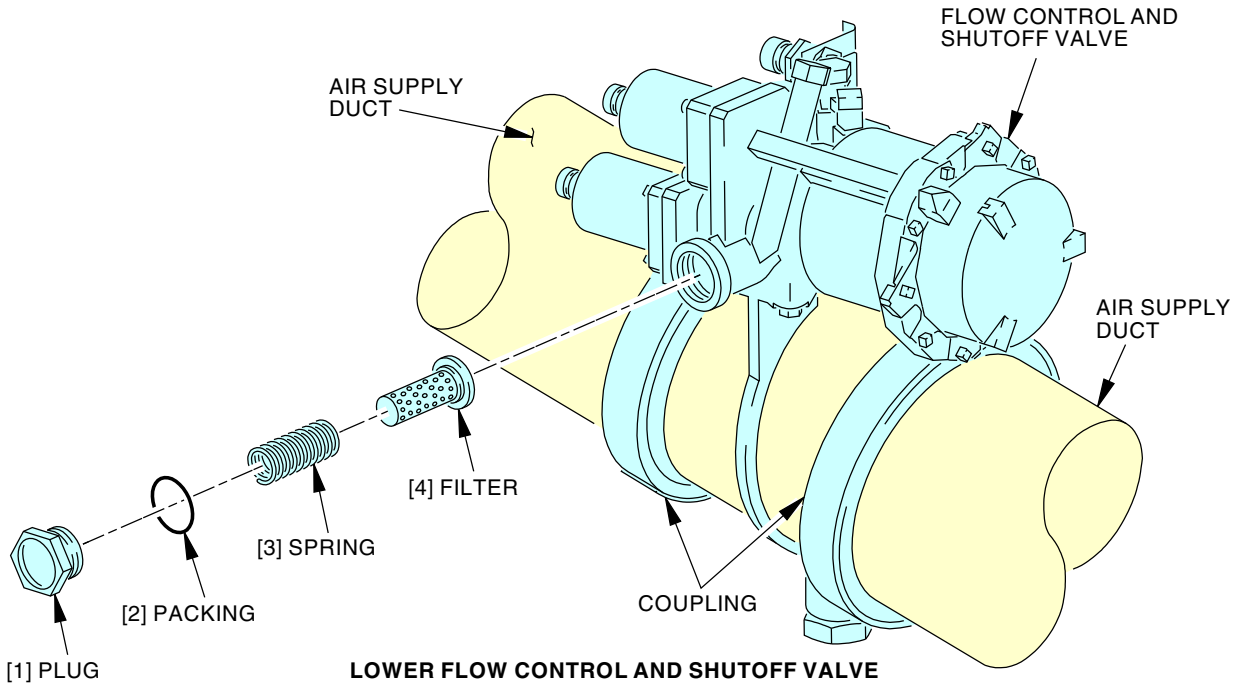


LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B



LOWER FLOW CONTROL AND SHUTOFF VALVE

C

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Lower Flow Control and Shutoff Valve Filter Installation
Figure 701/21-51-02-990-803 (Sheet 2 of 2)

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FLOW SENSORS - REMOVAL/INSTALLATION

1. General

A. The flow sensor is a duct that has one absolute pressure sensor and two differential pressure sensors.

The flow sensor can be replaced as a complete unit.

B. This procedure has these tasks:

(1) A removal of the flow sensor

(2) An installation of the flow sensor.

(3) A removal of a pressure sensor

(4) An installation of a pressure sensor.

TASK 21-51-03-000-801

2. Flow Sensor Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-51-03-860-007

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-03-010-003

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-51-03-860-008

(3) To remove the flow sensor [1] for the left cooling pack

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)
H	28	C21627	L PACK & TRIM PRESS SNSR

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

SUBTASK 21-51-03-860-009

(4) To remove the flow sensor [1] for the right cooling pack

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
G	6	C21628	R PACK & TRIM PRESS SNSR
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
P	12	C36612	AIR SPLY R PRI

SUBTASK 21-51-03-010-001

(5) To get access to the flow sensor for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-03-010-002

(6) To get access to the flow sensor for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Flow Sensor Removal

SUBTASK 21-51-03-020-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the electrical connectors [4] from the flow sensor [1].

SUBTASK 21-51-03-020-004

(2) Make a note of the flow sensor [1] position on the cooling pack duct.

NOTE: This will help you to remember the correct position for the installation procedure.

SUBTASK 21-51-03-020-002

(3) Remove the coupling [2] and the coupling [3].

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SUBTASK 21-51-03-020-003

(4) Remove the flow sensor [1].

SUBTASK 21-51-03-020-009

(5) If necessary, remove the insulation blanket from the flow sensor [1].

NOTE: Insulation blanket can either be removed from the flow sensor or it can be removed with the flow sensor as a unit.

(a) Disengage the five snap connections on the insulation blanket.

(b) Carefully remove the insulation blanket from the flow sensor [1].

——— END OF TASK ———

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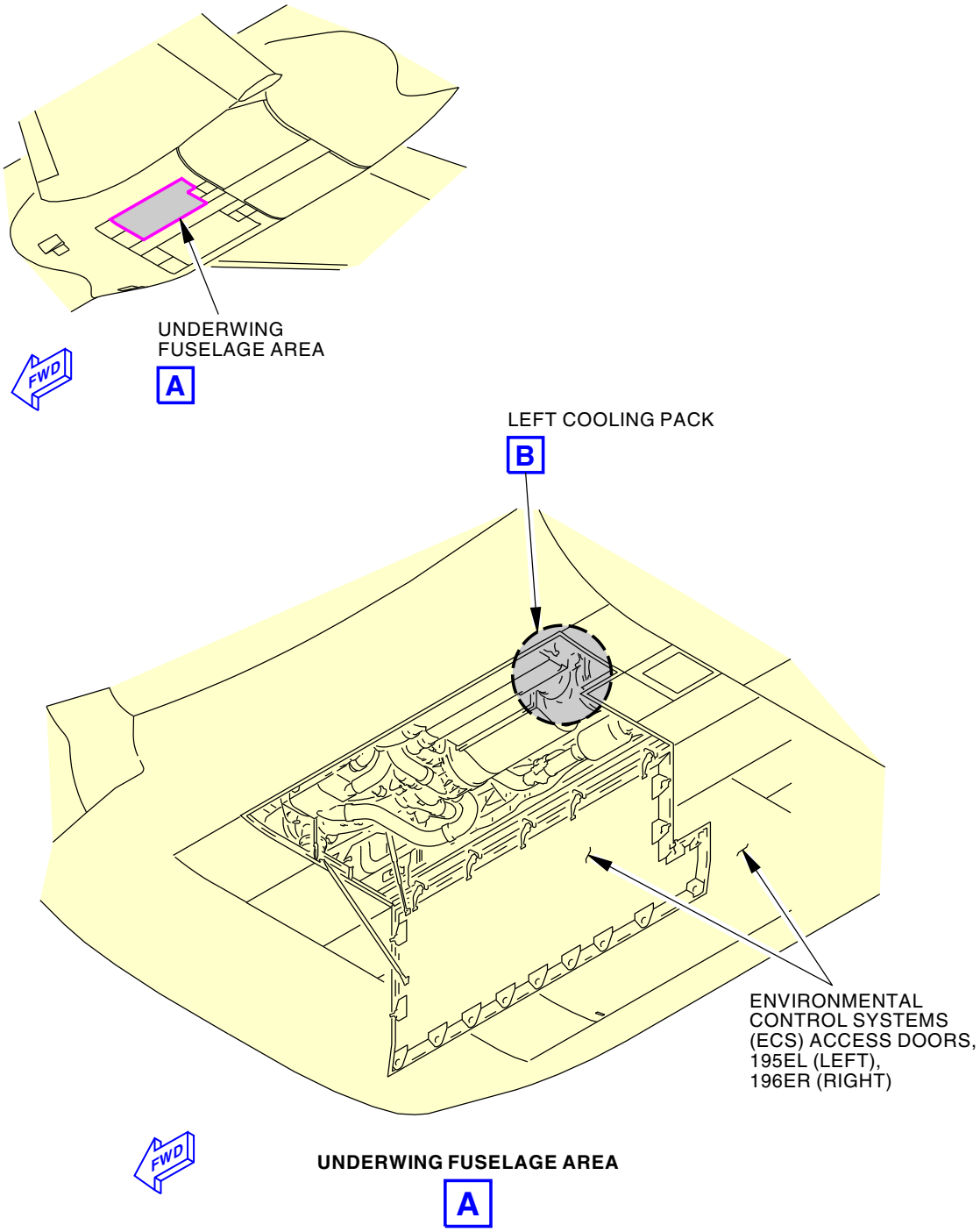

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Flow Sensor Installation
Figure 401/21-51-03-990-801 (Sheet 1 of 2)

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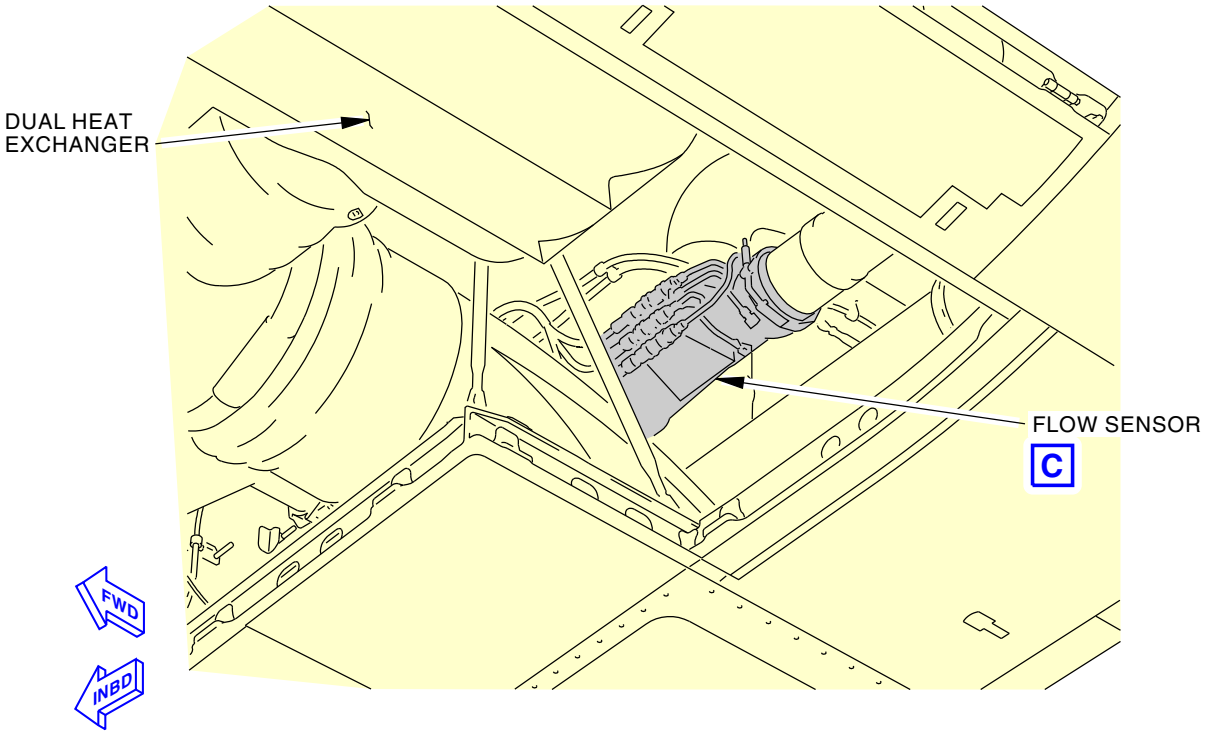

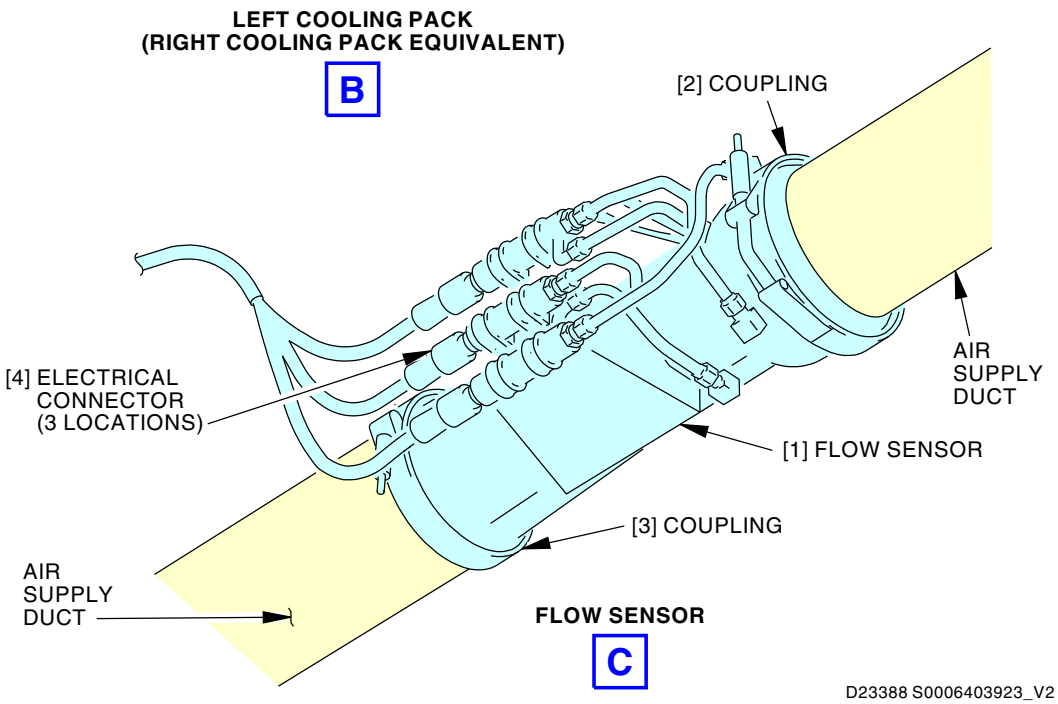

Flow Sensor Installation
Figure 401/21-51-03-990-801 (Sheet 2 of 2)

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TASK 21-51-03-400-801

3. Flow Sensor Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Flow sensor	21-51-03-01-020	ARO ALL

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Flow Sensor Installation

SUBTASK 21-51-03-420-008

(1) If removed, install the insulation blanket to the flow sensor [1].

(a) Make sure that the insulation blanket has no damage and the snaps are not broken.

(b) Carefully put the insulation blanket around the flow sensor [1].

(c) Engage the five snaps and make sure you hear a click sound when you engage each snap.

SUBTASK 21-51-03-420-001

(2) Put the flow sensor [1] between the two air supply ducts.

(a) With the note made at the removal, make sure that the flow sensor [1] is installed in the correct position.

NOTE: The flow sensor is usually installed with the airflow direction arrow pointing inboard and the electrical connectors facing forward. There are markings on the flow sensor body to help you with the installation.

SUBTASK 21-51-03-420-002

(3) Install the coupling [2] and the coupling [3].

(a) Tighten the coupling [2] and the coupling [3] to 50 in-lb (5.6 N·m) - 60 in-lb (6.8 N·m).

SUBTASK 21-51-03-420-003

(4) Connect the electrical connectors [4] to the flow sensor [1].

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SUBTASK 21-51-03-860-010

(5) If you replaced the flow sensor [1] for the left cooling pack

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)
H	28	C21627	L PACK & TRIM PRESS SNSR

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

SUBTASK 21-51-03-860-011

(6) If you replaced the flow sensor [1] for the right cooling pack

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	6	C21628	R PACK & TRIM PRESS SNSR
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
P	12	C36612	AIR SPLY R PRI

F. Flow Sensor Installation Test

SUBTASK 21-51-03-860-022

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-51-03-860-013

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-51-03-860-001

(3) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the ON position.

SUBTASK 21-51-03-860-002

(4) Push the L and R TRIM AIR switch-lights, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the ON position.

SUBTASK 21-51-03-860-003

(5) Push the UPPER and LOWER RECIRC FANS switch-lights, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the ON position.

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SUBTASK 21-51-03-740-001

(6) Do the steps that follow to do a LRU replacement test and an air leakage check of the applicable flow sensor:

(a) Do the leakage check while the MAT test is in operation.

NOTE: The steps for the leakage check follow the steps for the MAT selections.

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(b) Use a maintenance access terminal (MAT) to do the LRU Replacement Test of the Flow Sensor (TASK 45-10-00-740-808).

1) Make these selections on the MAT:
   a) ONBOARD MAINTENANCE
   b) LINE MAINTENANCE
   c) GROUND TESTS
   d) 21 Cabin Temperature Control System
   e) LRU Replacement Test
   f) System Air On Test (Left or Right as applicable)
   g) CONTINUE.
2) Do the instructions that show on the MAT and then make these selections:
   a) CONTINUE
   b) START TEST.
3) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
4) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.
5) Make these selections on the MAT:
   a) EXTENDED MAINTENANCE
   b) EXISTING FAULTS.

(c) Do a check for air leakage while the MAT test is in operation:

1) A second person should put their hand approximately six inches away from the applicable flow sensor couplings to feel for air leakage.
   a) If air leakage is felt, the couplings must be adjusted until air leakage is not felt.
2) Apply a liquid leak detection solution to the fittings of the pressure sensor tubes on the flow sensor.
   a) Fittings that show a fast formation of bubbles or spray leak detection fluid must be repaired.
   b) Fittings that show a slow formation of bubbles are permitted.

(d) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable flow sensor.

(e) If 21 Cabin Temperature Control System shows, do these steps:

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1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the pack flow sensors.
4) If a maintenance message for the applicable pack flow sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.
5) Make these selections on the MAT:
   a) NEW ATA.

(f) Look for 36 Air Supply Control System.

NOTE: If 36 Air Supply Control System does not show, then there are no maintenance messages in existing faults for the applicable flow sensor.

(g) If 36 Air Supply Control System shows, do these steps:
1) Select 36 Air Supply Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the pack flow sensors.
4) If a maintenance message for the applicable pack flow sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-03-860-004

(1) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-51-03-860-005

(2) Push the L and R TRIM AIR switch-lights, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-51-03-860-006

(3) Push the UPPER and LOWER RECIRC FANS switch-lights, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-51-03-860-014

(4) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-03-410-001

(5) If you replaced the flow sensor for the right cooling pack, then close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-03-410-002

(6) If you replaced the flow sensor for the left cooling pack, then close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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SUBTASK 21-51-03-410-003

(7) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-51-03-000-802

4. Pressure Sensor Removal

(Figure 402)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-51-03-860-023

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-03-010-004

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-51-03-860-024

(3) To remove a pressure sensor for the left cooling pack,

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)
H	28	C21627	L PACK & TRIM PRESS SNSR

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

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SUBTASK 21-51-03-860-025

(4) To remove a pressure sensor for the right cooling pack,

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
G	6	C21628	R PACK & TRIM PRESS SNSR
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
P	12	C36612	AIR SPLY R PRI

SUBTASK 21-51-03-010-005

(5) To get access to a pressure sensor for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-03-010-006

(6) To get access to a pressure sensor for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Pressure Sensor Removal

SUBTASK 21-51-03-020-005

(1) To remove the inlet pressure sensor [21], do these steps:

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(a) Disconnect the electrical connector [27] from the inlet pressure sensor [21].

(b) Make a note of the inlet pressure sensor [21] position in the clamps [26].

NOTE: This will help you to remember the correct position for the installation procedure.

CAUTION USE TWO WRENCHES TO LOOSEN THE FITTING. IF YOU USE ONLY ONE WRENCH TO LOOSEN THE FITTING, YOU CAN CAUSE DAMAGE TO THE PRESSURE SENSOR.

(c) Loosen the high pressure tube fitting.

(d) Remove the screws [23], washers [24], and nuts [25] that hold the clamps [26] to the mounting bracket.

(e) Remove the inlet pressure sensor [21].

SUBTASK 21-51-03-020-006

(2) To remove the CTC or the ASCPC differential pressure sensor, do these steps:

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WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(a) Disconnect the electrical connector [27] from the differential pressure sensor [22].

(b) Make a note of the differential pressure sensor [22] position in the clamps [26].

NOTE: This will help you to remember the correct position for the installation procedure.

CAUTION USE TWO WRENCHES TO LOOSEN THE FITTING. IF YOU USE ONLY ONE WRENCH TO LOOSEN THE FITTING, YOU CAN CAUSE DAMAGE TO THE PRESSURE SENSOR.

(c) Loosen the high pressure tube fitting.

CAUTION USE TWO WRENCHES TO LOOSEN THE FITTING. IF YOU USE ONLY ONE WRENCH TO LOOSEN THE FITTING, YOU CAN CAUSE DAMAGE TO THE PRESSURE SENSOR.

(d) Loosen the low pressure tube fitting.

(e) Remove the screws [23], washers [24], and nuts [25] that hold the clamps [26] to the mounting bracket.

(f) Remove the differential pressure sensor [22].

END OF TASK

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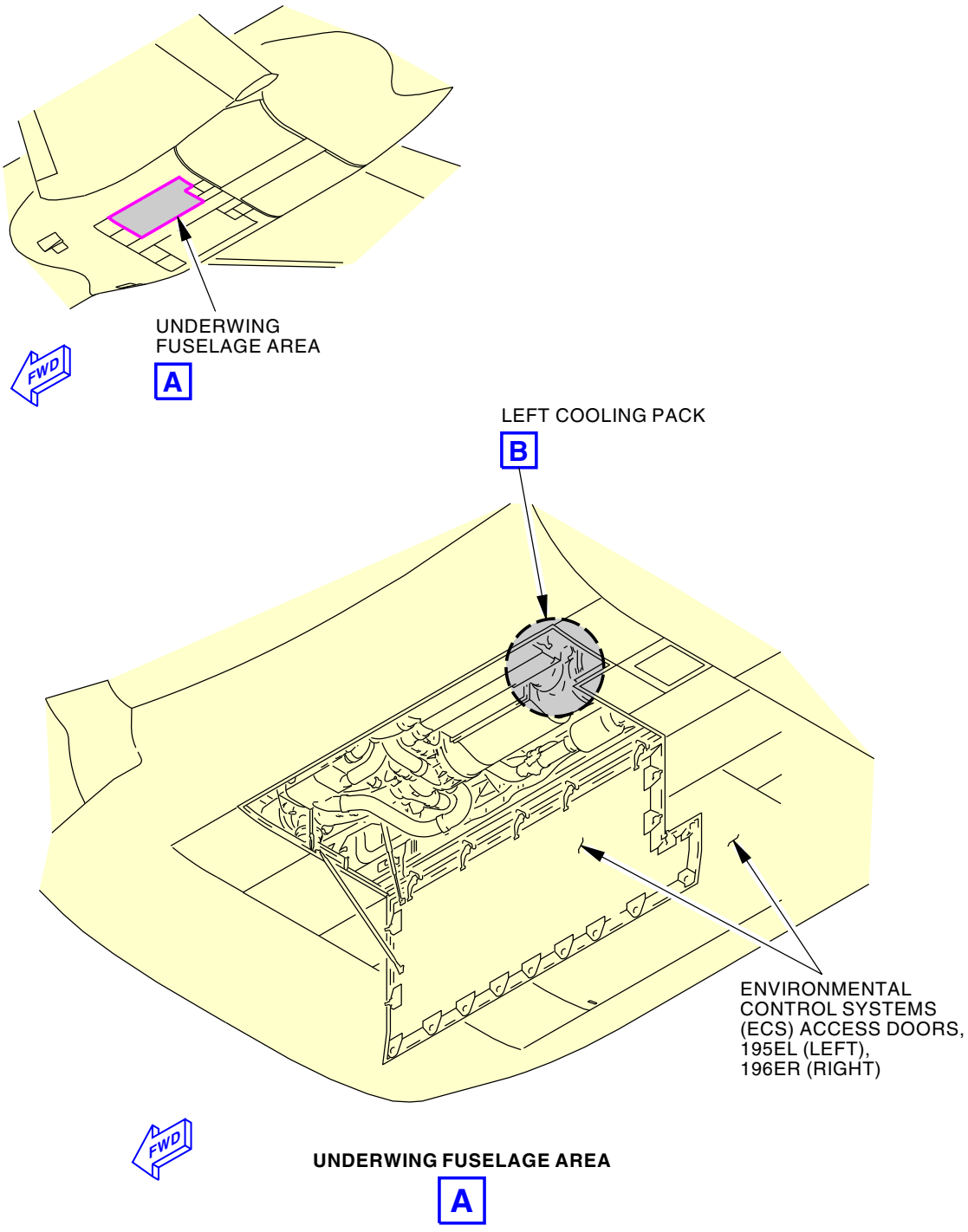

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Pressure Sensor Installation
Figure 402/21-51-03-990-802 (Sheet 1 of 2)

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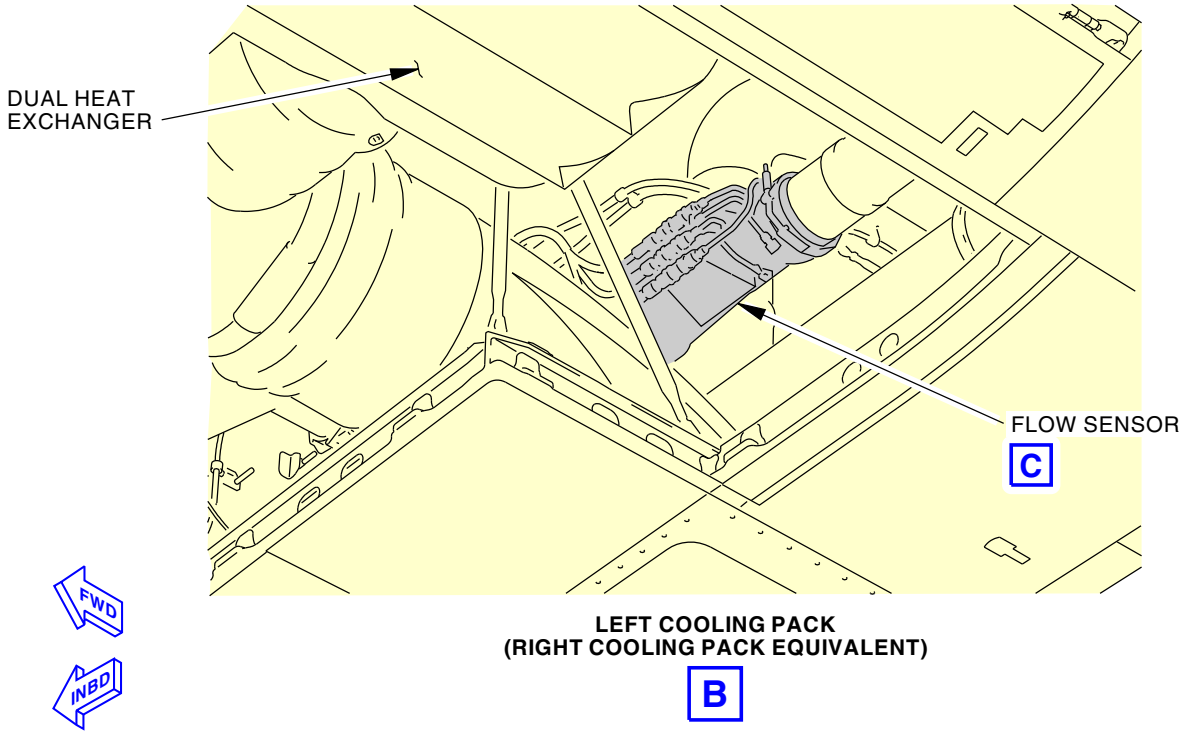

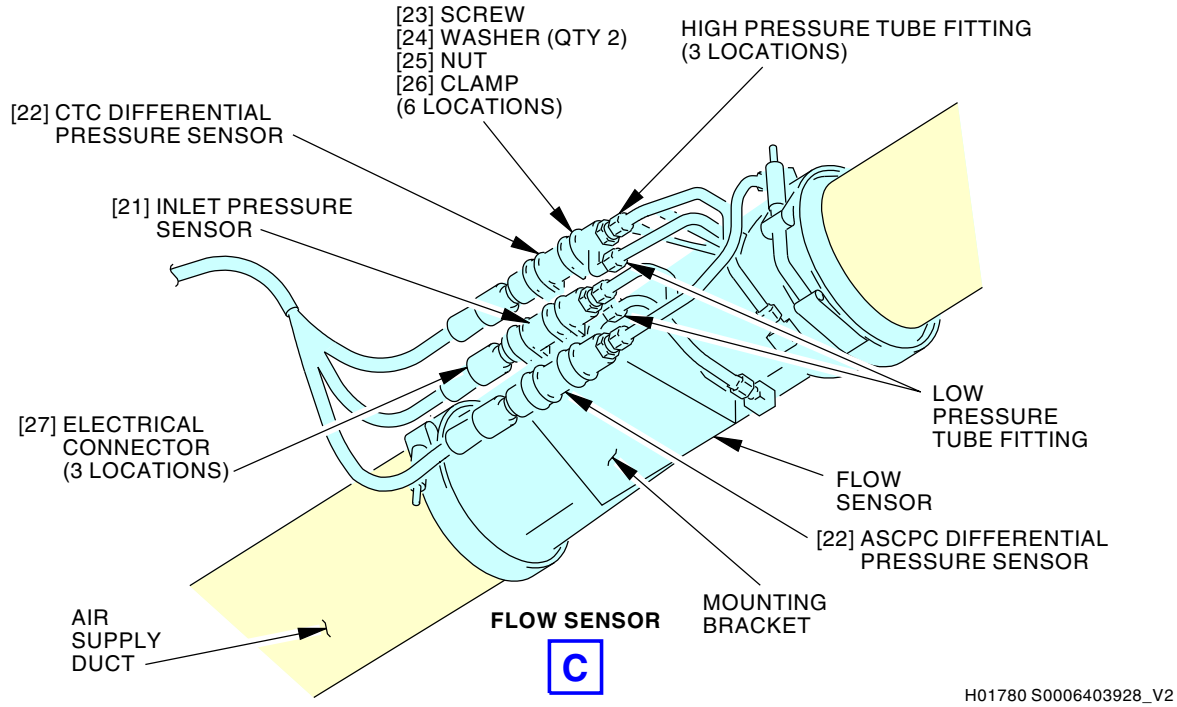

Pressure Sensor Installation
Figure 402/21-51-03-990-802 (Sheet 2 of 2)

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TASK 21-51-03-400-803

5. Pressure Sensor Installation

(Figure 402)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Sensor	21-51-03-50-095	ARO ALL
22	Sensor	21-51-03-50-070	ARO ALL

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Pressure Sensor Installation

SUBTASK 21-51-03-420-004

(1) To install the inlet pressure sensor [21], do these steps:

(a) Put the pressure sensor [21] in its position.

(b) Put the clamps [26] on the pressure sensor [21].

(c) Loosely install the screws [23], washers [24], and nuts [25] that hold the clamps [26] to the mounting bracket.

(d) With the note made at the removal, make sure that the pressure sensor [21] is installed in the correct position.

NOTE: The inlet pressure sensor is installed with the connector keyway facing away from the mounting bracket.

(e) Hand tighten the high pressure tube fitting to the pressure sensor [21].

(f) Tighten the nuts [25] to 15 in-lb (1.7 N·m) - 25 in-lb (2.8 N·m).

(g) Tighten the high pressure tube fitting to 120 in-lb (13.6 N·m) - 135 in-lb (15.3 N·m).

(h) Reconnect the electrical connector [27] to the pressure sensor [21].

SUBTASK 21-51-03-420-005

(2) To install the CTC or ASCPC differential pressure sensor [21], do these steps:

(a) Put the pressure sensor [22] in its position.

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(b) Put the clamps [26] on the pressure sensor [22].

(c) Loosely install the screws [23], washers [24], and nuts [25] that hold the clamps [26] to the mounting bracket.

(d) With the note made at the removal, make sure that the pressure sensor [22] is installed in the correct position.

NOTE: The differential pressure sensor is installed with the low pressure tube fitting facing toward the inlet pressure sensor. There is a placard in the pack bay to help you with the installation.

(e) Hand tighten the high pressure tube fitting to the pressure sensor [22].

(f) Hand tighten the low pressure tube fitting to the pressure sensor [22].

(g) Tighten the nuts [25] to 15 in-lb (1.7 N·m) - 25 in-lb (2.8 N·m).

(h) Tighten the high pressure tube fitting to 120 in-lb (13.6 N·m) - 135 in-lb (15.3 N·m).

(i) Tighten the low pressure tube fitting to 120 in-lb (13.6 N·m) - 135 in-lb (15.3 N·m).

(j) Reconnect the electrical connector [27] to the pressure sensor [22].

F. Pressure Sensor Installation Test

SUBTASK 21-51-03-860-026

(1) If you replaced a pressure sensor for the left cooling pack,

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)
H	28	C21627	L PACK & TRIM PRESS SNSR

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

SUBTASK 21-51-03-860-027

(2) If you replaced a pressure sensor for the right cooling pack,

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	6	C21628	R PACK & TRIM PRESS SNSR
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
P	12	C36612	AIR SPLY R PRI

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SUBTASK 21-51-03-860-028

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-51-03-860-030

(4) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-51-03-860-031

(5) Push the applicable L or R PACK switch, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the ON position.

SUBTASK 21-51-03-860-032

(6) Push the L and R TRIM AIR switches, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the ON position.

SUBTASK 21-51-03-860-033

(7) Push the UPPER and LOWER RECIRC FANS switches, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the ON position.

SUBTASK 21-51-03-740-004

(8) Do the steps that follow to do a LRU replacement test and an air leakage check of the applicable pressure sensor:

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(a) Use a maintenance access terminal (MAT) to do the LRU Replacement Test of the pressure sensor (TASK 45-10-00-740-808).

NOTE: While the MAT test is in operation, the cooling pack valves will open.

1) Make these selections on the MAT:
   a) ONBOARD MAINTENANCE
   b) LINE MAINTENANCE
   c) GROUND TESTS
   d) 21 Cabin Temperature Control System
   e) LRU Replacement Test
   f) System Air On Test (Left or Right as applicable)
   g) CONTINUE.
2) Do the instructions that show on the MAT and then make these selections:
   a) CONTINUE
   b) START TEST.
3) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
4) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

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5) Make these selections on the MAT:
   a) EXTENDED MAINTENANCE
   b) EXISTING FAULTS.

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable pressure sensor.

(c) If 21 Cabin Temperature Control System shows, do these steps:
1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the pack flow sensors.
4) If a maintenance message for the applicable pack flow sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.
5) Make these selections on the MAT:
   a) NEW ATA.

(d) Look for 36 Air Supply Control System.

NOTE: If 36 Air Supply Control System does not show, then there are no maintenance messages in existing faults for the applicable flow sensor.

(e) If 36 Air Supply Control System shows, do these steps:
1) Select 36 Air Supply Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the pack flow sensors.
4) If a maintenance message for the applicable pack flow sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

G. Pressor Sensor Leak Test

SUBTASK 21-51-03-860-041

(1) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-51-03-790-001

(2) Apply a solution of soap and water to the four connections of the pressure sense lines on the replaced pressure sensor.

SUBTASK 21-51-03-360-001

(3) If a bubble shows, repair the connection.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-03-860-034

(1) Push the applicable L or R PACK switch, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-51-03-860-035

(2) Push the L and R TRIM AIR switches, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

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SUBTASK 21-51-03-860-036

(3) Push the UPPER and LOWER RECIRC FANS switches, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-51-03-860-037

(4) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-03-410-004

(5) If you replaced a pressure sensor for the right cooling pack, then close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-03-410-005

(6) If you replaced a pressure sensor for the left cooling pack, then close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-03-410-006

(7) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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FLOW SENSORS - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) Flow Sensors Operational Test

C. The Flow Sensors Operational Test contains these initiated built in tests (IBIT) ground tests:

(1) Left System Air On Test

(2) Right System Air On Test

D. You must use a maintenance access terminal (MAT) to do the Left and Right System Air On Tests. The Left and Right System Air On Tests will do a test of the flow sensors for the left and right cooling packs.

TASK 21-51-03-400-802

2. Flow Sensors - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

B. Location Zones

Zone	Area
212	Flight Compartment, Right

C. Prepare for the Test

SUBTASK 21-51-03-860-018

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-51-03-860-019

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-51-03-860-016

(3) Set these switches on the Air Conditioning Module, in the pilot's overhead panel, P5 as follows:

(a) Put the applicable L or R PACK switch in the AUTO position.

NOTE: The test can fail because of low duct pressure if the air is supplied with a ground cart and both packs are on.

(b) Put the UPPER and the LOWER RECIRC FANS switches in the ON position.

(c) Put the L and R TRIM AIR switches in the ON position.

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D. Flow Sensors - Operational Test

SUBTASK 21-51-03-740-002

(1) Use a maintenance access terminal (MAT) to do the Left or Right System Air On Test. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT to do the Left or Right System Air On Test:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) OPERATIONAL TEST
6) (Left or Right as applicable) System Air On
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 21-51-03-740-003

(2) Do the steps which follow to do a check for existing faults of the Cabin Temperature Control System and the Air Supply Control System:

(a) Make these selections on the MAT:

1) EXTENDED MAINTENANCE
2) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable flow sensor.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the pack flow sensors.
4) If a maintenance message for the applicable pack flow sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(d) Make these selections on the MAT:

1) NEW ATA

(e) Look for 36 Air Supply Control System.

NOTE: If 36 Air Supply Control System does not show, then there are no maintenance messages in existing faults for the applicable flow sensor.

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(f) If 36 Air Supply Control System shows, do these steps:

1) Select 36 Air Supply Control System.

2) Select CONTINUE.

3) Look at the maintenance messages that show and make sure there are no maintenance messages for the pack flow sensors.

4) If a maintenance message for the applicable pack flow sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(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 21-51-03-860-017

(1) Set these switches on the Air Conditioning Module, in the pilot's overhead panel, P5 as follows:

(a) Put the UPPER and the LOWER RECIRC FANS switches in the OFF position.

(b) Put the L and R TRIM AIR switches in the OFF position.

SUBTASK 21-51-03-860-021

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

——— END OF TASK ———

TASK 21-51-03-720-801

3. ASCPC Differential Pressure Sensors - Functional Test

A. References

Reference	Title
21-51-03-000-801	Flow Sensor Removal (P/B 401)
21-51-03-400-801	Flow Sensor Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
45-10-00-760-801	How to Use Input Monitoring (P/B 201)

B. Location Zones

Zone	Area
212	Flight Compartment, Right

C. Prepare for the Functional Test

SUBTASK 21-51-03-860-038

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

SUBTASK 21-51-03-860-039

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-03-860-040

(3) Set the L PACK switch and R PACK switch to the OFF position.

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D. ASCPC Differential Pressure Sensor Functional Test

SUBTASK 21-51-03-720-001

(1) Use direct entry input monitoring on the MAT to monitor the output for the left and right pressure sensors: (TASK 45-10-00-760-801).

(a) Select GENERAL INPUT from the input monitoring main menu.

(b) Use these values in a direct entry field:

1) L/629/SYS L/E60/1/19-19 for the left pressure sensor

2) L/629/SYS L/E60/2/19-19 for the right pressure sensor.

(c) Change the units of the data:

1) Select UNITS.

2) Select ENGINEERING.

3) Use these parameters:

a) LWR BND = -32

b) UPR BND = 32

c) SIGN BIT = 15

d) MSB = 14

e) LSB = 0

f) UNITS = PSI.

4) Select CONTINUE.

5) Select RUN.

SUBTASK 21-51-03-000-001

(2) If the left or right pressure sensor reads equal to or greater than 0.04 PSI, do these tasks to replace the flow sensor:

Flow Sensor Removal, TASK 21-51-03-000-801

Flow Sensor Installation, TASK 21-51-03-400-801.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-03-910-001

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

——— END OF TASK ———

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PRIMARY HEAT EXCHANGER INLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the primary heat exchanger inlet temperature sensor

(2) An installation of the primary heat exchanger inlet temperature sensor.

TASK 21-51-04-000-801

2. Primary Heat Exchanger Inlet Temperature Sensor Removal

(Figure 401)

A. General

(1) The primary heat exchanger inlet temperature sensor will be referred to as the temperature sensor in this procedure.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Removal

SUBTASK 21-51-04-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-51-04-010-001

(2) To get access to the temperature sensor for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-51-04-010-002

(3) To get access to the temperature sensor for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

F. Temperature Sensor Removal

SUBTASK 21-51-04-030-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the electrical connector [2] from the temperature sensor [1].

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SUBTASK 21-51-04-030-002

(2) Remove and discard the lockwire from the temperature sensor [1].

SUBTASK 21-51-04-020-001

CAUTION

USE TWO WRENCHES TO REMOVE THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the temperature sensor [1].

(a) Hold the boss with one wrench and turn the temperature sensor [1] with the other wrench.

SUBTASK 21-51-04-030-003

(4) Remove and discard the packing [3] from the temperature sensor [1].

——— END OF TASK ———

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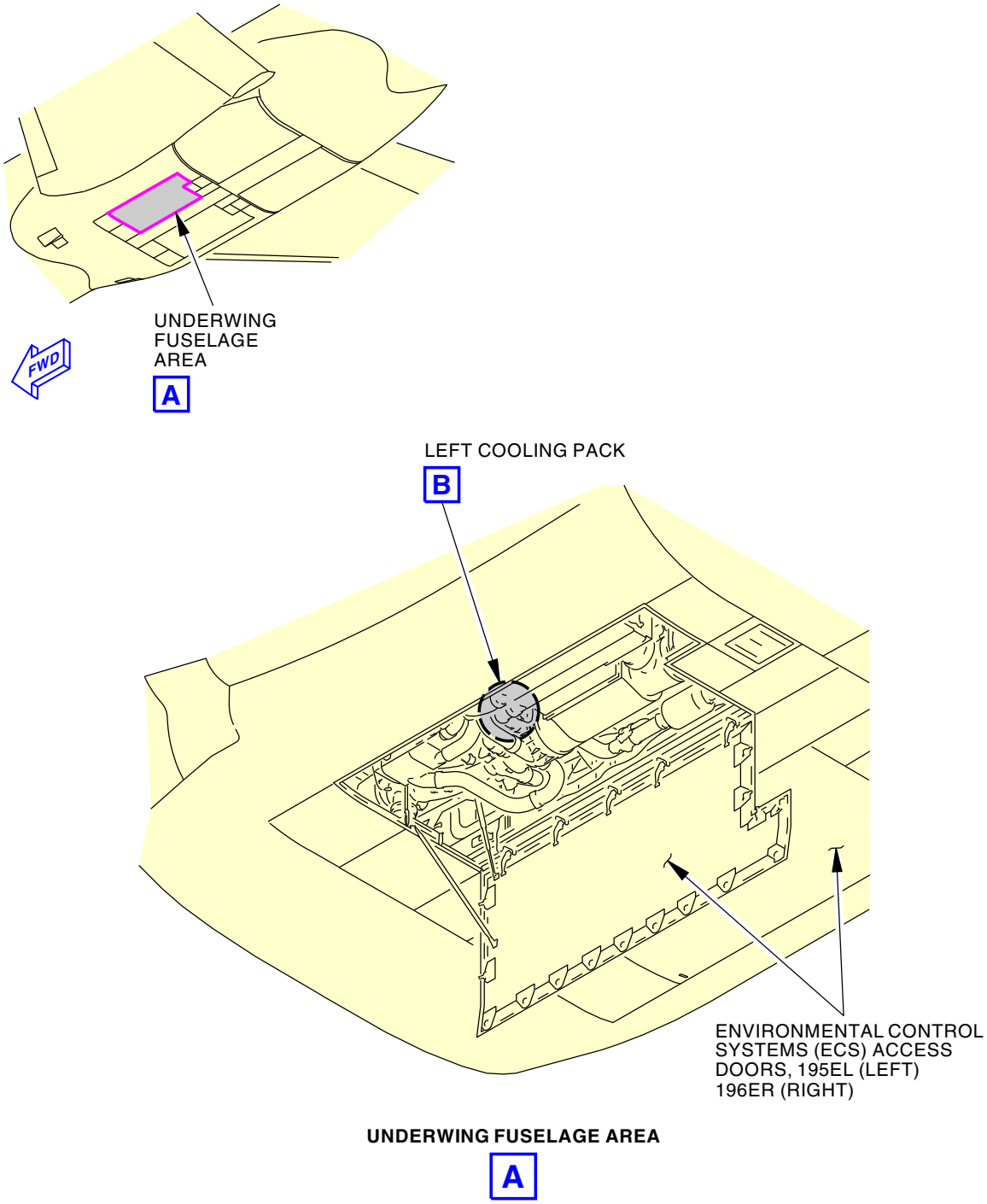

E06734 S0006403935_V2

Primary Heat Exchanger Inlet Temperature Sensor Installation
Figure 401/21-51-04-990-801 (Sheet 1 of 2)

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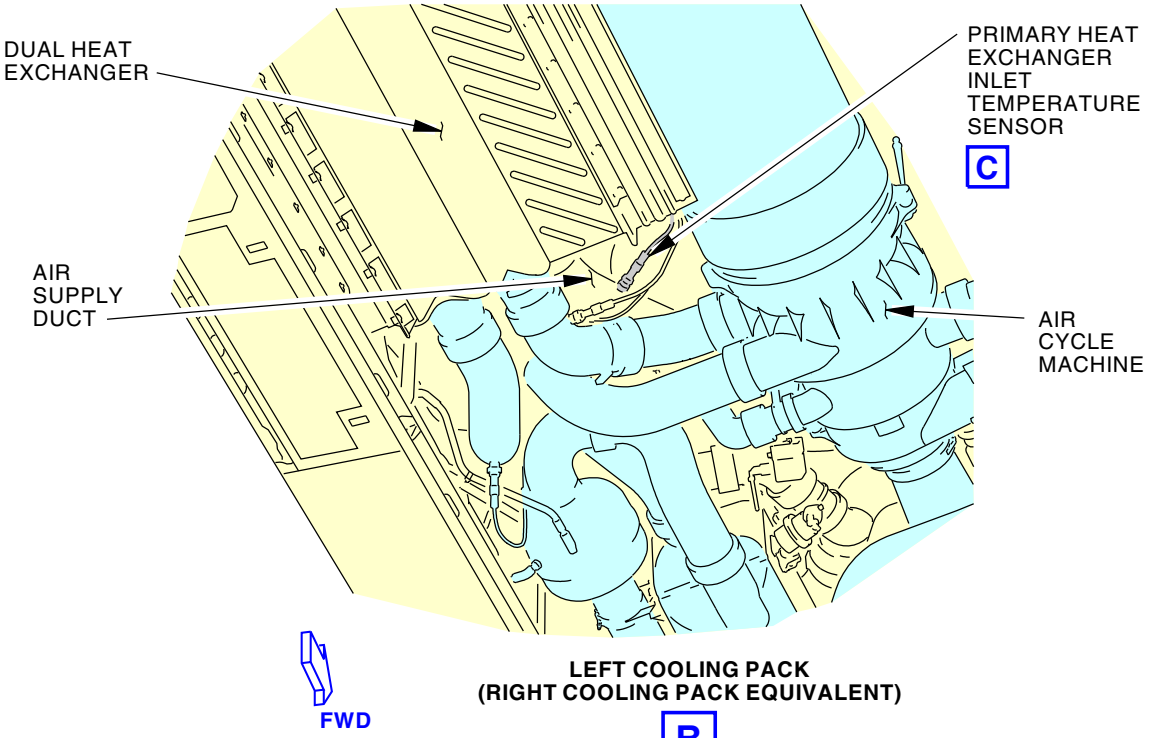
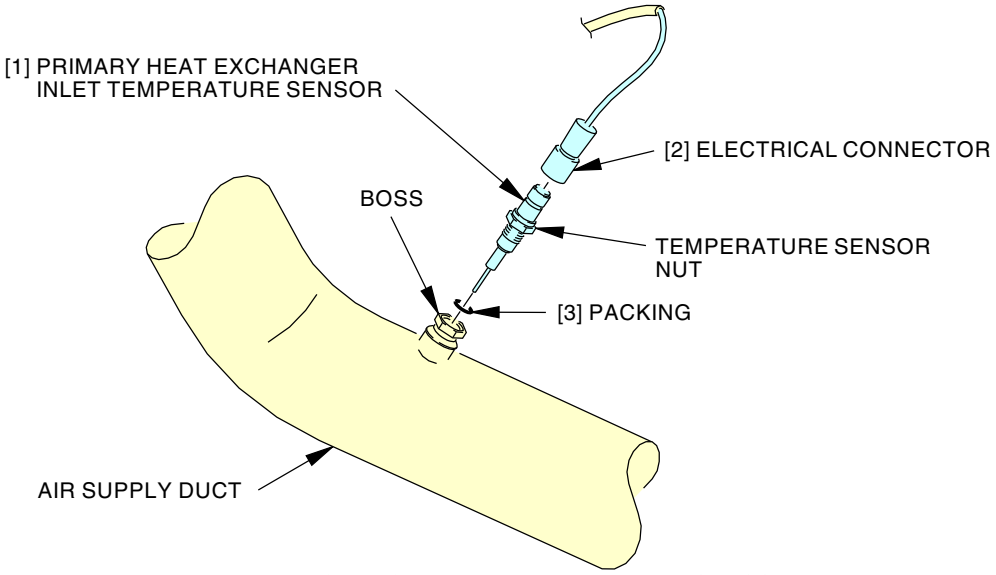


LEFT COOLING PACK
(RIGHT COOLING PACK EQUIVALENT)

B



PRIMARY HEAT EXCHANGER INLET TEMPERATURE SENSOR
(EXAMPLE)

C

E01062 S0006403936_V2

Primary Heat Exchanger Inlet Temperature Sensor Installation
Figure 401/21-51-04-990-801 (Sheet 2 of 2)

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TASK 21-51-04-400-801

3. Primary Heat Exchanger Inlet Temperature Sensor Installation

(Figure 401)

A. General

(1) The primary heat exchanger inlet temperature sensor will be referred to as the temperature sensor in this procedure.

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. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-51-04-01-010	ARO ALL
3	Packing	21-51-04-01-015	ARO ALL

E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

G. Temperature Sensor Installation

SUBTASK 21-51-04-430-001

(1) Install a new packing [3] on the temperature sensor [1].

SUBTASK 21-51-04-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut are clean.

SUBTASK 21-51-04-640-001

(3) Apply a thin layer of the Never-Seez NSBT compound, D00006 to the threads of the temperature sensor [1].

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SUBTASK 21-51-04-420-001

CAUTION: USE TWO WRENCHES TO INSTALL THE TEMPERATURE SENSOR IN THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to install the temperature sensor [1].

(a) Hold the boss with one wrench and turn the temperature sensor [1] with the other wrench.

SUBTASK 21-51-04-430-003

(5) Torque the temperature sensor [1] to 60 ±5 in-lb (7 ±1 N·m).

SUBTASK 21-51-04-420-002

(6) Install a new MS20995C32 lockwire, G01048 on the temperature sensor [1].

SUBTASK 21-51-04-430-002

(7) Connect the electrical connector [2] to the temperature sensor [1].

H. Temperature Sensor Installation Test

SUBTASK 21-51-04-860-002

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

SUBTASK 21-51-04-740-001

(2) Use a maintenance access terminal (MAT) to look for maintenance messages for the applicable temperature sensor. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable temperature sensors.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable temperature sensors.
4) If a maintenance message for the pack applicable temperature sensors shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-04-410-001

(1) If the temperature sensor for the right cooling pack was replaced, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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SUBTASK 21-51-04-410-002

(2) If the temperature sensor for the left cooling pack was replaced, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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PACK COOLING AND MIX MANIFOLD TEMPERATURE CONTROL - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Pack cooling and mix manifold temperature control - deactivation.

(2) Pack cooling and mix manifold temperature control - activation.

TASK 21-52-00-040-801

2. Pack Cooling and Mix Manifold Temperature Control - Deactivation

A. General

(1) This task will deactivate these components:

(a) Pack cooling and mix manifold temperature control

(b) Ram air inlet door

(c) Ram air inlet actuator

(d) Upper flow control and shutoff valve

(e) Lower flow control and shutoff valve

(f) Trim air pressure sensor.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Procedure

SUBTASK 21-52-00-210-001

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

(1) At the Air Conditioning Module, on the pilot's overhead panel,P5, do these steps:

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(a) Make sure that the L and R PACK switches are in the OFF position.

1) Install DO NOT OPERATE tags, STD-858 on the switches.

(b) Make sure that the L and R TRIM switches are in the OFF position.

SUBTASK 21-52-00-860-023

WARNING REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-00-010-005

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. HOT DUCTS CAN CAUSE INJURIES TO PERSONNEL.

(3) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-00-020-021

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(4) Do this task to deactivate the left pack cooling and mix manifold temperature control:

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	23	C21645	L ECV FCV POS SNSR
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)
H	28	C21627	L PACK & TRIM PRESS SNSR

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

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SUBTASK 21-52-00-860-029

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(5) Do this task to deactivate the right pack cooling and mix manifold temperature control:

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
G	6	C21628	R PACK & TRIM PRESS SNSR
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
H	4	C21646	R ECV/FCV POS SNSR
P	12	C36612	AIR SPLY R PRI

G. Pack Cooling and Mix Manifold Temperature Control - Tryout

NOTE: This tryout is to make sure that the pack cooling and mix manifold temperature control is in a zero energy state.

SUBTASK 21-52-00-860-024

(1) On the EICAS display, go to the ECS Maintenance page.

SUBTASK 21-52-00-860-025

(2) At the Air Conditioning Module, P5, put the L and R PACK switches to the ON position.

(a) Make sure that there is no valve movement on the ECS Maintenance Page.

SUBTASK 21-52-00-860-026

(3) At the Air Conditioning Module, P5, put the L and R PACK switches to the OFF position.

(a) Install DO NOT OPERATE tags, STD-858 on the switches.

SUBTASK 21-52-00-860-027

(4) Use a maintenance access terminal (MAT) to do an operational test of the left cooling pack electric actuator driven components.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) OPERATIONAL TEST
6) Left Pack Actuators
7) CONTINUE

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(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE

2) START TEST

(c) Make sure that there is no valve movement on the ECS Maintenance Page.

(d) Make sure that the LEFT RAM air inlet and outlet doors DO NOT move.

NOTE: A ground observer must be in voice contact with an operator in the flight deck at all times to complete this step.

(e) After the test, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

SUBTASK 21-52-00-860-028

(5) Use a maintenance access terminal (MAT) to do an operational test of the right cooling pack electric actuator driven components.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) GROUND TESTS

4) 21 Cabin Temperature Control System

5) OPERATIONAL TEST

6) Right Pack Actuators

7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE

2) START TEST

(c) Make sure that there is no valve movement on the ECS Maintenance Page.

(d) Make sure that the RIGHT RAM air inlet and outlet doors DO NOT move.

NOTE: A ground observer must be in voice contact with an operator in the flight deck at all times to complete this step.

(e) After the test, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

——— END OF TASK ———

TASK 21-52-00-440-801

3. Pack Cooling and Mix Manifold Temperature Control - Activation

A. General

(1) This task will activate these components:

(a) Pack cooling and mix manifold temperature control

(b) Ram air inlet door

(c) Ram air inlet actuator

(d) Upper flow control and shutoff valve

(e) Lower flow control and shutoff valve

(f) Trim air pressure sensor.

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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
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-52-00-860-030

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(1) Do this task to activate the left pack cooling and mix manifold temperature control:

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	23	C21645	L ECV FCV POS SNSR
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)
H	28	C21627	L PACK & TRIM PRESS SNSR

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

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SUBTASK 21-52-00-860-031

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

(2) Do this task to activate the right pack cooling and mix manifold temperature control:

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	6	C21628	R PACK & TRIM PRESS SNSR
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
H	4	C21646	R ECV/FCV POS SNSR
P	12	C36612	AIR SPLY R PRI

SUBTASK 21-52-00-410-001

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-00-860-032

(4) At the Air Conditioning Module, P5, remove the DO NOT OPERATE tags, STD-858 on the L and R PACK switches.

——— END OF TASK ———

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PACK COOLING AND MIX MANIFOLD TEMPERATURE CONTROL - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Operational Test - Pack Cooling Electric Actuator Driven Components

(2) Operational Test - Pack Cooling and Mix Manifold Temperature Control Pneumatic Actuated Components

(3) Operational Test - Pack Cooling and Mix Manifold Temperature Sensors

(4) Operational Test - Pack Switches

B. To do a complete system test of the pack cooling and mix manifold temperature control system, you must do each of the above tasks.

TASK 21-52-00-740-801

2. Pack Cooling Electric Actuator Driven Components - Operational Test

A. General

(1) The same sequence of steps is used to do the operational test for the left and right cooling packs

(2) A maintenance access terminal (MAT) 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. Procedure

SUBTASK 21-52-00-860-001

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-00-860-033

(2) Make sure the applicable L PACK switch or R PACK switch is set to the OFF position

NOTE: The L PACK switch and the R PACK switch are on the pilot's overhead panel, P5. The L (R) PACK switch must be set to OFF and the cooling pack must not be turning or the special functions check on the MAT will not operate.

SUBTASK 21-52-00-740-001

(3) Use a maintenance access terminal (MAT) to do the operational test of the cooling pack electric actuator driven components:

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(a) Make these selections on the MAT:
   1) ONBOARD MAINTENANCE
   2) LINE MAINTENANCE
   3) GROUND TESTS
   4) 21 Cabin Temperature Control System
   5) OPERATIONAL TEST
   6) (Left, Right) Pack Actuators
   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 21-52-00-740-802

3. Pack Cooling and Mix Manifold Temperature Control Pneumatic Actuated Components - Operational Test

A. General

(1) This test makes sure that the (left, right) Cabin Temperature Controller (CTC) can control the economy cooling valve, and the air cycle machine for the pack cooling and mix manifold temperature control system.

(2) The same sequence of steps is used to do the operational test of the pneumatic actuated components for the left and right pack cooling and mix manifold temperature control system.

(3) A maintenance access terminal (MAT) 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (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

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D. Prepare for the Test

SUBTASK 21-52-00-860-004

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-00-860-005

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-00-860-006

(3) To do a test of the pneumatic actuated components for the left cooling pack and mix manifold temperature control system, do these steps:

(a) Set the L TRIM AIR switch to the ON position.

NOTE: The L TRIM AIR switch is on the Pilot's Overhead Panel, P5.

(b) Set the L PACK switch to the AUTO position.

NOTE: The L PACK switch is on the Pilot's Overhead Panel, P5.

SUBTASK 21-52-00-860-007

(4) To do a test of the pneumatic actuated components for the right cooling pack and mix manifold temperature control system, do these steps:

(a) Set the R TRIM AIR switch to the ON position.

NOTE: The R TRIM AIR switch is on the Pilot's Overhead Panel, P5.

(b) Set the R PACK switch to the AUTO position.

NOTE: The R PACK switch is on the Pilot's Overhead Panel, P5.

SUBTASK 21-52-00-860-008

(5) Set the UPPER RECIRC FAN switch and LOWER RECIRC FAN switch to the ON position.

NOTE: The UPPER RECIRC FAN switch and LOWER RECIRC FAN switch are on the Pilot's Overhead Panel, P5.

E. Procedure

SUBTASK 21-52-00-740-002

(1) Use a maintenance access terminal (MAT) to do the operational test of the pneumatic actuated components for the cooling pack and mix manifold temperature control system.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) OPERATIONAL TEST
6) (Left, Right) System Air On
7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE

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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.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-00-860-009

(1) Set the L PACK switch and R PACK switch to the OFF position.

SUBTASK 21-52-00-860-010

(2) Set the L TRIM AIR switch and R TRIM AIR switch to the OFF position.

SUBTASK 21-52-00-860-011

(3) Set the UPPER RECIRC FAN switch and LOWER RECIRC FAN switch to the OFF position.

SUBTASK 21-52-00-860-013

(4) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

——— END OF TASK ———

TASK 21-52-00-740-803

4. Pack Cooling and Mix Manifold Temperature Sensors - Operational Test

A. General

(1) This test makes sure that the primary heat exchanger outlet, compressor discharge, secondary heat exchanger outlet, condenser inlet, turbine inlet, pack discharge and the mix manifold temperature sensors for the pack cooling and mix manifold temperature control system operate correctly.

(2) A maintenance access terminal (MAT) 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 21-52-00-860-014

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

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SUBTASK 21-52-00-740-003

(2) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the pack cooling and mix manifold temperature control system temperature sensors:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the pack cooling and mix manifold temperature sensors.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the pack cooling and mix manifold temperature sensors.
4) If a maintenance message for the pack cooling and mix manifold temperature sensors 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 21-52-00-740-804

5. Pack Switches - Operational Test

A. General

(1) This test makes sure that the L PACK switch and the R PACK switch operates correctly.

(2) A maintenance access terminal (MAT) 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. Prepare for the Test

SUBTASK 21-52-00-860-016

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

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SUBTASK 21-52-00-860-017

(2) Make sure the L PACK switch and the R PACK switch are set to the OFF position.

NOTE: The L PACK switch and the R PACK switch are on the pilot's overhead panel, P5.

E. Procedure

SUBTASK 21-52-00-740-004

(1) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the left or right pack switches:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 23 Overhead panel ARINC 629 System.

NOTE: If 23 Overhead panel ARINC 629 System does not show, then there are no maintenance messages in existing faults for the left or right pack switches.

(c) If 23 Overhead panel ARINC 629 System shows do these steps:

1) Select 23 Overhead panel ARINC 629 System
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the left or right pack switches.
4) If a maintenance message for the left or right pack switch shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 21-52-00-860-018

(2) Push the L PACK switch and the R PACK switch to the AUTO position.

SUBTASK 21-52-00-740-005

(3) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the left or right pack switches:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 23 Overhead panel ARINC 629 System.

NOTE: If 23 Overhead panel ARINC 629 System does not show, then there are no maintenance messages in existing faults for the left or right pack switches.

(c) If 23 Overhead panel ARINC 629 System shows do these steps:

1) Select 23 Overhead panel ARINC 629 System
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the left or right pack switches.
4) If a maintenance message for the left or right pack switch shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

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F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-00-860-019

(1) Set the L PACK switch and R PACK switch to the OFF position.

——— END OF TASK ———

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AIR CONDITIONING PACK WATER DRAINAGE - INSPECTION/CHECK

1. General

A. This task has an inspection of the water drainage paths for the air conditioning packs. Accumulation of excess water in the air conditioning pack can cause ice to occur in the Air Cycle Machine (ACM) which can damage the ACM.

B. This task has inspections for the components that follow:

(1) Inspect for blockage - Water Spray Nozzle

(2) Inspect for blockage - Water Collector Overflow Drain Line

(3) Inspect for blockage - Pack Outlet Muffler

(4) Inspect for blockage - Economy Cooling Valve

(5) Inspect for water accumulation - Condenser Inlet Header and Duct

(6) Inspect for water accumulation - Economy Cooling Valve Inlet

C. To do a complete inspection of the pack water drainage system, you must do each of the above tasks for the left and the right cooling packs.

TASK 21-52-00-740-805

2. Air Conditioning Packs Water Drainage - Inspection

(Figure 601)

A. References

Reference	Title
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)
21-52-05-000-801	Water Spray Nozzle Removal (P/B 401)
21-52-05-400-801	Water Spray Nozzle Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-123	Brush - Soft Bristle

C. Consumable Materials

Reference	Description	Specification
B50117	Detergent - General	
B50126	Solvent - Degreasing, General Purpose	MIL-PRF-680
D00649	Lubricant - O-Ring - Krytox GPL206	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III
G50256	Water, Regular	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Packing	21-52-00-01-583	ARO ALL
9	Packing	21-52-00-01-595	ARO ALL

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E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

G. Prepare for Inspection

SUBTASK 21-52-00-010-001

(1) To get access to the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-00-010-002

(2) To get access to the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

H. Inspect for blockage - Water Spray Nozzle

SUBTASK 21-52-00-020-001

(1) Remove the bolts [2] and the washers [3] that attach the water spray nozzle [4] to the ram air inlet duct.

SUBTASK 21-52-00-020-002

(2) Carefully remove the water spray nozzle [4] from the ram air inlet duct.

SUBTASK 21-52-00-020-003

(3) Operate the applicable left or right cooling pack (TASK 21-00-00-800-803).

SUBTASK 21-52-00-020-004

WARNING DO NOT POINT THE SPRAY NOZZLE AT YOUR EYES. THE WATER THAT COMES FROM THE SPRAY NOZZLE IS HIGH PRESSURE. THIS CAN CAUSE INJURY TO PERSONS.

(4) Make sure air and water sprays from the nozzle [4].

NOTE: The water should spray in a circular pattern with no signs of blockage.

(a) If the water spray nozzle is blocked or clogged, do the steps that follow to clean the nozzle:

1) Do this task: Water Spray Nozzle Removal, TASK 21-52-05-000-801.
2) Soak the nozzle assembly in degreasing solvent, B50126.
3) Use compressed air to blow out loose particles from the nozzle.
4) Do steps 2) and 3) again if necessary to clean the inner areas of the nozzle.
5) Use a soft bristle brush, STD-123 to remove external particles from the nozzle.
6) Soak the nozzle in general detergent, B50117 and water, G50256 to remove the solvent.

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7) Dry the nozzle with compressed air.

8) Examine the nozzle to make sure that there is no external damage.

9) Use a low pressure air source of between 0.5 psi (34.5 mBar) to 1 psi (69 mBar) to blow air through the nozzle.

a) Make sure that air flows freely through the air inlet and water inlet.

10) Do this task: Water Spray Nozzle Installation, TASK 21-52-05-400-801.

SUBTASK 21-52-00-020-005

(5) Stop the applicable left or right cooling pack (TASK 21-00-00-800-804).

SUBTASK 21-52-00-420-001

(6) Carefully put the water spray nozzle [4] in its position in the ram air inlet duct.

(a) Make sure the offset hole in the water spray nozzle [4] aligns with the offset hole in the ram air inlet duct.

SUBTASK 21-52-00-420-002

(7) Install the bolts [2] and the washers [3].

I. Inspect for blockage - Water Collector Overflow Drain Line

SUBTASK 21-52-00-020-006

(1) Disconnect the end of the overflow drain line [1] from the ram air inlet duct.

SUBTASK 21-52-00-020-007

(2) Operate the applicable left or right cooling pack (TASK 21-00-00-800-803).

SUBTASK 21-52-00-020-008

(3) Make sure air and/or water sprays from the end of the overflow drain line [1].

SUBTASK 21-52-00-020-009

(4) Stop the applicable left or right cooling pack (TASK 21-00-00-800-804).

SUBTASK 21-52-00-420-003

(5) Install the end of the overflow drain line [1] on the ram air inlet duct.

J. Inspect for blockage - Pack Outlet Muffler

SUBTASK 21-52-00-020-010

(1) Operate the applicable left or right cooling pack (TASK 21-00-00-800-803).

SUBTASK 21-52-00-020-011

(2) Make sure air and/or water comes out of the drain holes on the pack outlet muffler.

SUBTASK 21-52-00-020-012

(3) Stop the applicable left or right cooling pack (TASK 21-00-00-800-804).

K. Inspect for blockage - Economy Cooling Valve

SUBTASK 21-52-00-020-013

(1) Operate the applicable left or right cooling pack (TASK 21-00-00-800-803).

SUBTASK 21-52-00-020-014

(2) Make sure there is no contamination around the ambient vent hole on the economy cooling valve.

SUBTASK 21-52-00-020-015

(3) Make sure air comes out of the ambient vent hole on the economy cooling valve.

SUBTASK 21-52-00-020-016

(4) Stop the applicable left or right cooling pack (TASK 21-00-00-800-804).

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L. Inspect for water accumulation - Economy Cooling Valve Inlet

SUBTASK 21-52-00-020-017

(1) Do the step that follows to remove the coupling [8] that attaches the economy cooling valve to the economy cooling inlet duct:

(a) Remove the coupling [8].

NOTE: The clamshell coupling latches are designed such that they can not be disengaged when the system is pressurized. In order to disengage the latch, it is recommended that you pull the two ducts which are connected together towards each other. This will permit the latch to be easily lifted over the coupling in the unpressurized condition.

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(b) Move the sleeve [7] onto the economy cooling inlet duct.

(c) It is not necessary to remove the bonding spring [6].

SUBTASK 21-52-00-020-018

(2) Make sure any water in the inlet duct is allowed to drain out.

SUBTASK 21-52-00-420-004

(3) Do the steps that follow to install the coupling [8] that connects the economy cooling valve to the economy cooling inlet duct:

(a) If the packings were removed, then install new packings [5].

(b) Apply a thin layer of the Krytox GPL206 lubricant, D00649 or Krytox 240AC perfluoropolyether grease, D50063 or Christo-lube MCG111 grease, D50011, to the packings [5] and the inside diameter of the sleeve [7].

CAUTION MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(c) If the bonding spring was removed, install the bonding spring [6].

NOTE: The tabs on the bonding spring go towards the economy cooling inlet duct flange. You can use the sleeve to help hold the bonding spring in position while you align the ducts.

(d) Put the sleeve [7] in position over the economy cooling inlet duct and the economy cooling valve flange.

NOTE: Make sure you cannot see the flange grooves when you install the sleeve [7].

(e) Install the coupling [8].

M. Inspect for water accumulation - Condenser Inlet Header and Duct

SUBTASK 21-52-00-020-019

(1) Do the step that follows to remove the coupling [12] that attaches the condenser inlet header to the condenser inlet duct:

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(a) Remove the coupling [12].

NOTE: The clamshell coupling latches are designed such that they can not be disengaged when the system is pressurized. In order to disengage the latch, it is recommended that you pull the two ducts which are connected together towards each other. This will permit the latch to be easily lifted over the coupling in the unpressurized condition.

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(b) Move the sleeve [11] onto the condenser inlet duct.

(c) It is not necessary to remove the bonding spring [10].

SUBTASK 21-52-00-020-020

(2) Make sure any water in the condenser inlet duct and the condenser inlet header is allowed to drain out.

SUBTASK 21-52-00-420-005

(3) Do the steps that follow to install the coupling [12] that connects the condenser inlet duct to the condenser inlet header:

(a) If the packings were removed, then install new packings [9].

(b) Apply a thin layer of the Krytox GPL206 lubricant, D00649 or Krytox 240AC perfluoropolyether grease, D50063 or Christo-lube MCG111 grease, D50011, to the packings [9] and the inside diameter of the sleeve [11].

CAUTION MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(c) If the bonding spring was removed, install the bonding spring [10].

NOTE: The tabs on the bonding spring go towards the flange on the condenser inlet duct. You can use the sleeve to help hold the bonding spring in position while you align the ducts.

(d) Put the sleeve [11] in position over the condenser inlet duct and the condenser inlet header flange.

NOTE: Make sure you cannot see the flange grooves when you install the sleeve [11].

(e) Install the coupling [12].

N. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-00-010-003

(1) Close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-00-010-004

(2) Close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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END OF TASK

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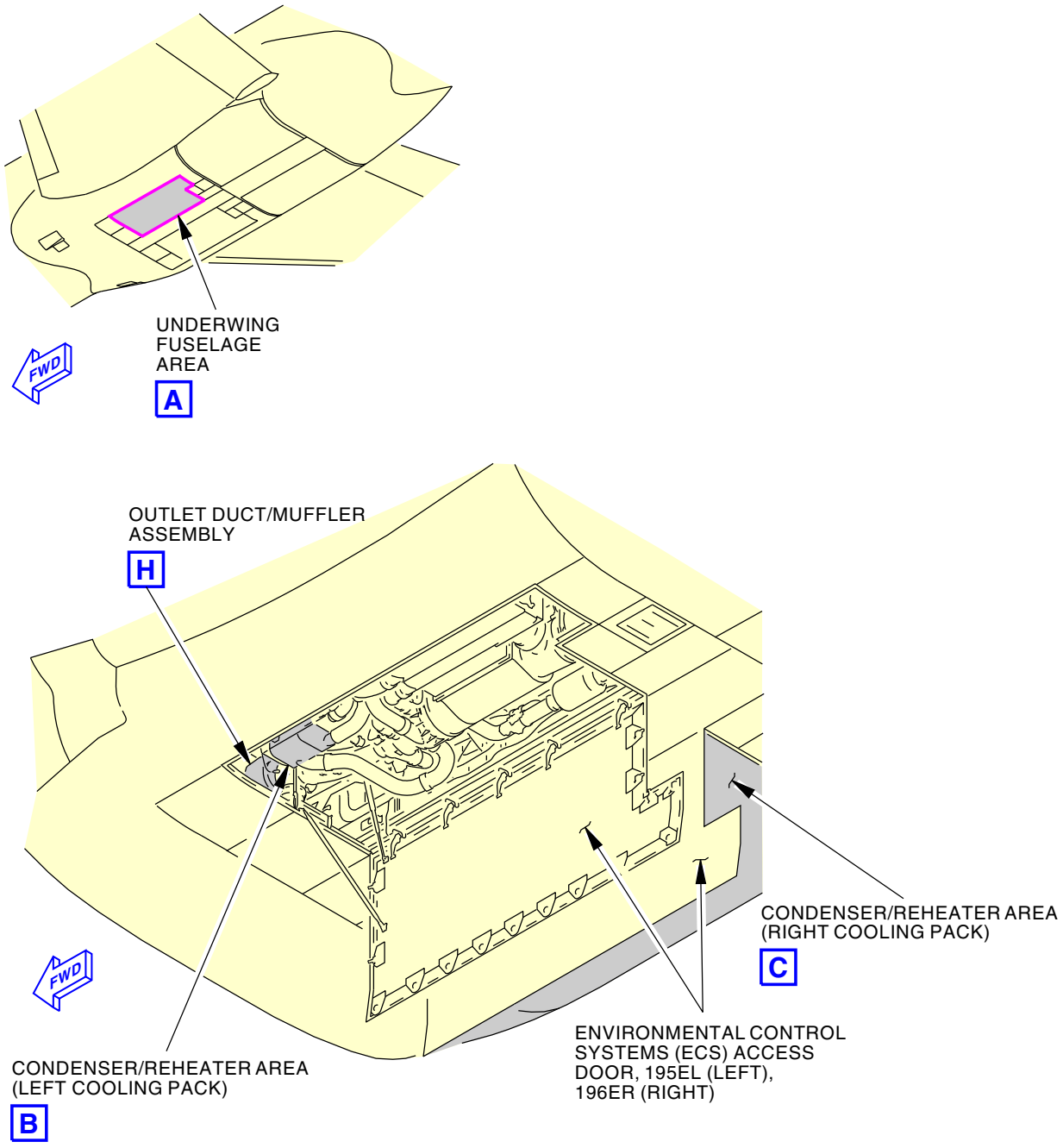

UNDERWING FUSELAGE AREA

A

H81979 S0006403947_V2

Air Conditioning Pack Water Drainage Inspection
Figure 601/21-52-00-990-807 (Sheet 1 of 5)

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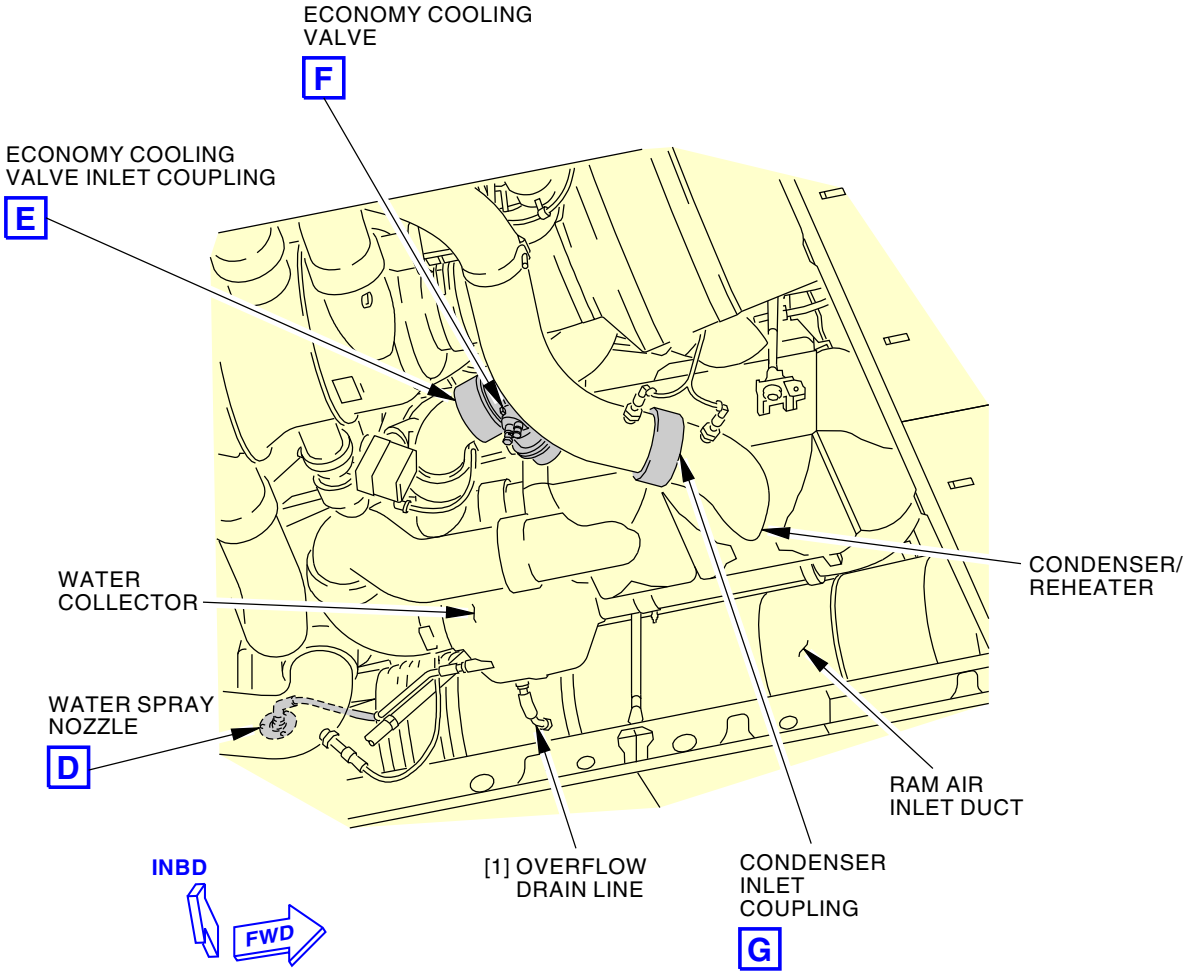

CONDENSER/REHEATER AREA (LEFT COOLING PACK)

B

H82088 S0006403948_V2

Air Conditioning Pack Water Drainage Inspection
Figure 601/21-52-00-990-807 (Sheet 2 of 5)

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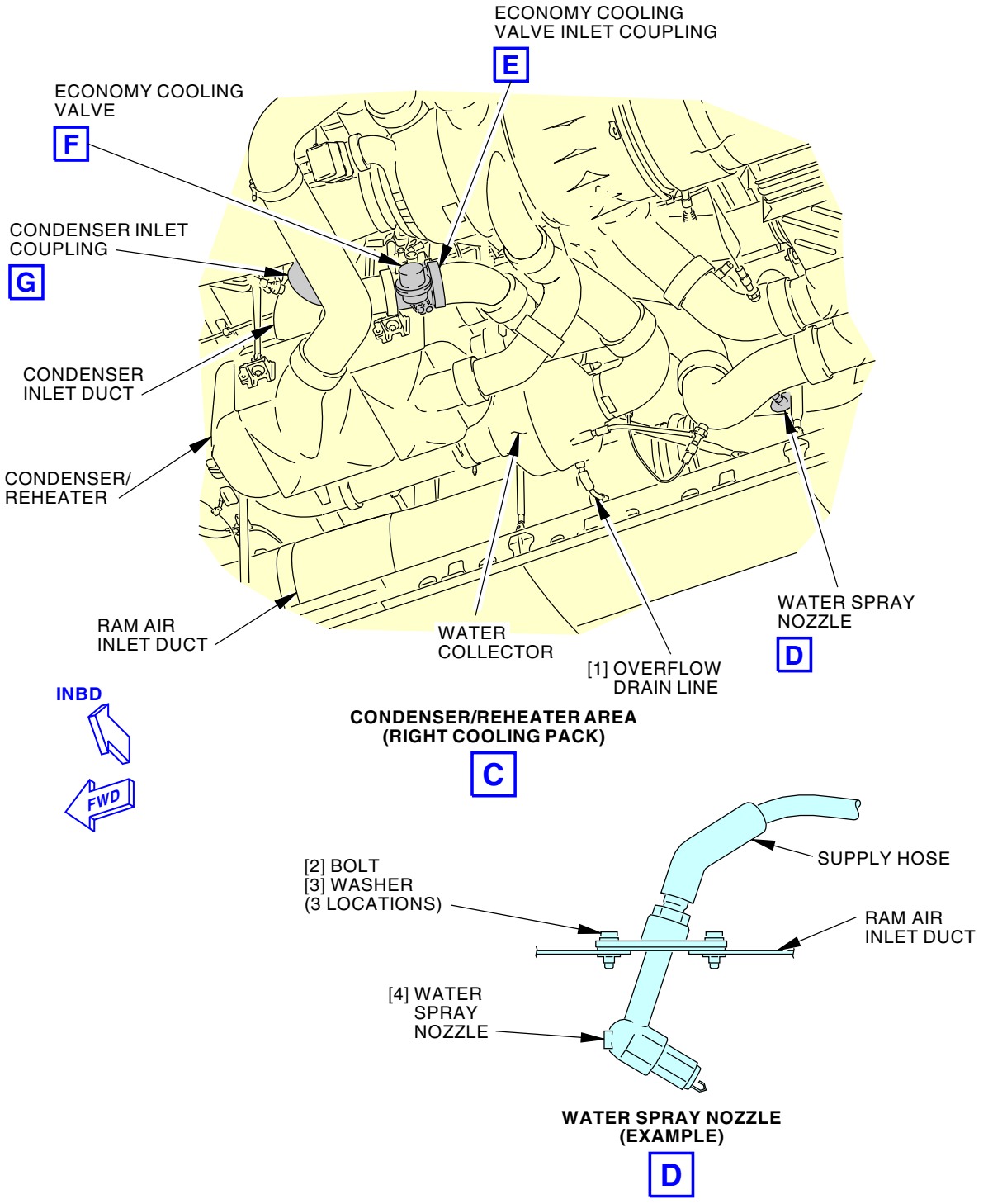

Air Conditioning Pack Water Drainage Inspection
Figure 601/21-52-00-990-807 (Sheet 3 of 5)

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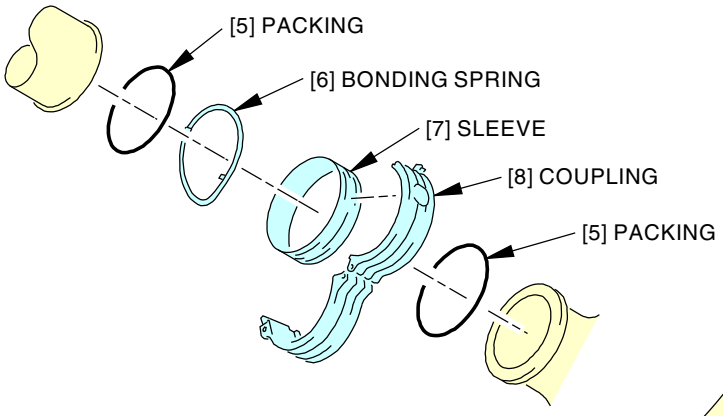
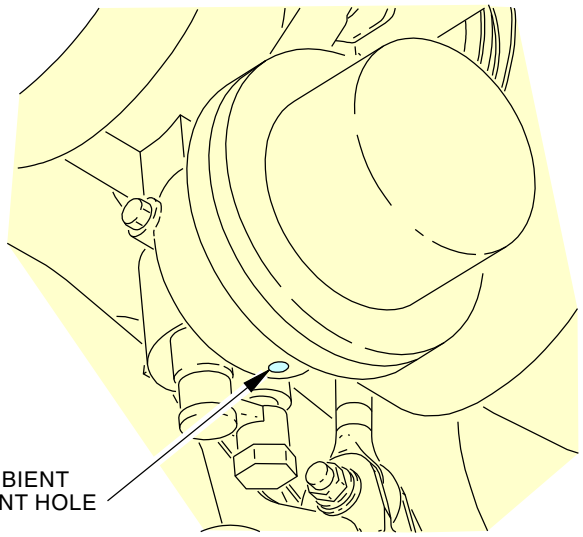


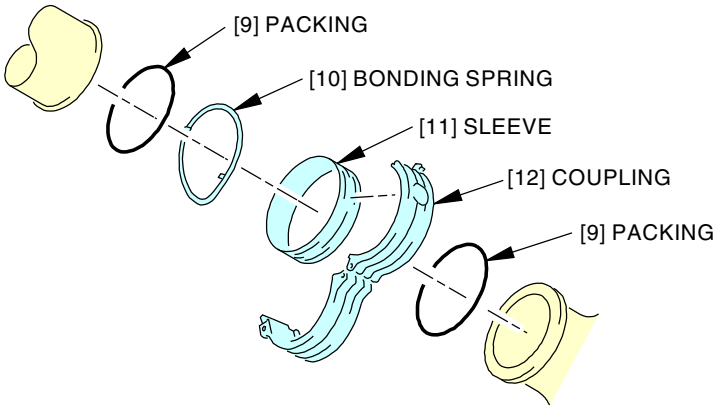
ECONOMY COOLING VALVE INLET COUPLING

E



ECONOMY COOLING VALVE (EXAMPLE)

F



CONDENSER INLET COUPLING

G

H82844 S0006403950_V2

Air Conditioning Pack Water Drainage Inspection
Figure 601/21-52-00-990-807 (Sheet 4 of 5)

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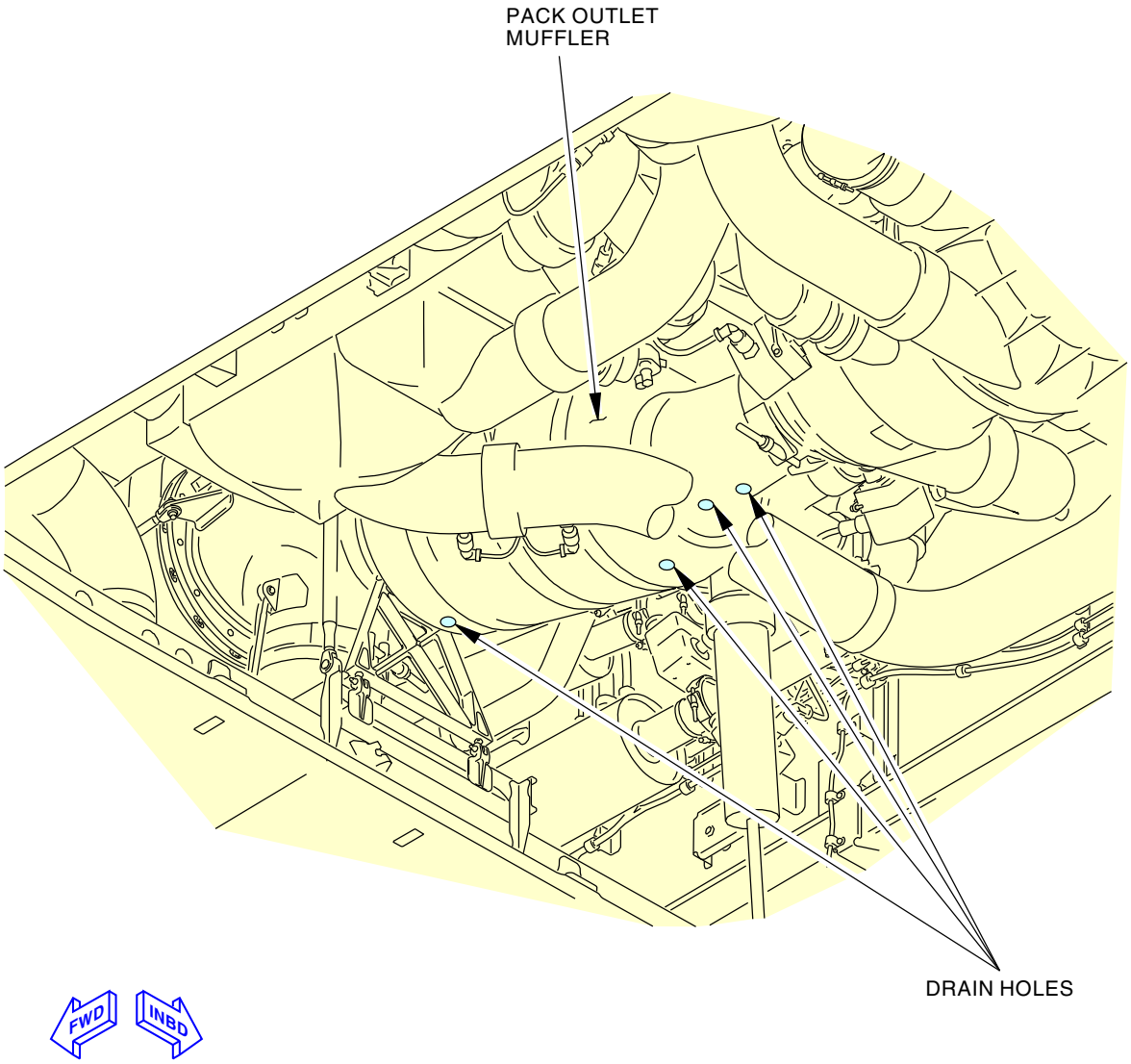

OUTLET DUCT/MUFFLER ASSEMBLY

H

H82824 S0006403952_V2

Air Conditioning Pack Water Drainage Inspection
Figure 601/21-52-00-990-807 (Sheet 5 of 5)

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DUAL HEAT EXCHANGER - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A removal of the dual heat exchanger

(2) An installation of the dual heat exchanger

C. There are two procedures available for the removal and installation of the dual heat exchanger. Each procedure is optional to the other. The procedure that is used is given by the ground equipment that is available.

(1) Procedure 1:

(a) This procedure uses three fishpole hoists to lift and lower the dual heat exchanger and the hoist adapter assembly.

(2) Procedure 2:

(a) This procedure uses a hydraulic jack to lift and lower the dual heat exchanger. The dual heat exchanger hoist adapter is attached to the hydraulic jack with retaining plates. The hydraulic jack moves the dual heat exchanger in and out of the Environmental Control Systems (ECS) bay.

TASK 21-52-01-000-801

2. Dual Heat Exchanger Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-52-10-000-801	Fan Bypass Check Valve Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (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-1582	Hoist - Fishpole, Manually Powered Part #: PF51-009-1 Supplier: 1YRX6 Part #: PF51-103-5 Supplier: 1YRX6
SPL-1450	Adapter - Hoist, Air Conditioning Pack Part #: J21001-132 Supplier: 81205 Part #: J21001-133 Supplier: 81205 Opt Part #: J21001-72 Supplier: 81205 Opt Part #: J21001-73 Supplier: 81205 Opt Part #: J21001-79 Supplier: 81205 Opt Part #: J21001-80 Supplier: 81205

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(Continued)

Reference	Description
SPL-1561	Jack - Hydraulic Part #: 930002 Supplier: 65834 Part #: J20009-110 Supplier: 81205 Opt Part #: J20009-108 Supplier: 81205 Opt Part #: J20009-109 Supplier: 81205
SPL-1603	Adapter - Heat Exchanger Part #: J21001-136 Supplier: 81205 Opt Part #: J21001-74 Supplier: 81205 Opt Part #: J21001-82 Supplier: 81205

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Removal

SUBTASK 21-52-01-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-01-010-001

(2) To get access to the dual heat exchanger [14]

for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-01-010-002

(3) To get access to the dual heat exchanger [14]

for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

F. Dual Heat Exchanger Removal

SUBTASK 21-52-01-020-001

(1) Do this task: Fan Bypass Check Valve Removal, TASK 21-52-10-000-801.

NOTE: Make sure you do the inspection of the check valve.

SUBTASK 21-52-01-020-002

(2) Remove the twelve screws [9] and the twelve washers [10] that connect the primary heat exchanger flange to the fan inlet and diffuser housing.

SUBTASK 21-52-01-020-003

(3) Remove the screws [11], washers [12] and the spacers [13] that connect the ram air inlet plenum to the side flanges of the secondary heat exchanger.

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SUBTASK 21-52-01-020-004

(4) Remove the bolts [15] and the washers [16] that connect the ram air inlet plenum to the bottom flange of the secondary heat exchanger.

SUBTASK 21-52-01-020-005

(5) Remove the couplings [2] from the primary outlet, secondary outlet and the secondary inlet.

NOTE: The clamshell coupling latches are designed such that they can not be disengaged when the system is pressurized. In order to disengage the latch, it is recommended that you pull the two ducts which are connected together towards each other. This will permit the latch to be easily lifted over the coupling in the unpressurized condition.

SUBTASK 21-52-01-820-001

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(6) Move the sleeves [3] onto the primary outlet, secondary outlet, and the secondary inlet of the dual heat exchanger [14].

SUBTASK 21-52-01-020-006

(7) Remove the bonding springs [4].

SUBTASK 21-52-01-020-007

(8) Remove the coupling [6] from the primary inlet.

SUBTASK 21-52-01-020-008

(9) Move the sleeve [7] onto the primary inlet of the dual heat exchanger [14].

SUBTASK 21-52-01-020-009

(10) Remove the bonding spring [8].

SUBTASK 21-52-01-480-004

(11) If you use the fishpole hoist method to lower the dual heat exchanger, do the steps that follow (Figure 402):

WARNING MAKE SURE THAT THE FISHPOLE HOIST IS IN A SERVICEABLE CONDITION. MAKE SURE THAT THERE ARE NO SIGNS OF DAMAGE ON THE CABLES OR CHAINS. IF THERE IS DAMAGE, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(a) Examine the forward and aft fishpole hoists, COM-1582, as follows:

1) Pull the cable out of the fishpole hoists, COM-1582, and look for any damage to the cable.

CAUTION MAKE SURE THAT YOU DO AN INSPECTION OF THE KEY HOLE SLOT AREAS. A DAMAGED KEY HOLE SLOT CAN CAUSE INCORRECT SUPPORT OF THE ACM. THIS CAN CAUSE DAMAGE TO THE ACM.

(b) Examine the keyhole slots for any damage before you install the fishpole hoists, COM-1582.

(c) Install the two forward fishpole hoists, COM-1582, in the keyhole slots that are found at these locations:

1) Above the forward outboard support rod for the dual heat exchanger [14].

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2) Inboard and above the outlet duct of the fan inlet and diffuser housing.

(d) Install the aft fishpole hoist, COM-1582, in the keyhole slot that is found above the aft mount of the dual heat exchanger [14].

(e) Attach the fishpole hoist cable assembly [45] to the heat exchanger adapter, SPL-1603.

NOTE: The heat exchanger adapter, SPL-1603, (J21001-73 or J21001-80), which is part of the air conditioning pack hoist adapter, SPL-1450, tool kit, includes the heat exchanger adapter and arm assembly A (J21001-11 or J21001–88).

(f) Put the heat exchanger adapter, SPL-1603, in position below the dual heat exchanger [14].

(g) Make sure the three adapter posts engage the dual heat exchanger mount pads.

(h) Install the pin [44] in the forward adapter post.

CAUTION

CAREFULLY LIFT THE DUAL HEAT-EXCHANGER. IF YOU DO NOT, DAMAGE TO THE DUAL HEAT-EXCHANGER-MOUNTS CAN OCCUR.

(i) Tighten the fishpole hoist cables a sufficient amount to take the weight off of the dual heat exchanger mounts.

SUBTASK 21-52-01-480-001

(12) If you use the hydraulic jack method to lower the dual heat exchanger, do the steps that follow (Figure 403):

(a) Install the heat exchanger adapter, SPL-1603, on the hydraulic jack, SPL-1561.

NOTE: The adapter is part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

(b) Raise the hydraulic jack, SPL-1561, to position the heat exchanger adapter, SPL-1603, below the dual heat exchanger [14].

(c) Make sure the heat exchanger adapter, SPL-1603, posts engage the dual heat exchanger [14] mount pads.

(d) Install the pin [44] in the forward adapter post.

CAUTION

CAREFULLY LIFT THE DUAL HEAT-EXCHANGER. IF YOU DO NOT, DAMAGE TO THE DUAL HEAT-EXCHANGER-MOUNTS CAN OCCUR.

(e) Raise the hydraulic jack, SPL-1561, to remove the weight from the dual heat exchanger mounts.

SUBTASK 21-52-01-020-010

(13) Do the steps that follow to disconnect the four forward support rods:

(a) Remove the nut [17], bolt [15] and the washer [16] from the support rod attached to the fan inlet plenum.

(b) Remove the bolt [18], washer [19] and the bushing [20] from the support rod attached to the forward mount pad.

(c) Remove the bolt [21], washer [22] and the bushing [23] from the two support rods attached to the forward mount pad.

SUBTASK 21-52-01-020-011

(14) Do the step that follows to disconnect the two aft support rods from the dual heat exchanger [14]:

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(a) Remove the bolt [24], bushing [25] and the washer [19].

SUBTASK 21-52-01-480-002

(15) Position the support rods away from the dual heat exchanger [14] such that they do not interfere with the dual heat exchanger [14] removal.

SUBTASK 21-52-01-020-012

(16) Carefully lower the dual heat exchanger [14].

SUBTASK 21-52-01-080-001

(17) Remove and discard the packings [1] from the primary outlet, secondary outlet and the secondary inlet connections.

SUBTASK 21-52-01-080-002

(18) Remove and discard the packings [5] from the primary inlet connection.

SUBTASK 21-52-01-080-003

(19) Remove the sleeves [3] from the primary outlet, secondary outlet and the secondary inlet of the dual heat exchanger [14].

SUBTASK 21-52-01-080-004

(20) Remove the sleeve [7] from the primary inlet of the dual heat exchanger [14].

——— END OF TASK ———

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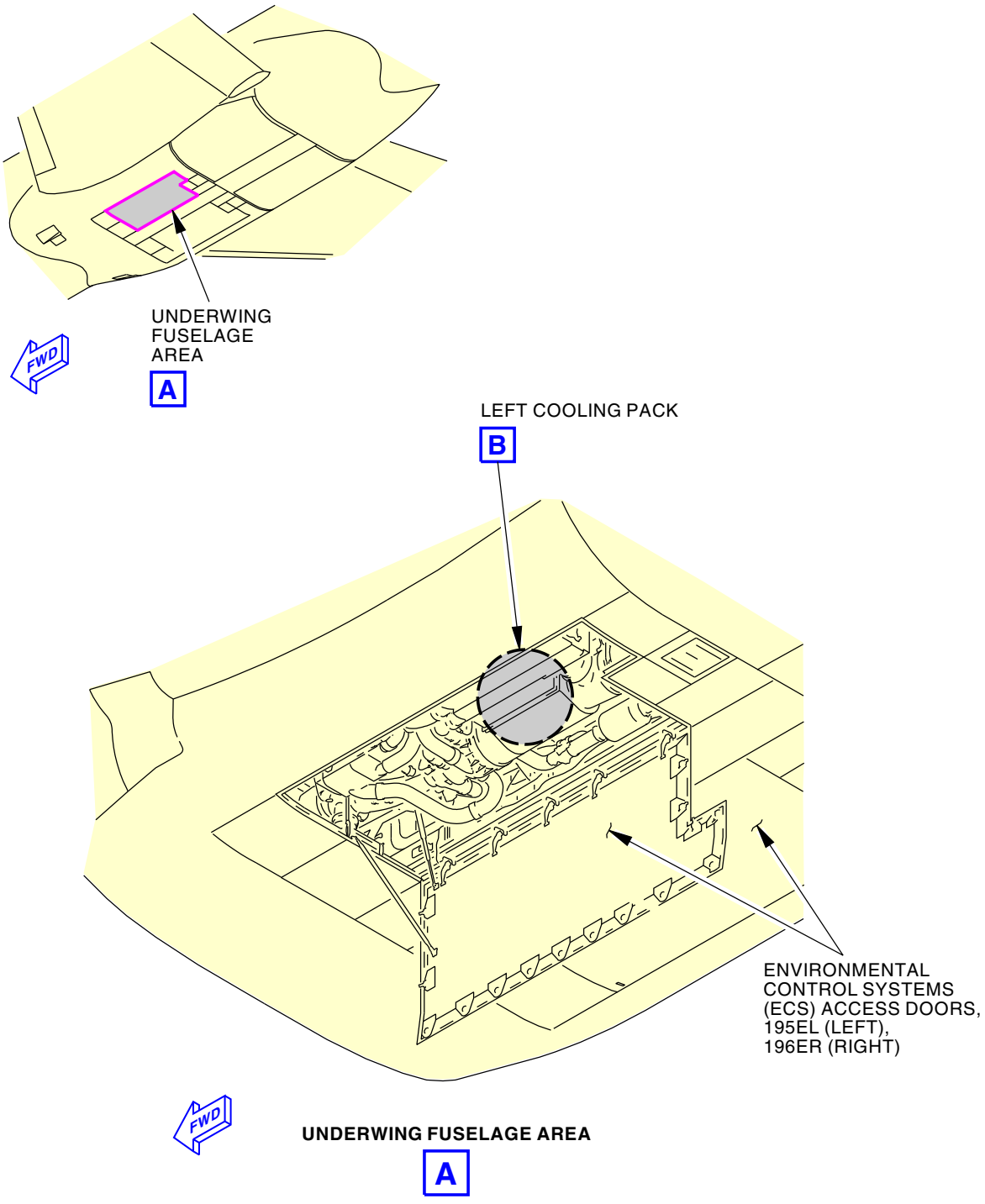

D11867 S0006403957_V2

Dual Heat Exchanger Installation
Figure 401/21-52-01-990-801 (Sheet 1 of 5)

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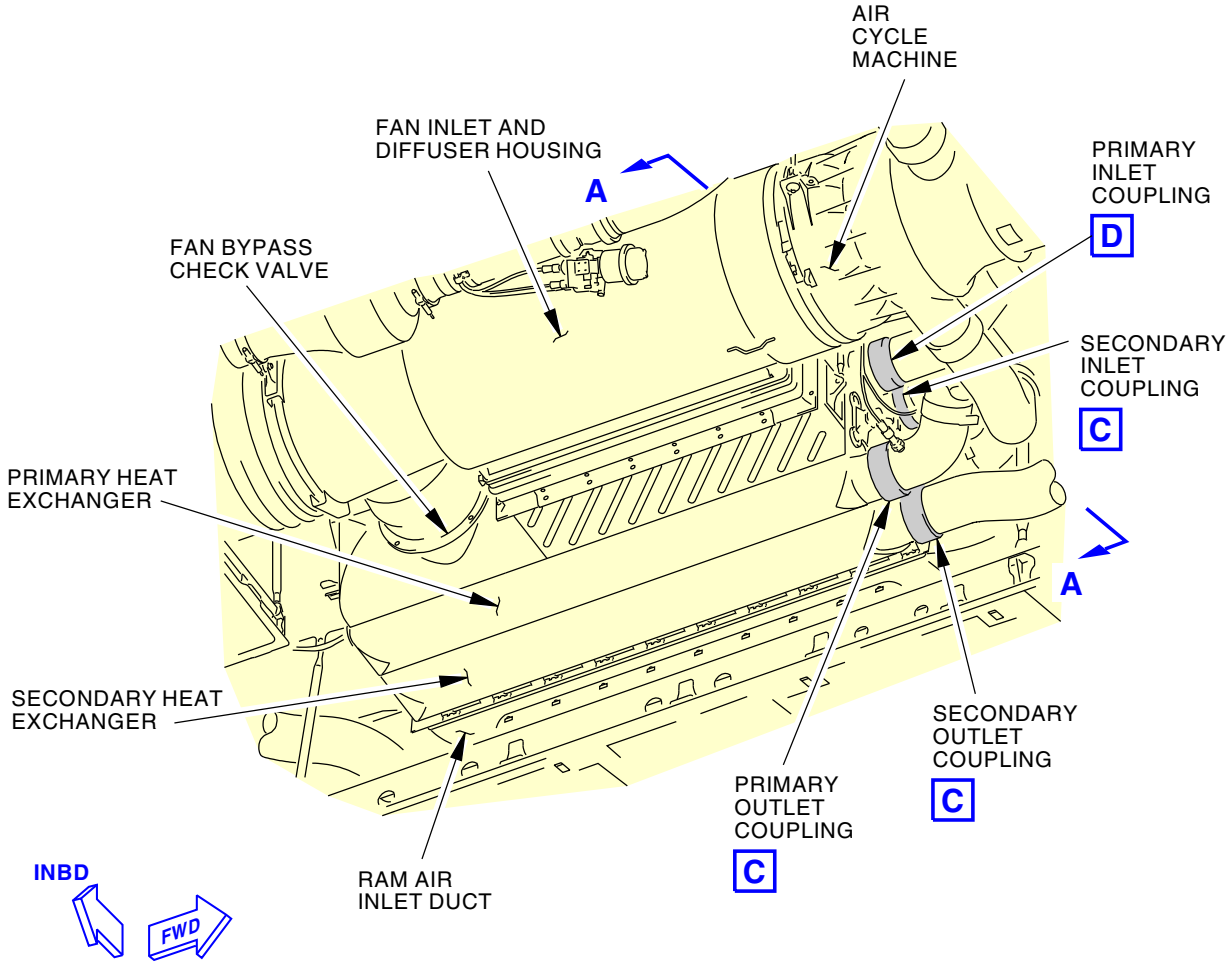

LEFT COOLING PACK
(RIGHT COOLING PACK EQUIVALENT)

B

D12088 S0006403958_V2

Dual Heat Exchanger Installation
Figure 401/21-52-01-990-801 (Sheet 2 of 5)

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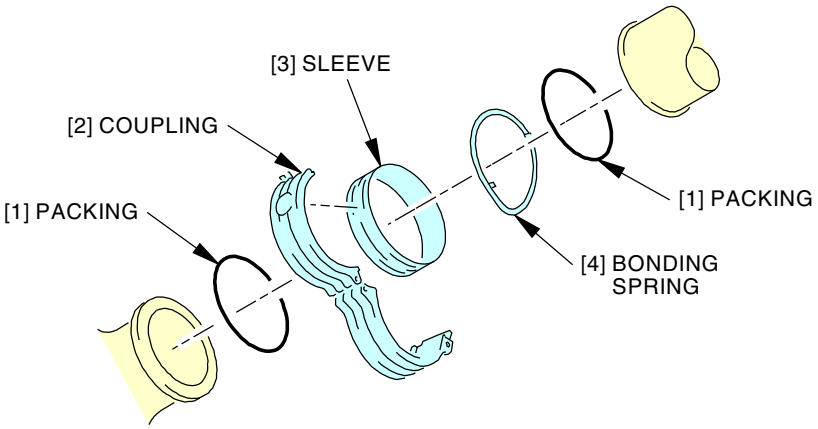
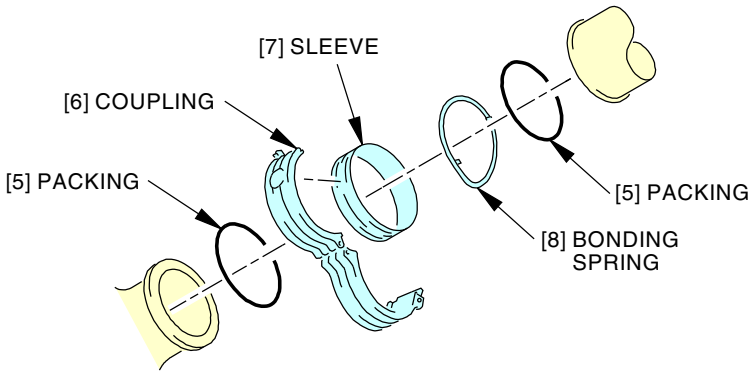


COUPLING INSTALLATION FOR THE PRIMARY OUTLET, SECONDARY OUTLET AND THE SECONDARY INLET

C



COUPLING INSTALLATION FOR THE PRIMARY INLET

D

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Dual Heat Exchanger Installation
Figure 401/21-52-01-990-801 (Sheet 3 of 5)

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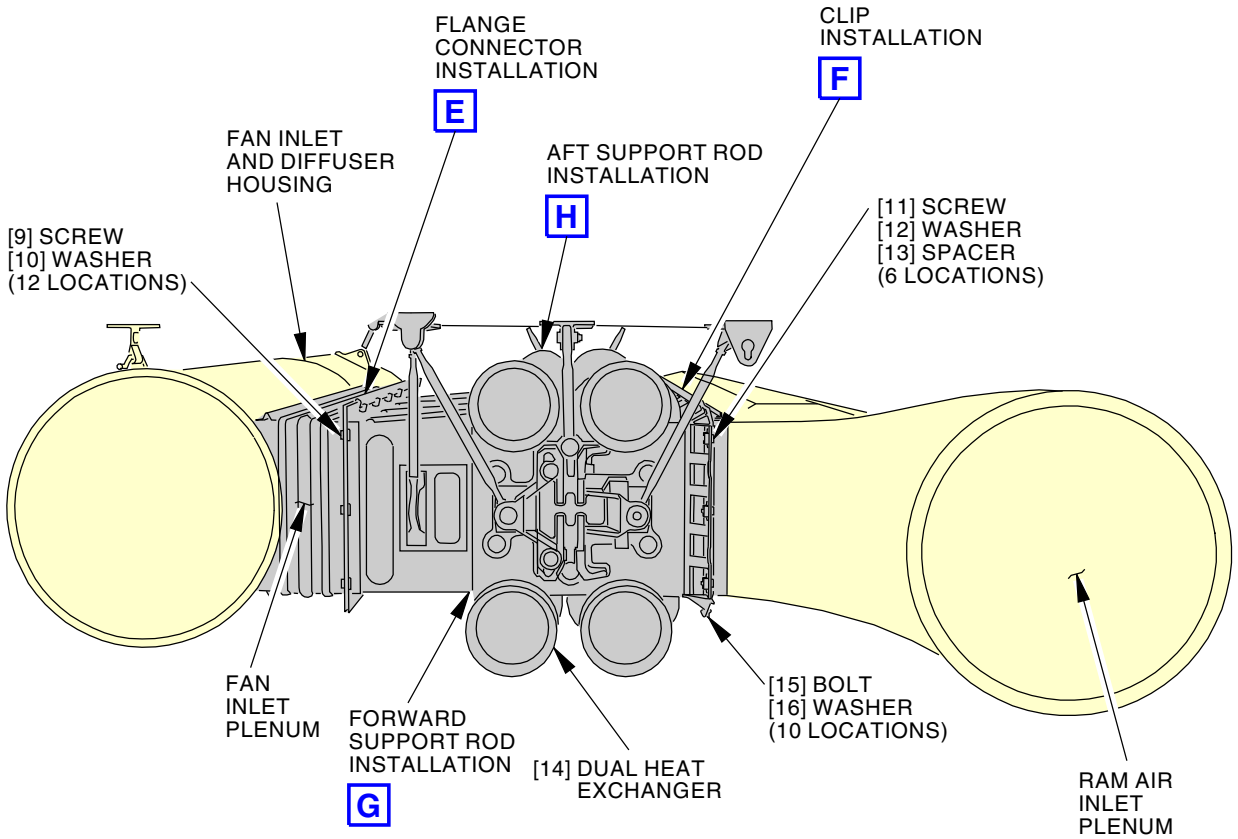
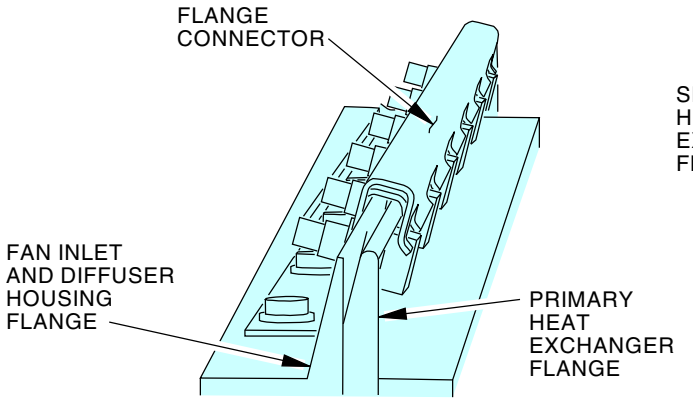
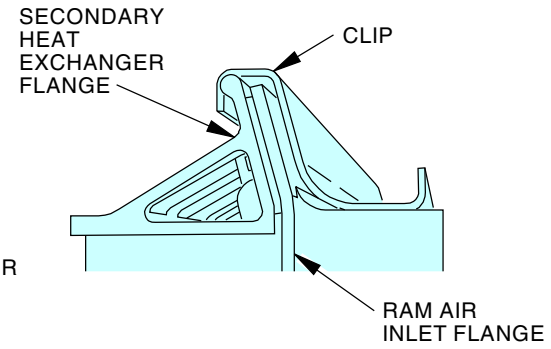


A-A



FLANGE CONNECTOR INSTALLATION

E



CLIP INSTALLATION

F

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Dual Heat Exchanger Installation
Figure 401/21-52-01-990-801 (Sheet 4 of 5)

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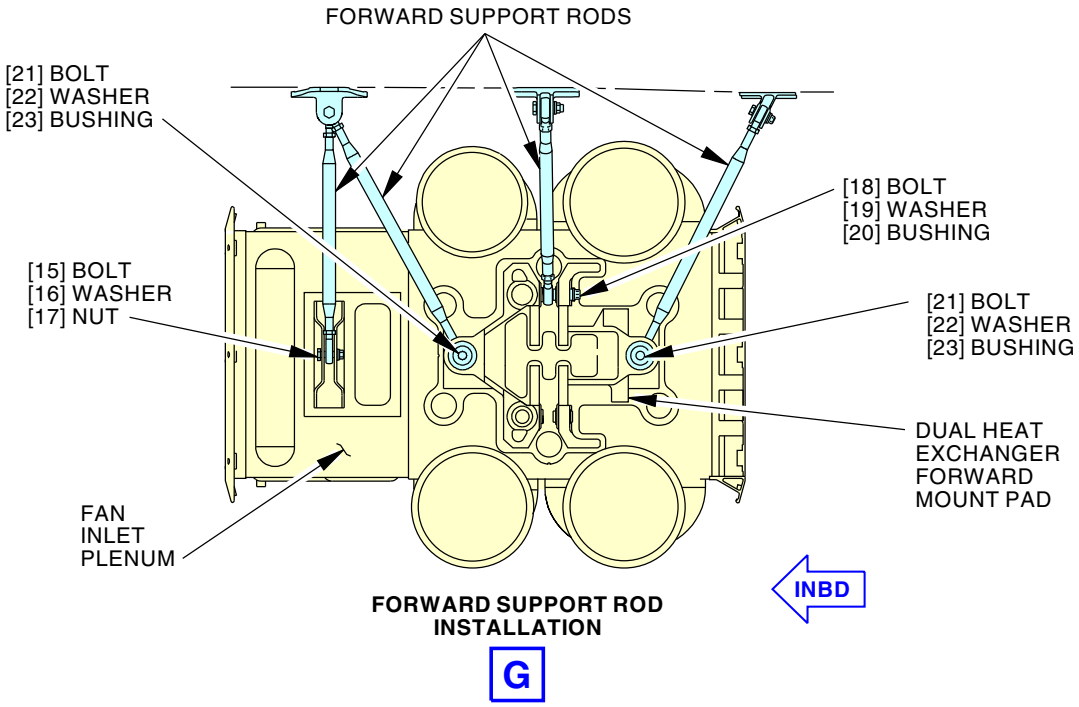

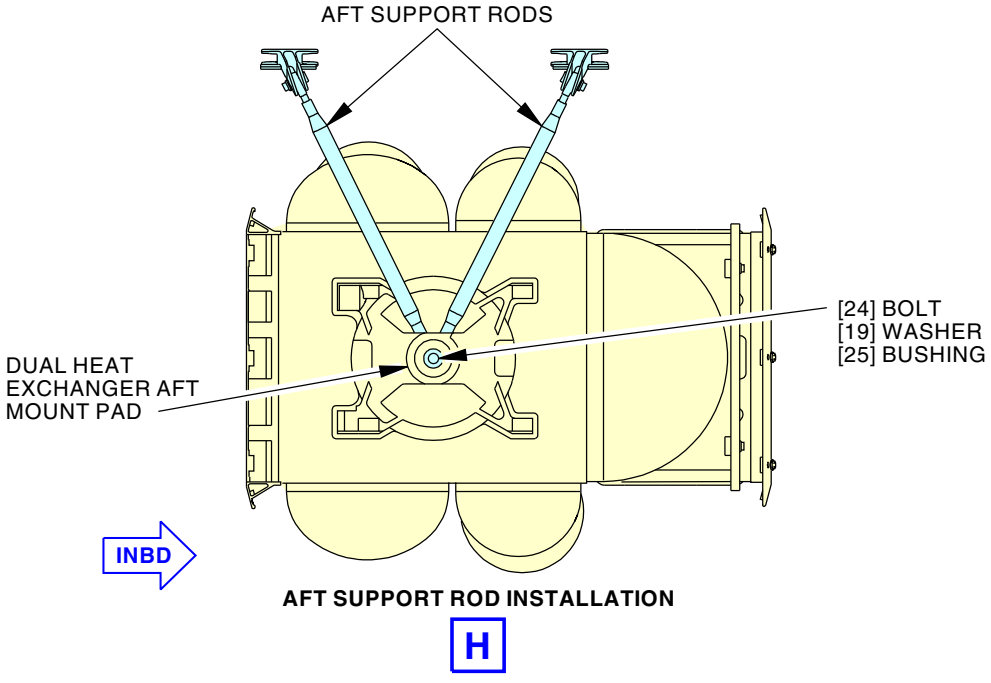

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Dual Heat Exchanger Installation
Figure 401/21-52-01-990-801 (Sheet 5 of 5)

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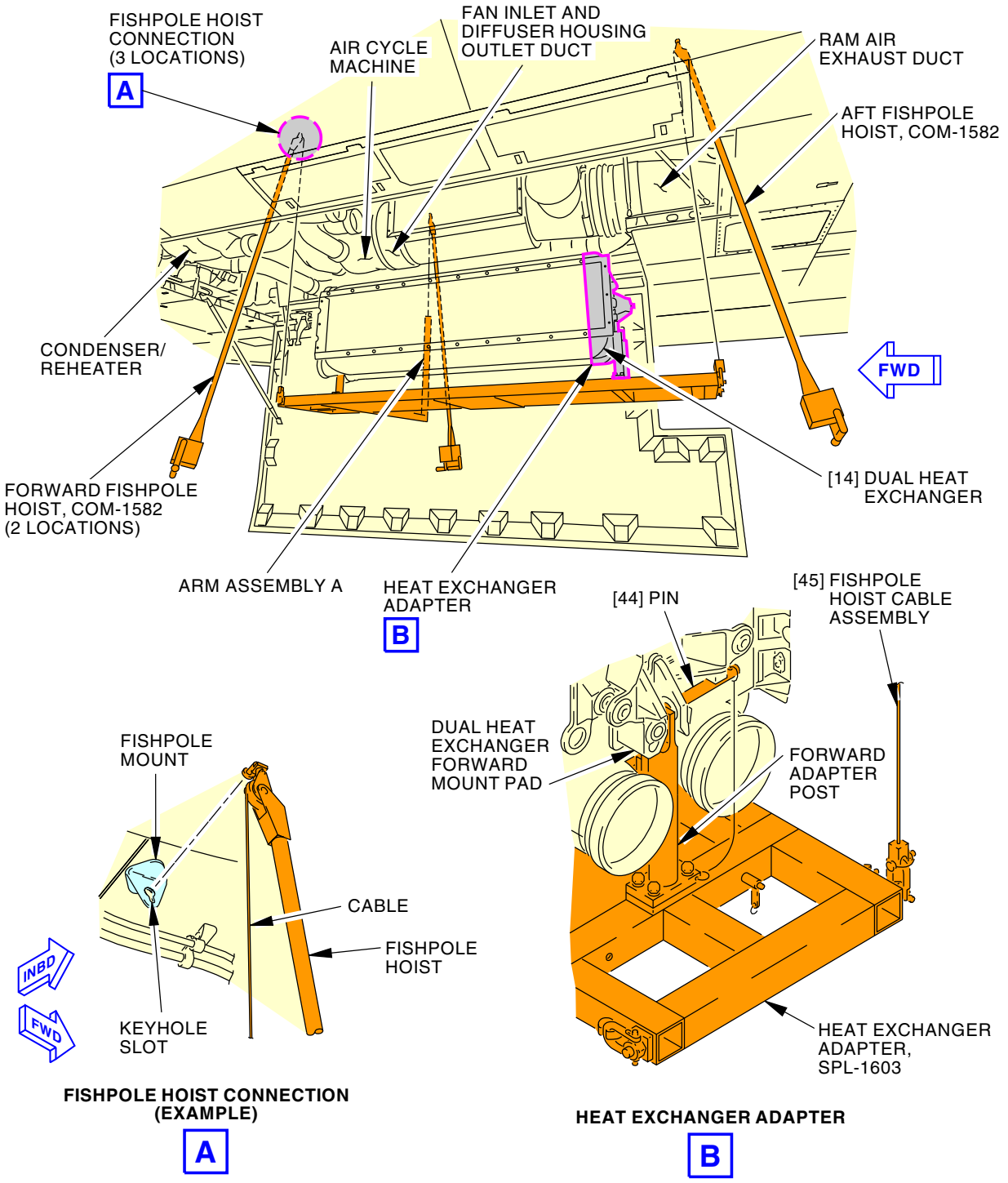

Dual Heat Exchanger Installation Equipment (Fishpole Hoist Method)
Figure 402/21-52-01-990-802

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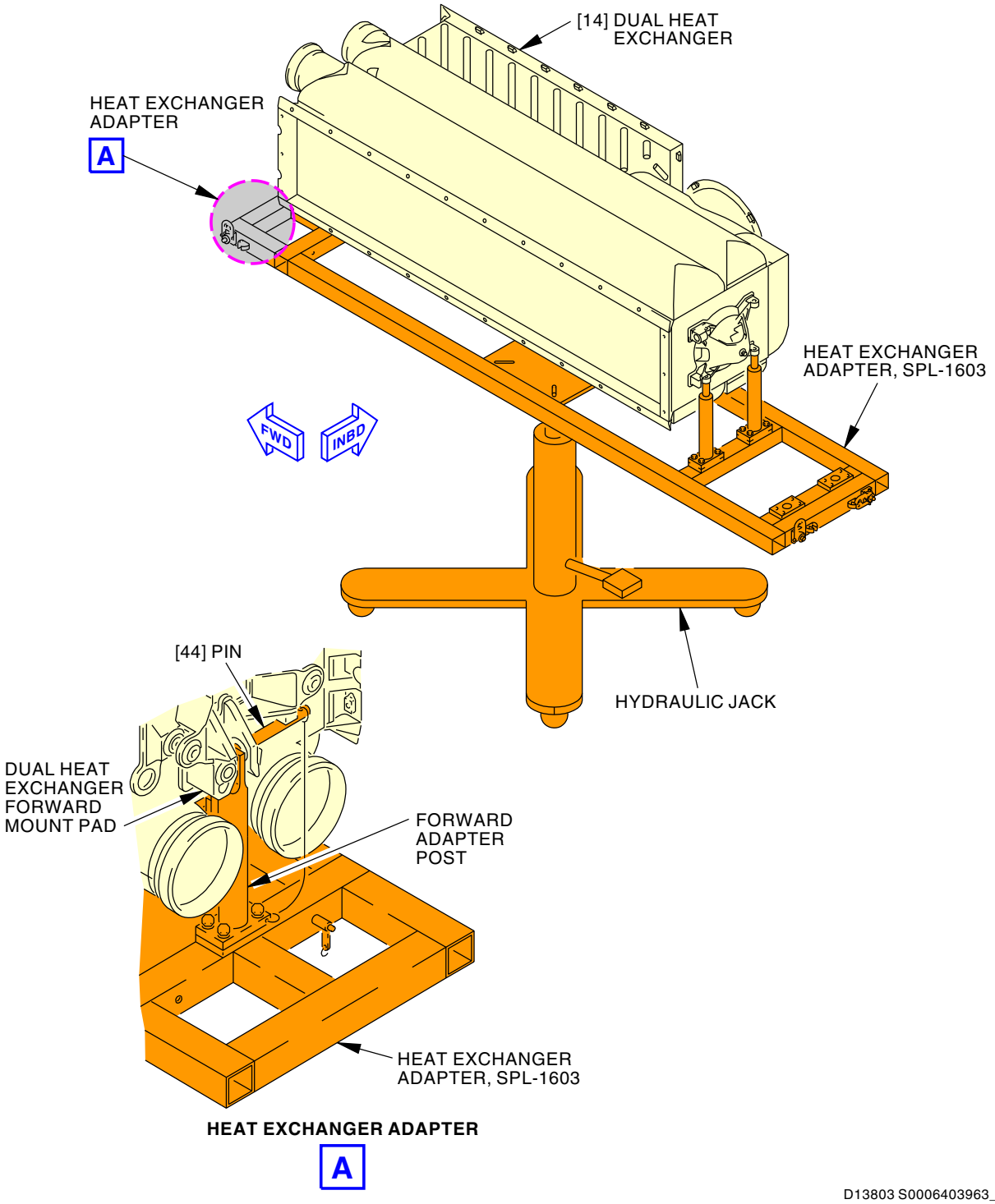

Dual Heat Exchanger Installation Equipment (Hydraulic Jack Method)
Figure 403/21-52-01-990-803

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TASK 21-52-01-400-801

3. Dual Heat Exchanger Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-52-10-400-801	Fan Bypass Check Valve Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (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-1582	Hoist - Fishpole, Manually Powered Part #: PF51-009-1 Supplier: 1YRX6 Part #: PF51-103-5 Supplier: 1YRX6
SPL-1450	Adapter - Hoist, Air Conditioning Pack Part #: J21001-132 Supplier: 81205 Part #: J21001-133 Supplier: 81205 Opt Part #: J21001-72 Supplier: 81205 Opt Part #: J21001-73 Supplier: 81205 Opt Part #: J21001-79 Supplier: 81205 Opt Part #: J21001-80 Supplier: 81205
SPL-1561	Jack - Hydraulic Part #: 930002 Supplier: 65834 Part #: J20009-110 Supplier: 81205 Opt Part #: J20009-108 Supplier: 81205 Opt Part #: J20009-109 Supplier: 81205
SPL-1603	Adapter - Heat Exchanger Part #: J21001-136 Supplier: 81205 Opt Part #: J21001-74 Supplier: 81205 Opt Part #: J21001-82 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00649	Lubricant - O-Ring - Krytox GPL206	
D00669	Multi-Purpose, Moly-Lithium Type, Lubriplate Mo-Lith No. 2	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Packing	21-52-00-01-595	ARO ALL

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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Packing	21-51-04-01-032	ARO ALL
14	Exchanger	21-52-00-01-430	ARO ALL

E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

G. Dual Heat Exchanger Installation

SUBTASK 21-52-01-420-001

(1) Do these steps to install the packings [1] and packings [5] and the sleeves [3] and sleeve [7]:

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(a) Apply the Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, or Christo-lube MCG111 grease, D50011, to the new packings [1], new packings [5] and to the inside diameter of the sleeves [3] and sleeve [7].

(b) Install the new packings [1] on the primary outlet, secondary outlet and the secondary inlet connections.

(c) Install the new packings [5] on the primary inlet connection.

(d) Install the three sleeves [3] over the primary outlet, secondary outlet and the secondary inlet ducts of the dual heat exchanger [14].

(e) Install the sleeve [7] on the primary inlet duct of the dual heat exchanger [14].

SUBTASK 21-52-01-480-005

(2) If the fishpole hoist method is used to install the dual heat exchanger, do the steps that follow to install the support equipment (Figure 402):

WARNING MAKE SURE THAT THE FISHPOLE HOIST IS IN A SERVICEABLE CONDITION. MAKE SURE THAT THERE ARE NO SIGNS OF DAMAGE ON THE CABLES OR CHAINS. IF THERE IS DAMAGE, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(a) Examine the forward and aft fishpole hoists, COM-1582, as follows:

1) Pull the cable out of the fishpole hoists, COM-1582, and look for any damage to the cable.

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CAUTION

MAKE SURE THAT YOU DO AN INSPECTION OF THE KEY HOLE SLOT AREAS. A DAMAGED KEY HOLE SLOT CAN CAUSE INCORRECT SUPPORT OF THE ACM. THIS CAN CAUSE DAMAGE TO THE ACM.

(b) Examine the keyhole slots for any damage before you install the fishpole hoists, COM-1582.

(c) Install the two forward fishpole hoists, COM-1582, in the keyhole slots that are found at these locations:

1) Above the forward outboard support rod for the dual heat exchanger [14].

2) Inboard and above the outlet duct of the fan inlet and diffuser housing.

(d) Install the aft fishpole hoist, COM-1582, in the keyhole slot that is found above the aft mount of the dual heat exchanger [14].

(e) Attach the fishpole hoist cable assembly [45] to the heat exchanger adapter, SPL-1603.

NOTE: The heat exchanger adapter, SPL-1603, includes the heat exchanger adapter and arm assembly A, J21001-11 which are part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

(f) Put the heat exchanger adapter, SPL-1603, in position below the dual heat exchanger [14].

(g) Make sure the three adapter posts engage the dual heat exchanger mount pads.

(h) Install the pin [44] in the forward adapter post.

SUBTASK 21-52-01-480-003

(3) If the hydraulic jack method is used to install the dual heat exchanger, do the steps that follow to install the support equipment (Figure 403):

(a) Attach the heat exchanger adapter, SPL-1603, to the hydraulic jack, SPL-1561.

NOTE: The heat exchanger adapter, SPL-1603, is part of the air conditioning pack hoist adapter, SPL-1450 tool kit.

(b) Put the dual heat exchanger [14] on the heat exchanger adapter, SPL-1603.

(c) Install the pin [44] on the forward adapter post.

SUBTASK 21-52-01-420-002

(4) Slowly raise the dual heat exchanger [14] to its position below the forward and the aft support rods.

(a) Put the forward and the aft support rods in position on the dual heat exchanger mount pads.

(b) Make sure the dual heat exchanger flanges engage the flange connector on the fan inlet plenum and the clip on the ram air inlet plenum.

(c) Make sure you align the dual heat exchanger ducts.

SUBTASK 21-52-01-020-013

(5) Do the steps that follow to connect the four forward support rods:

(a) Install the bolt [15], washer [16] and the nut [17] to connect the support rod to the fan inlet plenum.

(b) Install the bushing [23], bolt [21] and the washer [22] to connect the two support rods to the dual heat exchanger forward mount pad.

1) Make sure the countersunk surface of the washer [22] is against the bolt head.

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(c) Alter the length of the adjustable forward support rod until it will be possible for the bolt [18] to be easily inserted through the rod end and its connection on the dual heat exchanger forward mount pad without forcing the bolt.

(d) Install the bushing [20], bolt [18] and the washer [19] to connect the support rod to the dual heat exchanger forward mount pad.

1) Make sure the countersunk surface of the washer [19] is against the bolt head.

SUBTASK 21-52-01-020-014

(6) Do the steps that follow to connect the two aft support rods to the dual heat exchanger [14]:

(a) Install the bushing [25], bolt [24] and the washer [19].

1) Make sure the countersunk surface of the washer [19] is against the bolt head.

SUBTASK 21-52-01-080-006

(7) If you used the fishpole hoist method, do the steps that follow to remove the support equipment:

(a) Remove the pin [44] from the forward adapter post.

(b) Lower the heat exchanger adapter, SPL-1603, from the ECS bay.

(c) Disconnect the fishpole hoist cable assembly [45] from the heat exchanger adapter, SPL-1603.

(d) Remove the heat exchanger adapter, SPL-1603.

(e) Remove the two forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582.

SUBTASK 21-52-01-080-005

(8) If you used the hydraulic jack method, do the steps that follow to remove the support equipment:

(a) Remove the pin [44] from the forward adapter post.

(b) Lower the heat exchanger adapter, SPL-1603, and the hydraulic jack, SPL-1561, away from the ECS bay.

(c) Remove the heat exchanger adapter, SPL-1603, from the hydraulic jack, SPL-1561.

SUBTASK 21-52-01-420-007

(9) To install the twelve screws that connect the primary heat exchanger to the fan inlet and diffuser housing, do these steps:

(a) Apply a thin layer of the Lubriplate Mo-Lith No. 2 Lubricant, D00669, to the threads of the twelve screws [9].

(b) Loosely install the twelve screws [9] and the twelve washers [10].

(c) Measure the self-locking torque that is required to turn each of the screws [9] before it touches the heat exchanger flange.

NOTE: The self-locking torque is also referred to as the run on torque.

1) If the self-locking torque for any of the screws [9] is less than 3.5 in-lb (0.395 N·m) or more than 30 in-lb (3.390 N·m), then discard that screw and install a new screw.

a) Measure the self-locking torque of the new screw while you install it.

b) If the self locking torque of the new screw is less than 3.5 in-lb (0.395 N·m) or more than 30 in-lb (3.390 N·m), then replace the nutplate.

c) If you replaced the nutplate, measure the self-locking torque of the new screw while you install it in the new nutplate.

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(d) Tighten each of the twelve screws [9] from 8 in-lb (0.904 N·m) to 12 in-lb (1.356 N·m) higher than its self locking torque.

SUBTASK 21-52-01-020-016

(10) Install the spacers [13], screws [11] and the washers [12] to connect the ram air inlet plenum to the side flanges of the secondary heat exchanger.

SUBTASK 21-52-01-020-017

(11) Install the bolts [15] and the washers [16] to connect the bottom flange of the ram air inlet plenum to the secondary heat exchanger.

NOTE: 0.02 in. (0.51 mm) gaps under the header assembly fasteners or washers are acceptable.

SUBTASK 21-52-01-020-018

(12) Do the steps that follow to install the three couplings [2] on the primary outlet, secondary outlet and the secondary inlet ducts:

(a) Slide the sleeve [3] on the duct past the packing [1].

NOTE: Sliding the sleeve past the packing will provide access to the end of the duct to install the bonding spring.

CAUTION

MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(b) Install the bonding spring [4] onto the duct flange using the tabs on the bonding spring [4].

NOTE: The tabs on the bonding springs go towards the duct flange that has the sleeve installed. The tabs on the bonding spring are used to keep the bonding spring on the duct flange during installation. Use the sleeve to align the bonding spring with the end of the duct.

(c) Put the sleeve [3] in position over the ducts.

NOTE: Make sure you cannot see the flange grooves when you install the sleeves.

(d) Install the coupling [2] over the sleeve [3].

SUBTASK 21-52-01-020-019

(13) Do the steps that follow to install the coupling [6] on the primary inlet duct:

(a) Slide the sleeve [7] on the duct past the packing [5].

NOTE: Sliding the sleeve past the packing will provide access to the end of the duct to install the bonding spring.

CAUTION

MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(b) Install the bonding spring [8] on to the duct flange using the tabs on the bonding spring [8].

NOTE: The tabs on the bonding springs go towards the duct flange that has the sleeve installed. The tabs on the bonding spring are used to keep the bonding spring on the duct flange during installation. Use the sleeve to align the bonding spring with the end of the duct.

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(c) Put the sleeve [7] in position over the ducts.

NOTE: Make sure you cannot see the flange grooves when you install the sleeves.

(d) Install the coupling [6] over the sleeve [7].

SUBTASK 21-52-01-020-020

(14) Do this task: Fan Bypass Check Valve Installation, TASK 21-52-10-400-801.

NOTE: Make sure you do the inspection of the check valve.

H. Dual Heat Exchanger Installation Test

SUBTASK 21-52-01-860-002

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-01-860-003

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-01-860-004

(3) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the AUTO position.

SUBTASK 21-52-01-790-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(4) Make sure there is no air leakage at the dual heat exchanger duct connections.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-01-860-005

(1) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-52-01-860-006

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-01-410-001

(3) If the dual heat exchanger [14] for the right cooling pack was removed,

Close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-01-410-002

(4) If the dual heat exchanger [14] for the left cooling pack was removed,

Close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

END OF TASK

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DUAL HEAT EXCHANGER - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) An inspection of the Hamilton Sundstrand dual heat exchanger to detect cracks in the primary heat exchanger.

B. The dual heat exchanger has a primary and a secondary heat exchanger in a single assembly.

C. The primary heat exchanger is on the inboard side of the dual heat exchanger for each cooling pack. The secondary heat exchanger is on the outboard side. Each heat exchanger has an inlet and an outlet.

D. The inlets for the two heat exchangers are at the upper forward end of the dual heat exchanger. The outlets for the two heat exchangers are at the lower forward end of the dual heat exchanger.

TASK 21-52-01-000-803

2. Primary Heat Exchanger Inspection

(Figure 601)

A. General

(1) This inspection task will examine the primary heat exchanger for evidence of cracks that could show in these locations:

(a) The upper or lower surface of the ram air outlet header near the ram air exit box.

(b) The primary heat exchanger header area between the two inlets (upper V-notch area) or between the two outlets (lower V-notch area).

(c) The forward end sheet of the primary heat exchanger near the primary inlet or the primary outlet.

(d) Cracks can appear in the upper or lower surface of the ram air outlet header near the ram air exit box.

(2) If a crack is found on the external surface of the V-notch area, or if an end sheet crack extends into the inlet or outlet, then the air duct must be removed to do an inspection of the inner surface of the inlet or outlet.

(3) If you find a large crack or multiple small cracks, then the heat exchanger must be replaced.

(4) When a whistling noise is present this can indicate missing fins or damage in the heat exchanger core. This condition can be verified when doing an internal check of the V-notch area. Missing fins or damage to the core do not require replacement of the heat exchanger provided there are no flight deck effects.

B. References

Reference	Title
21-20-02-330-803	Structural Repair - Fiberglass/Kevlar Duct (P/B 801)
21-52-01-000-801	Dual Heat Exchanger Removal (P/B 401)
21-52-01-400-801	Dual Heat Exchanger Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)

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C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Packing	21-51-01-01-130	ARO ALL
		21-51-04-01-032	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
195JL	Heat Exchanger Door
196ER	Environmental Control Systems (ECS) Access Door
196JR	Heat Exchanger Door

F. Prepare for the Inspection

SUBTASK 21-52-01-860-014

WARNING

REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-01-010-005

(2) To get access to the heat exchanger for the left cooling pack, do this step:

(a) Open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-01-010-006

(3) To get access to the heat exchanger for the right cooling pack, do this step:

(a) Open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

G. Ram Air Outlet Header Inspection

SUBTASK 21-52-01-280-015

(1) Do these steps to inspect the ram air outlet header:

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WARNING DO NOT TOUCH THE HEAT EXCHANGER WHEN IT IS HOT. IF YOU TOUCH A HOT HEAT EXCHANGER, IT CAN CAUSE INJURY.

(a) Look at the upper and lower surfaces of the ram air outlet header near the ram air exit box.

NOTE: You can use a flashlight and an inspection mirror to help you see the upper surface.

SUBTASK 21-52-01-960-006

(2) If you find one or more cracks at the area of the reinforcement dimples of the ram air outlet header, then do these steps:

(a) Make a note of the length of each crack.

1) If the ram air outlet header has one crack that is more than 2.0 in. (50.8 mm), then replace the heat exchanger.

a) Do this task: Dual Heat Exchanger Removal, TASK 21-52-01-000-801.

b) Do this task: Dual Heat Exchanger Installation, TASK 21-52-01-400-801.

(b) Add all of the crack lengths to find the total crack length.

(c) Use this table to find the applicable corrective action:

Table 601/21-52-01-993-801

Total Crack Length	Corrective Action
Less than 4.0 in. (102 mm)	Reinspect at next maintenance activity
More than 4.0 in. (102 mm) less than 8.0 in. (203 mm)	Reinspect within 5000 flight hours
More than 8.0 in. (203 mm) less than 12.0 in. (305 mm)	Reinspect within 4300 flight hours
More than 12.0 in. (305 mm) less than 14.0 in. (356 mm)	Reinspect within 3200 flight hours
More than 14.0 in. (356 mm)	Replace immediately

(d) If the corrective action is to replace immediately, then replace the heat exchanger.

1) Do this task: Dual Heat Exchanger Removal, TASK 21-52-01-000-801.

2) Do this task: Dual Heat Exchanger Installation, TASK 21-52-01-400-801.

SUBTASK 21-52-01-960-003

(3) If you find one or more ram air outlet header cracks along the header welds and at the corner of the box, then do these steps:

(a) Make a note of the length of each crack.

(b) Add all of the crack lengths to find the total crack length.

(c) If the ram air outlet header has a total crack length of less than 5.0 in. (127 mm), then reinspect the heat exchanger within 3200 flight hours.

(d) If the ram air outlet header has a total crack length of more than 5.0 in. (127 mm), then replace the heat exchanger.

1) Do this task: Dual Heat Exchanger Removal, TASK 21-52-01-000-801.

2) Do this task: Dual Heat Exchanger Installation, TASK 21-52-01-400-801.

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(e) If the ram air outlet header has one crack that is more than 2.0 in. (50.8 mm), then replace the heat exchanger.

1) Do this task: Dual Heat Exchanger Removal, TASK 21-52-01-000-801.

2) Do this task: Dual Heat Exchanger Installation, TASK 21-52-01-400-801.

H. V-notch and End Sheet Inspection

SUBTASK 21-52-01-280-016

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Look at the forward end of the primary heat exchanger in the lower V-notch area.

NOTE: You can use a flashlight and an inspection mirror to help you see all of the lower V-notch area.

(a) If you find one or more cracks in the lower V-notch area, then make a note of the location of each crack.

SUBTASK 21-52-01-280-017

(2) Look at the forward end of the primary heat exchanger in the upper V-notch area.

NOTE: You can use a flashlight and an inspection mirror to help you see all of the upper V-notch area.

(a) If you find one or more cracks in the upper V-notch area, then make a note of the location of each crack.

SUBTASK 21-52-01-280-018

(3) Look at the lower end sheet area near the primary outlet duct.

NOTE: You can use a flashlight and an inspection mirror to help you see all of the lower end sheet area.

(a) If you find one or more cracks in the lower end sheet area, then make a note of the length of each crack.

(b) If a crack extends into the heat exchanger outlet, then make a note of the location of the crack.

SUBTASK 21-52-01-280-019

(4) Look at the upper end sheet area near the primary inlet duct.

NOTE: You can use a flashlight and an inspection mirror to help you see all of the upper end sheet area.

(a) If you find one or more cracks in the upper end sheet area, then make a note of the length of each crack.

(b) If a crack extends into the heat exchanger inlet, then make a note of the location of the crack.

SUBTASK 21-52-01-020-026

(5) If you found external cracks in either the upper or the lower V-notch area, then do these steps to remove the primary outlet duct [4]:

NOTE: The outlet duct can be removed to do an inspection of the inner surface of the heat exchanger outlet or to get access to the inlet duct.

(a) Disconnect the connector [3].

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(b) Remove the band clamp [7] that hold the sensor wires to the primary outlet duct [4].

1) Make a note of the position of each clamp to help you with the installation.

(c) Remove the channel band coupling [1] from the aft connection of the primary outlet duct [4].

NOTE: The coupling latches are designed such that they can not be released when the system is pressurized.

1) To release the latches, pull the duct toward the heat exchanger.

(d) Remove the channel band coupling [1] from the forward connection of the primary outlet duct [4].

NOTE: The coupling latches are designed such that they can not be released when the system is pressurized.

1) To release the latches, pull the two ducts toward each other.

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(e) Move the sleeve [10] onto the forward and the aft ends of the primary outlet duct [4].

(f) Remove the V-band coupling [2] from the upper connection of the primary outlet duct [4].

(g) Remove the primary outlet duct [4] from the heat exchanger.

(h) Remove the bonding springs [11] from the forward and the aft connections of the primary outlet duct [4].

1) Keep the bonding springs for the installation.

SUBTASK 21-52-01-280-020

(6) If you found external cracks in the lower V-notch area, then do these steps:

(a) Make a note of the length of each external crack.

(b) Look at the internal surface of the heat exchanger outlet in each area where you found an external crack.

NOTE: You can use a flashlight and an inspection mirror to help you see all of the area.

(c) If you find internal cracks, then make a note of the length of each internal crack.

NOTE: You can use the closure bars and the fin sections to find the length of an internal crack. For example, a crack that extends over two fin sections and one closure bar is 0.34 in. (8.64 mm)+0.34 in. (8.64 mm)+0.52 in. (13.2 mm)=1.20 in. (30.48 mm) long.

(d) Add the length of each external crack to the length of the internal crack that is associated with it to find a total length for each crack.

(e) Look for missing fins or core damage.

NOTE: Damage to the core of the heat exchanger does not require replacement of the heat exchanger provided there are no flight deck effects.

SUBTASK 21-52-01-280-021

(7) If you found external cracks in the lower end sheet area that extend into the outlet of the primary heat exchanger, then do these steps:

(a) Make a note of the length of each external crack.

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(b) Look at the internal surface of the outlet in each area where you found an external crack.

NOTE: You can use a flashlight and an inspection mirror to help you see all of the outlet area.

(c) If you find internal cracks, then make a note of the length of each internal crack.

(d) Add the length of each external crack to the length of the internal crack that is associated with it to find a total length for each crack.

(e) Look for missing fins or core damage.

NOTE: Damage to the core of the heat exchanger does not require replacement of the heat exchanger provided there are no flight deck effects.

SUBTASK 21-52-01-020-027

(8) If you found external cracks in the upper V-notch area, then do these steps to remove the primary inlet duct [8]:

(a) Disconnect the connector [5].

(b) Remove the channel band coupling [1] from the aft connection of the primary inlet duct [8].

NOTE: The coupling latches are designed such that they can not be released when the system is pressurized.

1) To release the latches, pull the duct toward the heat exchanger.

(c) Move the sleeve [10] onto the aft end of the primary inlet duct [8].

(d) Remove the V-band coupling [6] from the forward connection of the primary inlet duct [8].

(e) Remove the primary inlet duct [8].

(f) Remove the bonding spring [11].

1) Keep the bonding spring for the installation.

SUBTASK 21-52-01-280-022

(9) If you found external cracks in the upper V-notch area of the primary heat exchanger, then do these steps:

(a) Make a note of the length of each external crack.

(b) Look at the internal surface of the heat exchanger inlet in each area where you found an external crack.

NOTE: You can use a flashlight and an inspection mirror to help you see all of the area.

(c) If you find internal cracks, then make a note of the length of each internal crack.

NOTE: You can use the closure bars and the fin sections to find the length of an internal crack. For example, a crack that extends over two fin sections and one closure bar is 0.34 in. (8.64 mm)+0.34 in. (8.64 mm)+0.52 in. (13.2 mm)=1.20 in. (30.48 mm) long.

(d) Add the length of each external crack to the length of the internal crack that is associated with it to find a total length for each crack.

(e) Look for missing fins or core damage.

NOTE: Damage to the core of the heat exchanger does not require replacement of the heat exchanger provided there are no flight deck effects.

SUBTASK 21-52-01-280-023

(10) If you found external cracks in the upper end sheet area that extend into the inlet of the primary heat exchanger, then do these steps:

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(a) Make a note of the length of each external crack.

(b) Look at the internal surface of the inlet in each area where you found an external crack.

NOTE: You can use a flashlight and an inspection mirror to help you see all of the inlet area.

(c) If you find internal cracks, then make a note of the length of each internal crack.

(d) Add the length of each external crack to the length of the internal crack that is associated with it to find a total length for each crack.

SUBTASK 21-52-01-960-004

(11) If you find one or more primary heat exchanger cracks, then do these steps:

(a) Reinspect or remove the heat exchanger within the stated flight hours or flight cycles in the table below, whichever comes first.

(b) Use this table to find the applicable corrective action:

Table 602/21-52-01-993-802

Length of the Cracks	Hours Until Removal or Reinspection	Cycles Until Removal or Reinspection
No cracks found	Reinspect within 4500 flight hours	Reinspect within 900 flight cycles
Less than 1.0 in. (25.4 mm)	Reinspect within 3000 flight hours	Reinspect within 600 flight cycles
More than 1.0 in. (25.4 mm) and less than 1.5 in. (38.1 mm)	Reinspect within 1400 flight hours	Reinspect within 280 flight cycles
More than 1.5 in. (38.1 mm) and less than 2.0 in. (50.8 mm)	Reinspect within 750 flight hours	Reinspect within 150 flight cycles
More than 2.0 in. (50.8 mm) and less than 2.5 in. (63.5 mm)	Reinspect within 500 flight hours	Reinspect within 100 flight cycles
More than 2.5 in. (63.5 mm) and less than 3.0 in. (76.2 mm)	Reinspect within 250 flight hours	Reinspect within 50 flight cycles
More than 3.0 in. (76.2 mm) and less than 4.0 in. (101.6 mm)	Replace the heat exchanger within 120 flight hours	Replace the heat exchanger within 24 flight cycles
More than 4.0 in. (101.6 mm)	Replace the heat exchanger	Replace the heat exchanger

(c) If the corrective action is to replace immediately, then replace the heat exchanger.

1) Do this task: Dual Heat Exchanger Removal, TASK 21-52-01-000-801.

2) Do this task: Dual Heat Exchanger Installation, TASK 21-52-01-400-801.

SUBTASK 21-52-01-420-008

(12) If you removed the primary inlet duct [8], then do these steps:

(a) Inspect the packings [9] for damage or deterioration.

(b) If you find damage or deterioration, then install new packings [9].

CAUTION MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(c) Install the bonding spring [11].

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(d) Put the primary inlet duct [8] into its position on the heat exchanger.

(e) Move the sleeve [10] over the aft connection of the primary inlet duct [8].

(f) Install the channel band coupling [1] onto the aft connection of the primary inlet duct [8].

(g) Install the V-band coupling [6] onto the forward connection of the primary inlet duct [8].

(h) Reconnect the connector [5].

SUBTASK 21-52-01-420-009

(13) If you removed the primary outlet duct [4], then do these steps:

(a) Inspect the packings [9] for damage or deterioration.

(b) If you find damage or deterioration, then install new packings [9].

CAUTION

MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(c) Install the bonding springs [11].

(d) Put the primary outlet duct [4] into its position on the heat exchanger.

(e) Move the sleeve [10] over the forward and the aft connections of the primary outlet duct [4].

(f) Install the channel band coupling [1] onto the forward and the aft connections of the primary outlet duct [4].

(g) Install the V-band coupling [2] onto the upper connection of the primary outlet duct [4].

(h) Install the band clamp [7] that hold the sensor wires to the primary outlet duct [4].

1) Use the note you made during the removal to help you put each clamp in the correct position.

(i) Reconnect the connector [3].

I. Ram Air Inlet Duct Inspection

SUBTASK 21-52-01-280-024

(1) Do these steps to get access to the interior of the ram air inlet duct:

(a) To get access to the left ram air inlet duct, open this access panel:

Number	Name/Location
195JL	Heat Exchanger Door

(b) To get access to the right ram air inlet duct, open this access panel:

Number	Name/Location
196JR	Heat Exchanger Door

(c) Remove the bolt [12] and washer [13] which attach the access panel [14] to the ram air inlet duct.

(d) Remove the access panel [14] from the ram air inlet duct.

SUBTASK 21-52-01-280-025

(2) Do these steps to inspect the ram air inlet duct:

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(a) Look at the internal and external surfaces of the ram air inlet duct near the heat exchanger.

NOTE: You can use a flashlight and an inspection mirror to help you see the internal surface.

(b) The internal and external surface of the ram air inlet duct must be smooth with no sign of the fiberglass reinforcing cloth below the resin.

NOTE: Streaks of dirt or soot on the ram air inlet duct is permitted.

1) If the ram air inlet duct shows sign of the fiberglass reinforcing cloth, repair the duct as follows:

a) Repair the duct by adding fiberglass fabric and resin as required to build up the duct to the thickness of the undamaged duct (TASK 21-20-02-330-803).

SUBTASK 21-52-01-280-026

(3) Do these steps to install the access panel [14] of the ram air inlet duct:

(a) Put the access panel [14] in its position on the ram air inlet duct.

(b) Install the bolt [12] and washer [13] which attach the access panel [14] to the ram air inlet duct.

1) Torque the bolts [12] to 20 in-lb (2 N·m) - 30 in-lb (3 N·m).

J. Dual Heat Exchanger Operational Test

SUBTASK 21-52-01-860-015

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

SUBTASK 21-52-01-860-016

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-01-860-017

(3) Push the applicable L or R PACK switch, on the Air Conditioning Module, in the P5 overhead panel to the AUTO position.

SUBTASK 21-52-01-790-003

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(4) Make sure there is no air leakage at the dual heat exchanger duct connections.

K. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-01-860-018

(1) Push the applicable L or R PACK switch, on the Air Conditioning Module, in the P5 overhead panel, to the OFF position.

SUBTASK 21-52-01-860-019

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-01-410-007

(3) If the ram air inlet duct for the right cooling pack was inspected, then close this access panel:

Number	Name/Location
196JR	Heat Exchanger Door

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SUBTASK 21-52-01-410-008

(4) If the ram air inlet duct for the left cooling pack was inspected, then close this access panel:

Number	Name/Location
195JL	Heat Exchanger Door

SUBTASK 21-52-01-410-009

(5) If the dual heat exchanger for the right cooling pack was inspected, then close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-01-410-010

(6) If the dual heat exchanger for the left cooling pack was inspected, then close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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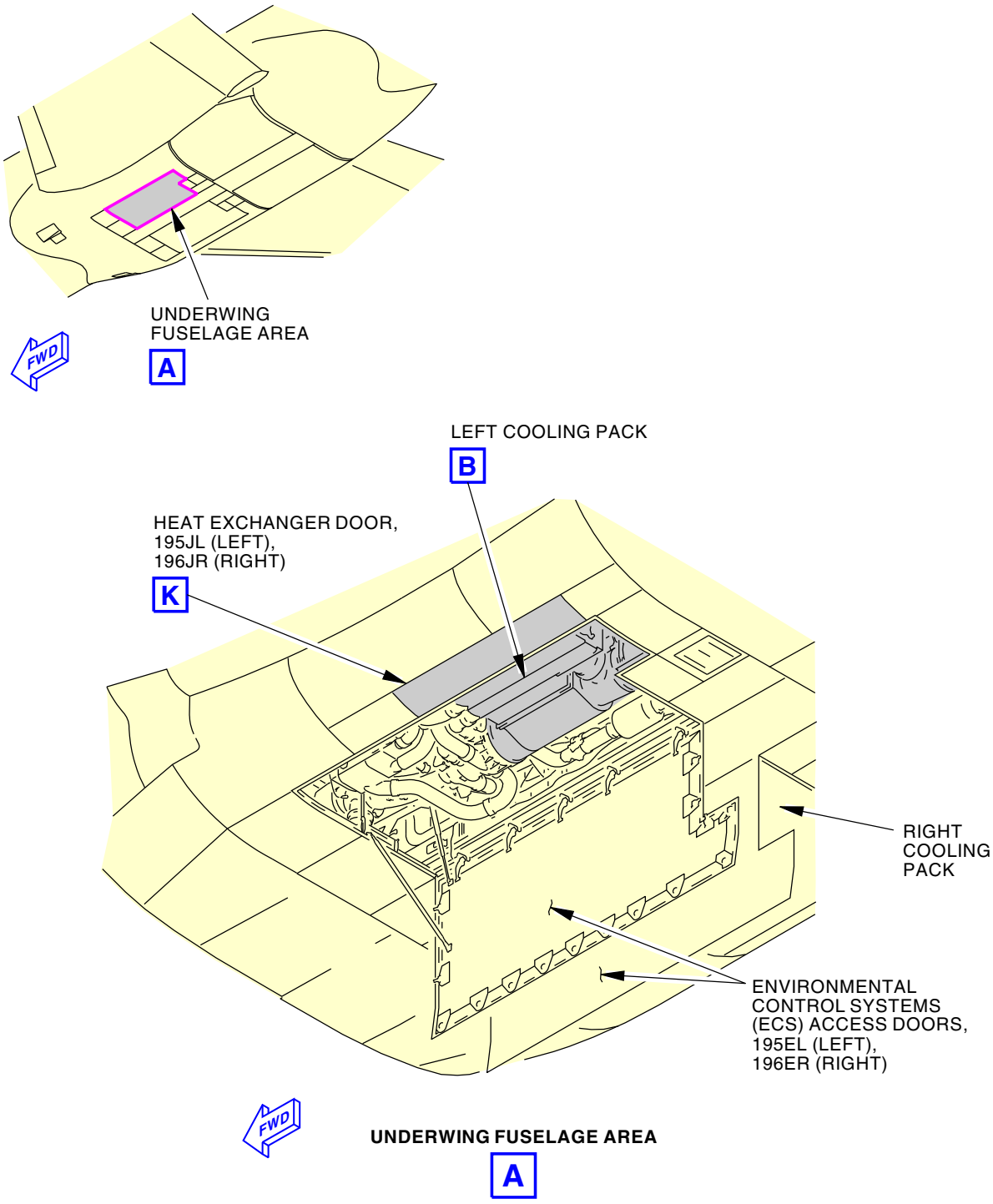

G29465 S0006403969_V2

Dual Heat Exchanger Inspection
Figure 601/21-52-01-990-804 (Sheet 1 of 8)

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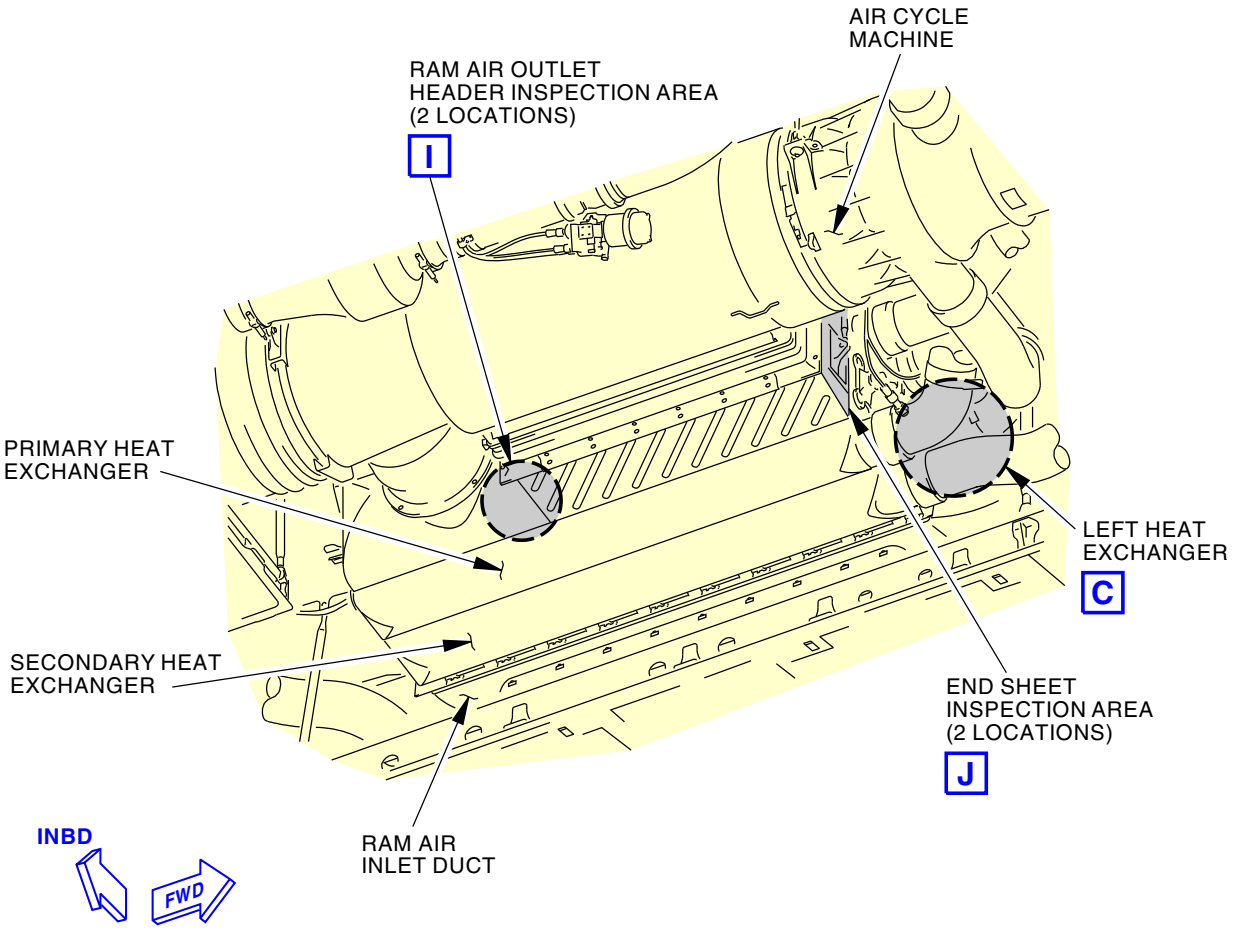

RIGHT COOLING PACK
(LEFT COOLING PACK EQUIVALENT)

B

G81089 S0006403970_V2

Dual Heat Exchanger Inspection
Figure 601/21-52-01-990-804 (Sheet 2 of 8)

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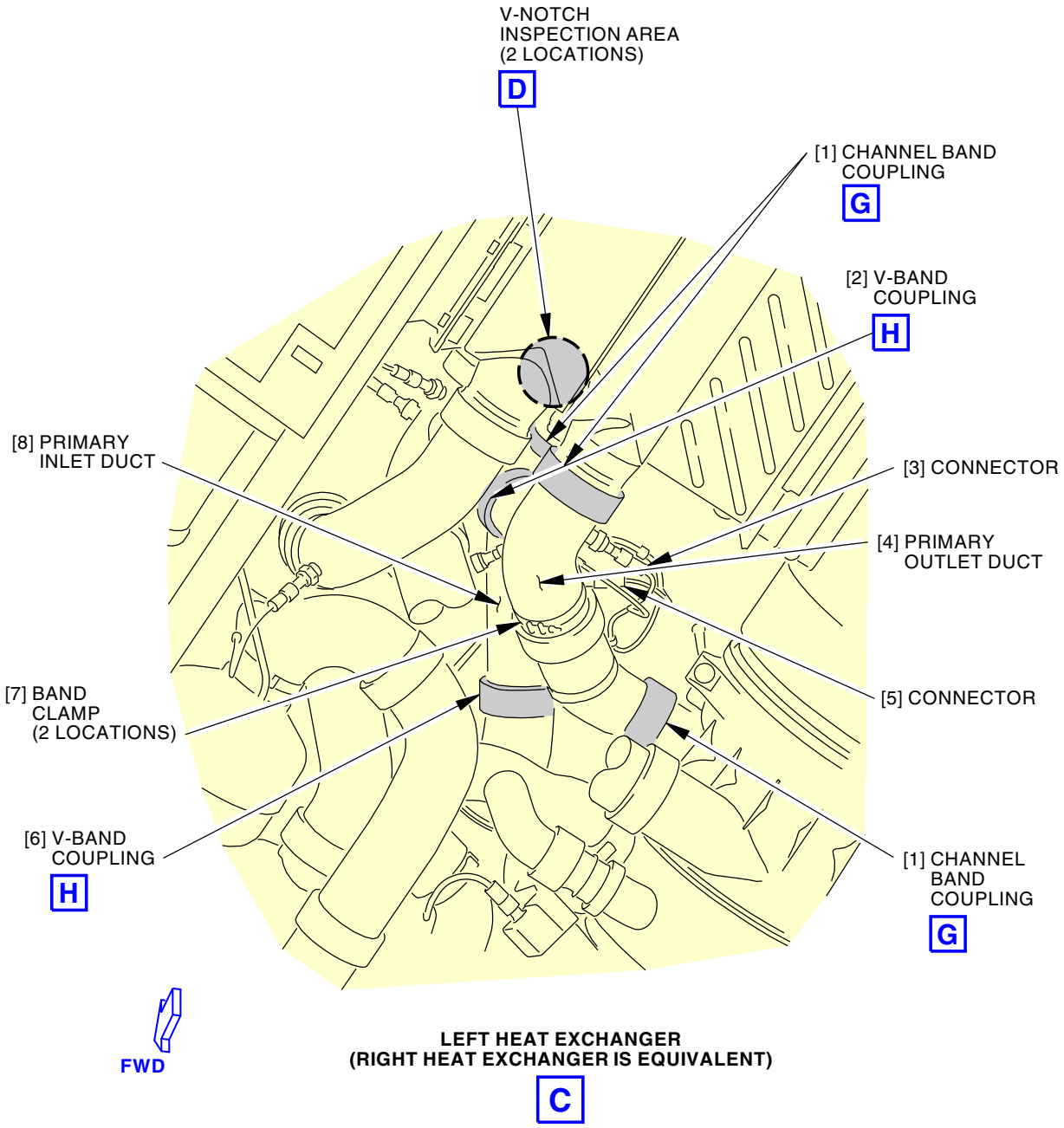

G34602 S0006403971_V2

Dual Heat Exchanger Inspection
Figure 601/21-52-01-990-804 (Sheet 3 of 8)

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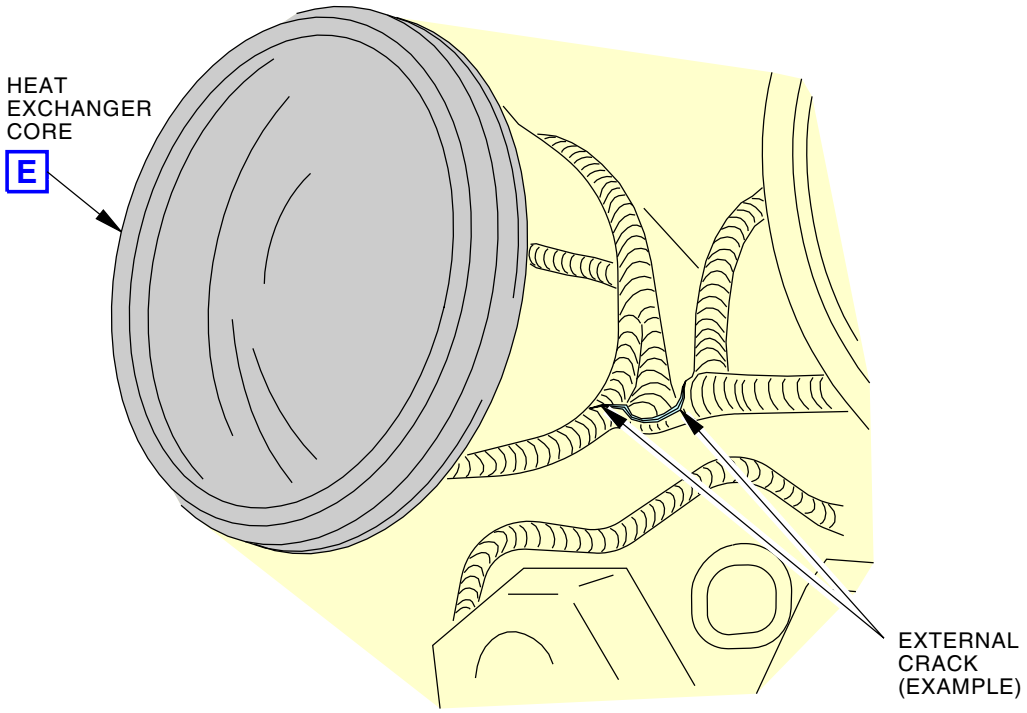

**V-NOTCH INSPECTION AREA
(UPPER V-NOTCH SHOWN, LOWER
V-NOTCH EQUIVALENT)**

D

G34634 S0006403972_V2

**Dual Heat Exchanger Inspection
Figure 601/21-52-01-990-804 (Sheet 4 of 8)**

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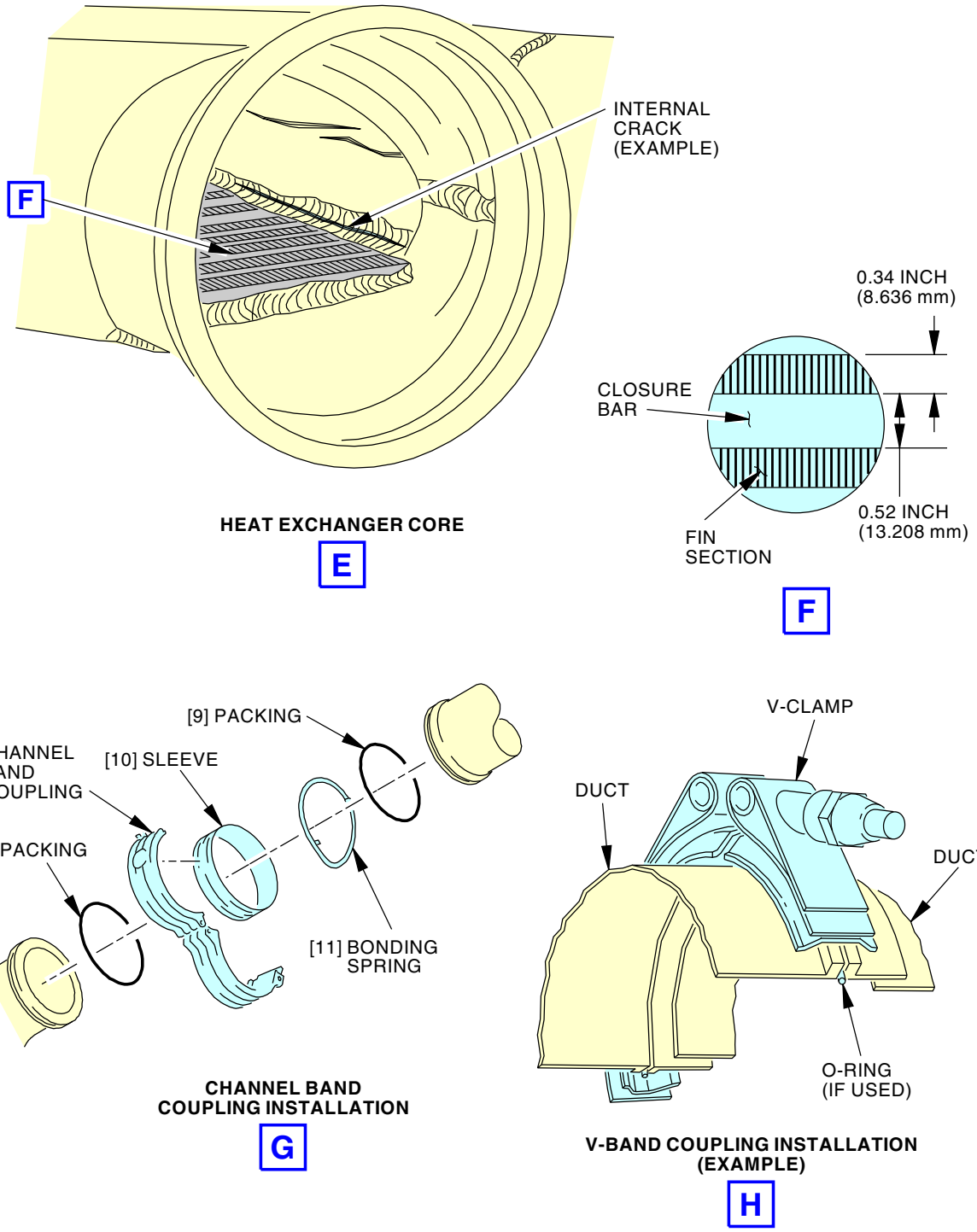

Dual Heat Exchanger Inspection
Figure 601/21-52-01-990-804 (Sheet 5 of 8)

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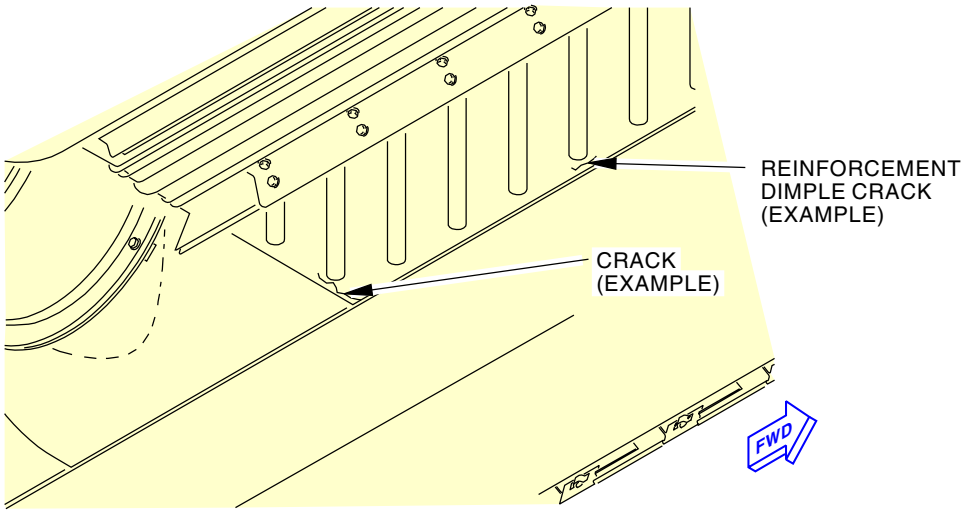
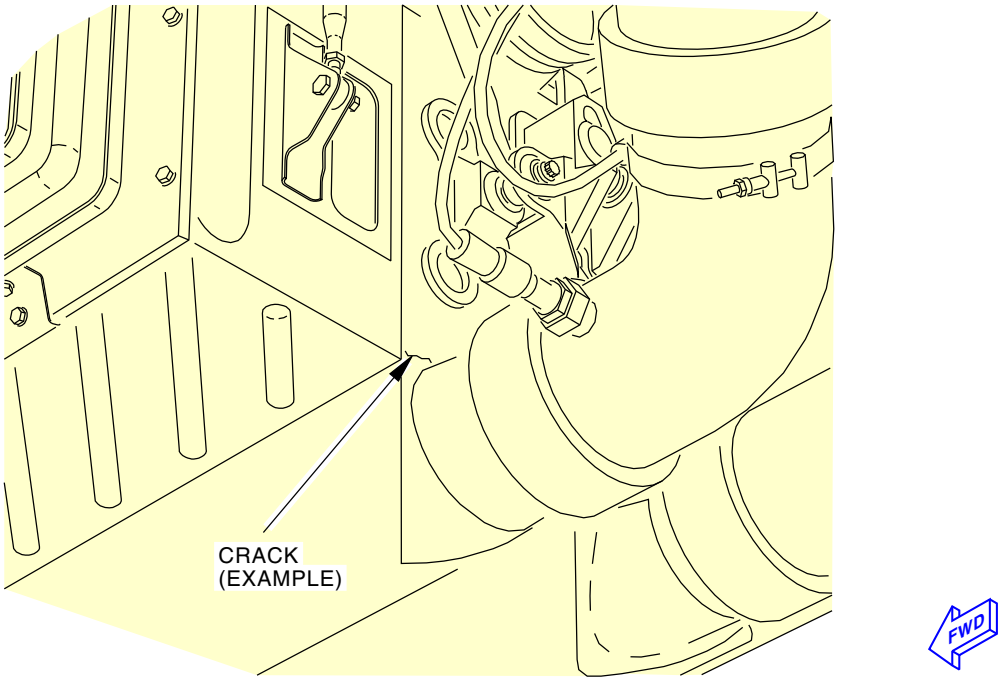


RAM AIR OUTLET HEADER INSPECTION AREA
(LOWER SURFACE SHOWN, UPPER SURFACE EQUIVALENT)

I



END SHEET INSPECTION AREA
(LOWER END SHEET SHOWN, UPPER END SHEET EQUIVALENT)

J

G81433 S0006403974_V2

Dual Heat Exchanger Inspection
Figure 601/21-52-01-990-804 (Sheet 6 of 8)

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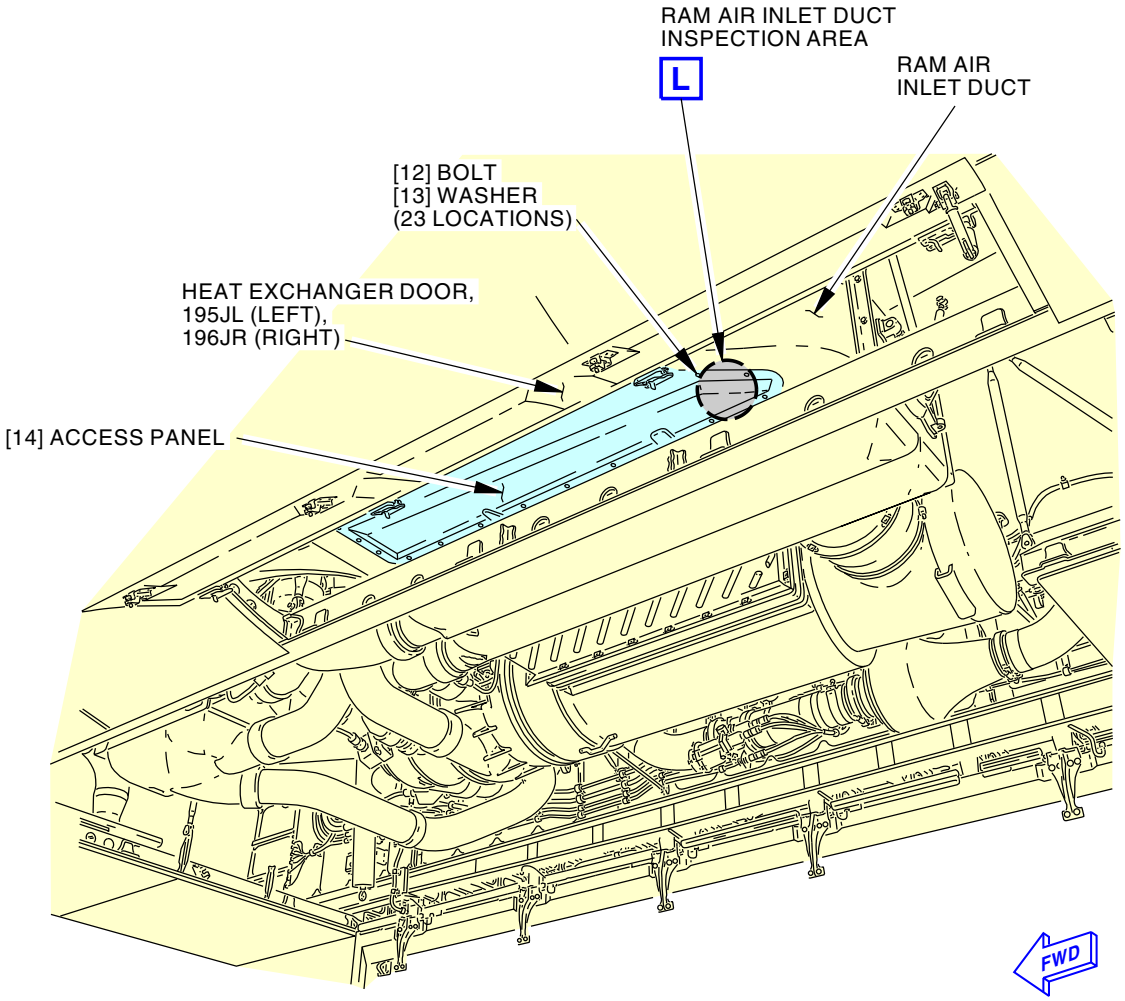

LEFT HEAT EXCHANGER DOOR 195JL SHOWN
(RIGHT HEAT EXCHANGER DOOR 196JR IS OPPOSITE)

K

K18641 S0006403975_V2

Dual Heat Exchanger Inspection
Figure 601/21-52-01-990-804 (Sheet 7 of 8)

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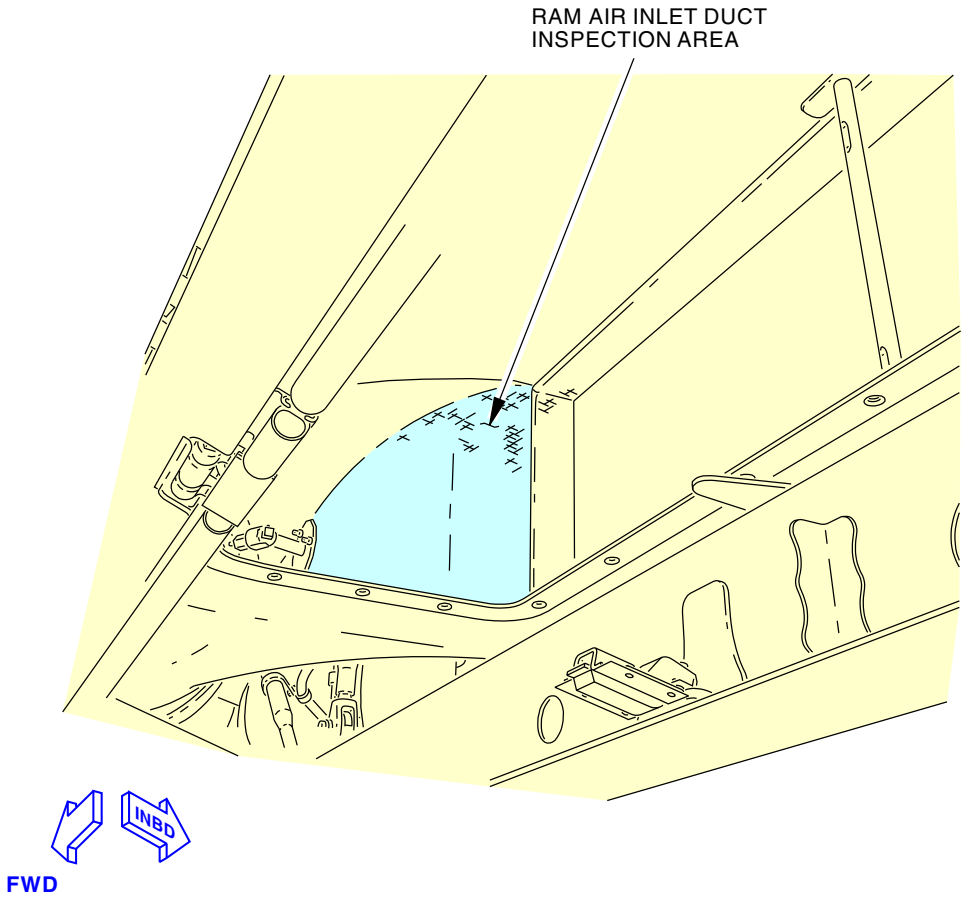

RAM AIR INLET DUCT INSPECTION AREA
(VIEW SHOWN WITH ACCESS PANEL REMOVED)

L

K19564 S0006403976_V2

Dual Heat Exchanger Inspection
Figure 601/21-52-01-990-804 (Sheet 8 of 8)

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AIR CYCLE MACHINE (ACM) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the air cycle machine (ACM)

(2) An installation of the air cycle machine (ACM).

B. There are two procedures available for the removal and installation of the air cycle machine (ACM). Each procedure is optional to the other. The procedure that is used is given by the ground equipment that is available. The air cycle machine will be called the ACM throughout this procedure.

(1) Procedure 1:

(a) This procedure uses two fishpole hoists to lift and lower the ACM and the hoist adapter assembly.

(2) Procedure 2:

(a) This procedure uses a hydraulic jack and a maintenance stand to lift and lower the ACM. The ACM hoist adapter is attached to the hydraulic jack with retaining plates. The maintenance stand is used to lift the ACM and the hydraulic jack to the Environmental Control Systems (ECS) bay. The hydraulic jack then moves the ACM in and out of the ECS bay.

TASK 21-52-02-000-801

2. Air Cycle Machine (ACM) Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-52-06-300-801	Fan Inlet and Diffuser Housing (FIDH) Seal Repair (P/B 801)
21-52-07-000-804-002	Outlet Duct/Muffler Assembly Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (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-1568	Jack - Hydraulic, General Low Profile Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
COM-1582	Hoist - Fishpole, Manually Powered Part #: PF51-009-1 Supplier: 1YRX6 Part #: PF51-103-5 Supplier: 1YRX6
SPL-1449	Adapter - Air Cycle Machine Part #: J21001-138 Supplier: 81205 Opt Part #: J21001-76 Supplier: 81205 Opt Part #: J21001-84 Supplier: 81205

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(Continued)

Reference	Description
SPL-1450	Adapter - Hoist, Air Conditioning Pack Part #: J21001-132 Supplier: 81205 Part #: J21001-133 Supplier: 81205 Opt Part #: J21001-72 Supplier: 81205 Opt Part #: J21001-73 Supplier: 81205 Opt Part #: J21001-79 Supplier: 81205 Opt Part #: J21001-80 Supplier: 81205
SPL-1605	Rod - Alignment, Air Conditioning Pack Installation Part #: J21001-77 Supplier: 81205

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Removal

SUBTASK 21-52-02-860-002

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-02-010-001

(2) To get access to the ACM [3]

for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-02-010-002

(3) To get access to the ACM [3]

for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

F. Air Cycle Machine (ACM) Removal

SUBTASK 21-52-02-020-010

(1) Use one of the two methods that follow to disconnect the cooling pack outlet duct/muffler assembly [24] from the ACM [3]:

(a) Disconnect the coupling which connects the cooling pack outlet duct/muffler assembly [24] to the ACM [3] (method 1).

NOTE: If you disconnect the pack outlet duct/muffler assembly from the ACM, you must use a rigid piece of material to protect the FIDH tube seal during ACM removal and installation. The rigid piece of material is placed between the ACM and the FIDH.

1) Remove the coupling [1].

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2) Move the sleeve [2] onto the cooling pack outlet duct/muffler assembly [24].

(b) Remove the cooling pack outlet duct/muffler assembly [24] (method 2):

NOTE: The removal of the cooling pack outlet duct/muffler will provide more space between the ACM and the fan inlet and diffuser housing (FIDH). This added space will decrease the risk of damaging the tube seal in the FIDH during removal and installation of the ACM.

1) Do this task: Outlet Duct/Muffler Assembly Removal, TASK 21-52-07-000-804-002.

SUBTASK 21-52-02-020-001

WARNING

MAKE SURE THE AIR CYCLE MACHINE IS NOT HOT. THE TEMPERATURE OF THE ACM CAN CAUSE INJURY TO PERSONS.

(2) Disconnect these duct connections (Figure 401):

NOTE: There are 9 couplings; two 3 inch V-Band type couplings (low limit valve and turbine bypass valve connections), one large V-Band type coupling (FIDH connection), one channel band coupling (pack outlet duct/muffler connection), four 5 inch coupling assemblies (coupling, sleeve, bonding spring) and one 4 inch coupling assembly (coupling, sleeve, bonding spring).

(a) Remove the coupling [4] that connects the FIDH to the ACM [3].

(b) Do the steps that follow to remove these coupling assemblies:

NOTE: The clamshell coupling latches are designed such that they can not be disengaged when the system is pressurized. In order to disengage the latch, it is recommended that you pull the two ducts which are connected together towards each other. This will permit the latch to be easily lifted over the coupling in the unpressurized condition.

1) Remove the couplings [11] from the 2nd-stage turbine inlet, 1st-stage turbine outlet, compressor inlet and the compressor outlet ducts.

WARNING

DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

a) Move the sleeves [9] onto the 2nd-stage turbine inlet, 1st-stage turbine outlet, compressor inlet and the compressor outlet ducts.

b) Remove the bonding springs [10].

2) Remove the coupling [15] from the 1st-stage turbine inlet connection.

a) Move the sleeve [13] onto the 1st-stage turbine inlet duct.

b) Remove the bonding spring [14].

(c) Remove the couplings [7] that connect the condenser low limit valve and the 2nd-stage turbine bypass valve to the ACM [3].

1) Remove and discard the packings [6] from the flange groove of the condenser low limit valve and the 2nd-stage turbine bypass valve.

SUBTASK 21-52-02-020-002

(3) Do the steps that follow to remove the bonding jumper [5] from the ACM mount pad:

(a) Remove the nut [19], washer [17], two washers [18] and the bolt [16].

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(b) Remove the bonding jumper [5].

SUBTASK 21-52-02-480-001

(4) Use one of the two methods that follow to lower the ACM [3]:

(a) If you use the fishpole hoist method, do these steps (Figure 402):

WARNING DO AN INSPECTION OF THE FISHPOLE HOISTS BEFORE YOU INSTALL THEM OR YOU CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

1) Examine the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, as follows:

a) Pull the cable out of the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, and look for any damage to the cable.

CAUTION MAKE SURE YOU DO AN INSPECTION OF THE KEY HOLE SLOT AREAS. A DAMAGED KEY HOLE SLOT CAN CAUSE INCORRECT SUPPORT OF THE ACM. THIS CAN CAUSE DAMAGE TO THE ACM.

2) Examine the keyhole slots for any damage before you install the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582.

3) Install the forward fishpole hoist, COM-1582, in the keyhole slot that is forward and above the condenser/reheater.

4) Install the aft fishpole hoist, COM-1582, in the keyhole slot that is inboard and above the outlet duct of the fan inlet and diffuser housing.

5) Attach the fishpole hoist cable assembly [32] to the hoist adapter [33].

NOTE: The hoist adapter [33] includes the adapter, arm assembly A, J21001-11 and arm assembly B J21001-12 which are part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

6) Raise the hoist air cycle machine adapter, SPL-1449 in position below the ACM [3].

7) Make sure the three pins on the hoist adapter posts engage the ACM mount pads.

CAUTION CAREFULLY RAISE THE HOIST ADAPTER SO YOU DO NOT DAMAGE THE SUPPORT RODS.

8) Tighten the fishpole hoist cables a sufficient amount to take the weight off of the ACM mounts.

(b) If you use the hydraulic jack method, do these steps (Figure 403):

1) Install the hoist air cycle machine adapter, SPL-1449 or hoist adapter [33] on the hydraulic low profile hydraulic jack, COM-1568.

NOTE: The adapter is part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

2) Raise the hydraulic jack [41] to position the hoist adapter [33] below the ACM [3].

3) Make sure the three pins on the hoist adapter posts engage the ACM mount pads.

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CAUTION

CAREFULLY RAISE THE HOIST ADAPTER SO YOU DO NOT DAMAGE THE SUPPORT RODS.

4) Raise the hydraulic jack [41] to remove the weight from the ACM mounts.

SUBTASK 21-52-02-020-003

(5) Remove the nuts [20] and the washers [21] from the three support rods.

SUBTASK 21-52-02-480-002

(6) Install the air conditioning pack installation alignment rod, SPL-1605, on each of the three support rod T-bolts.

SUBTASK 21-52-02-020-004

CAUTION

MAKE SURE THE ACM IS LOWERED SUCH THAT THE FORWARD AND AFT END OF THE ACM DOES NOT SHIFT FORWARD OR AFT. THE ACM (WEIGHT APPROXIMATELY 100 LBS) CAN HIT THE COOLING PACK DUCTS. THIS CAN CAUSE DAMAGE TO THE COOLING PACK DUCTS AND THE TUBE SEAL IN THE FIDH.

(7) Carefully lower the ACM [3].

NOTE: It is recommended that you hold the ACM and the hoist adapter while you lower the assembly to keep the assembly stable and clear of the connections.

(a) Make sure the aft end of the ACM does not contact the tube seal located on the inside diameter of the FIDH.

1) If necessary use a thin rigid piece of material to hold over the FIDH outlet while you lower the ACM, this will prevent damage to the tube seal.

2) If you damage the tube seal, you must repair it (TASK 21-52-06-300-801).

SUBTASK 21-52-02-020-005

(8) Remove the sleeves [9] from the 2nd-stage turbine inlet, 1st-stage turbine outlet, compressor inlet and the compressor outlet.

SUBTASK 21-52-02-020-006

(9) Remove the sleeve [13] from the 1st-stage turbine inlet.

SUBTASK 21-52-02-020-007

(10) Remove and discard the packings [8] from the 2nd-stage turbine inlet, 1st-stage turbine outlet, compressor inlet and the compressor outlet connections.

SUBTASK 21-52-02-020-008

(11) Remove and discard the packings [12] from the 1st-stage turbine inlet connection.

SUBTASK 21-52-02-480-004

(12) Install the customer furnished safety strap.

NOTE: This strap is optional and can be used to aid in transportation of the ACM and the hoist adapter assembly.

END OF TASK

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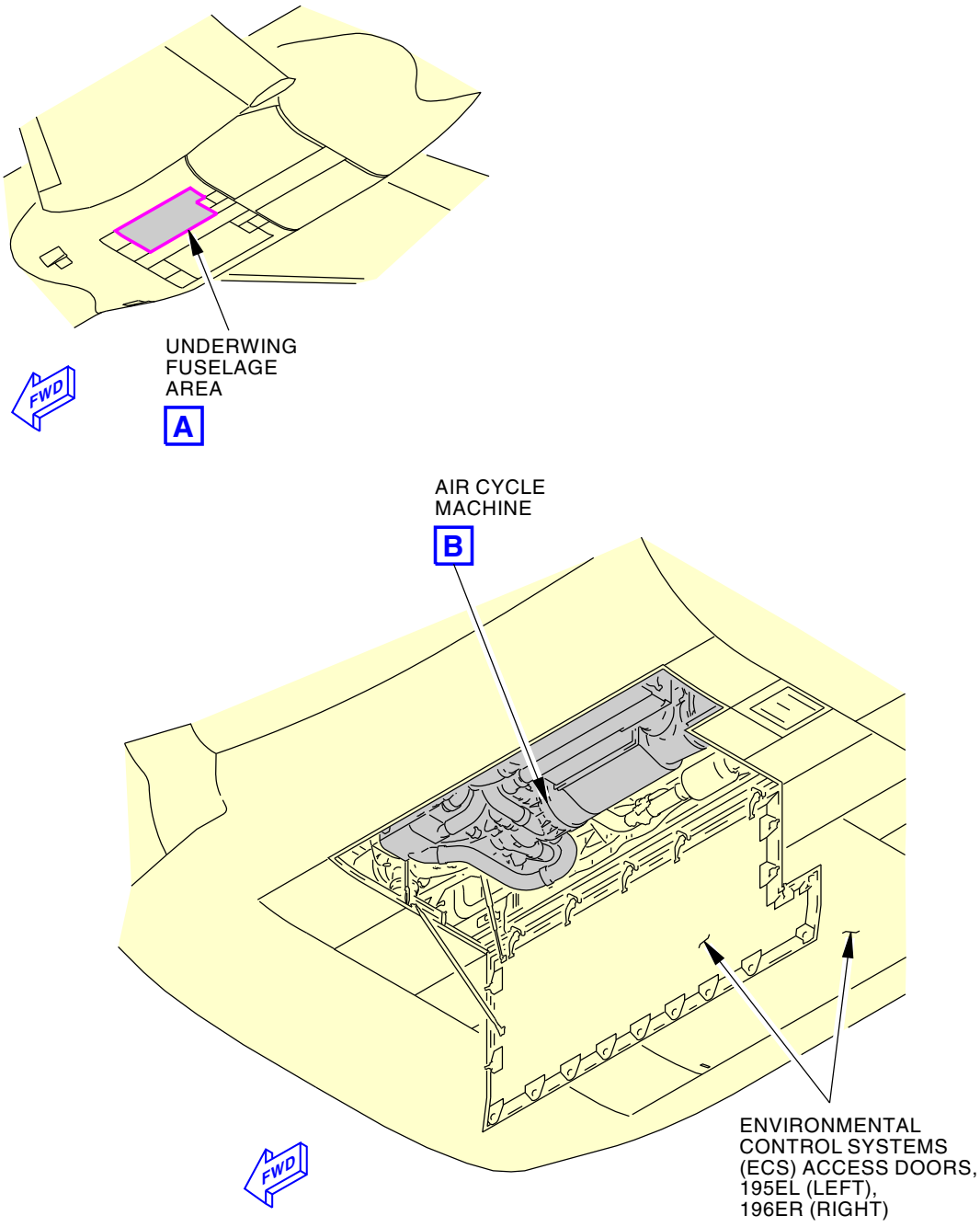

Air Cycle Machine (ACM) Installation
Figure 401/21-52-02-990-801 (Sheet 1 of 4)

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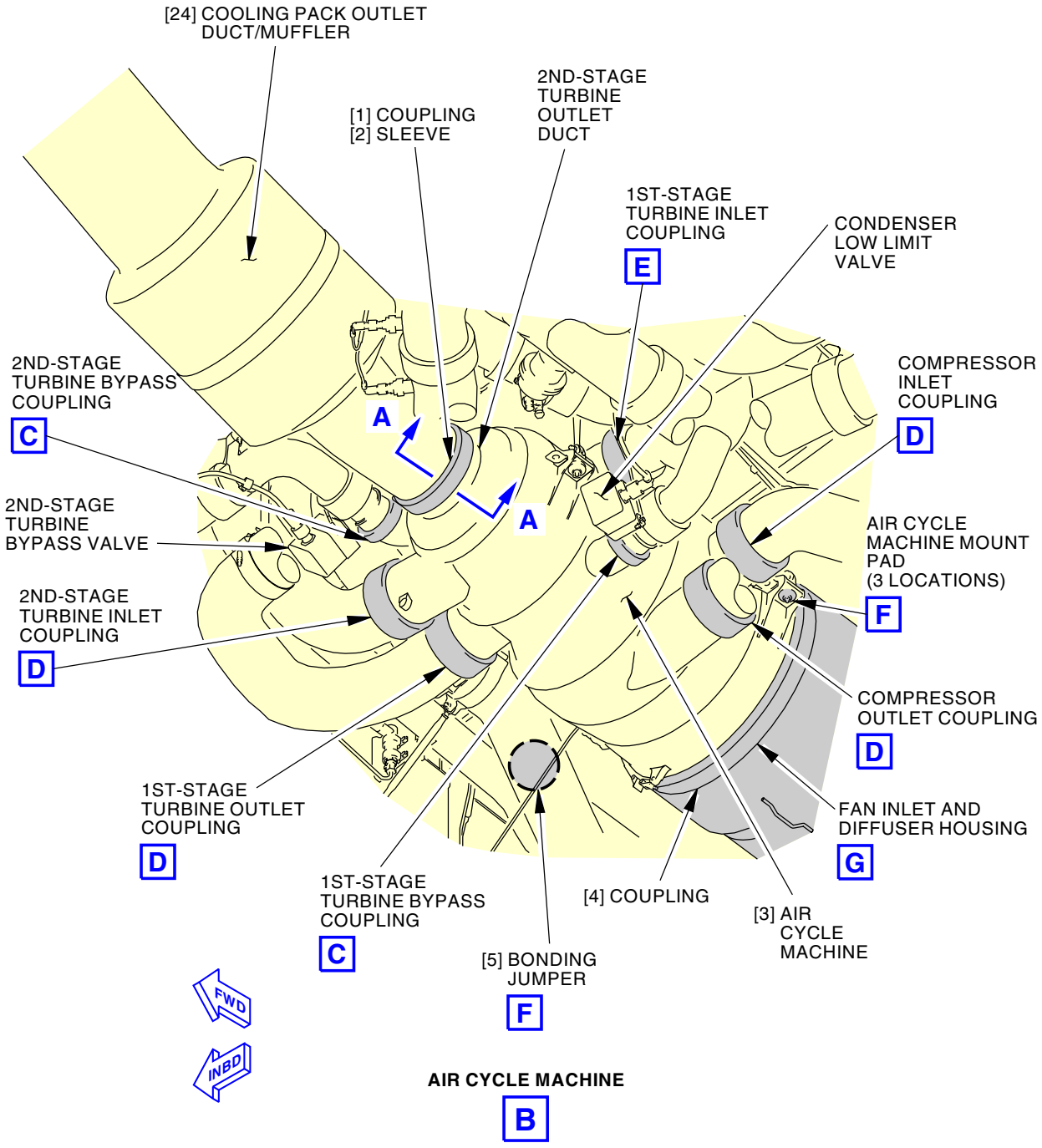

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Air Cycle Machine (ACM) Installation
Figure 401/21-52-02-990-801 (Sheet 2 of 4)

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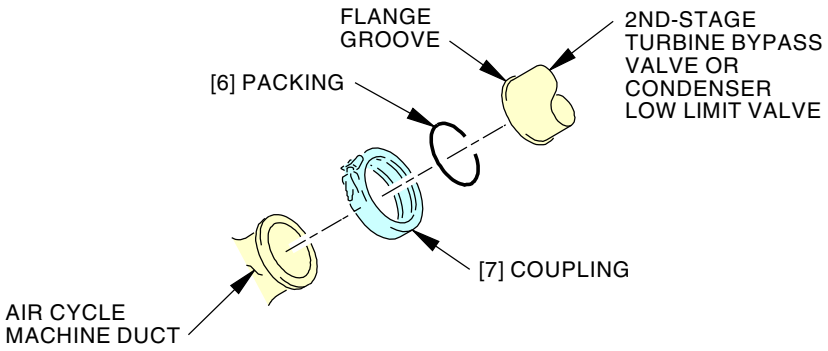
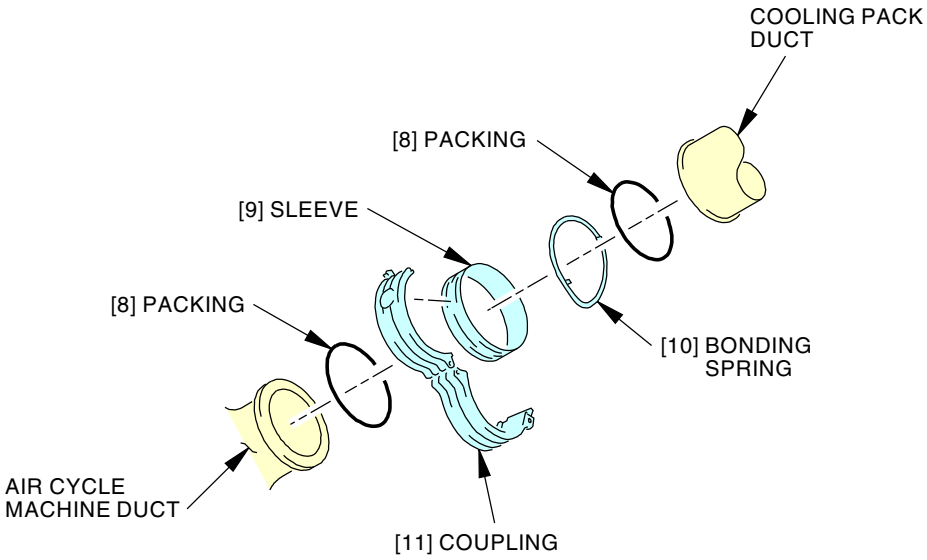


COUPLING INSTALLATION FOR THE 1ST- AND 2ND-STAGE TURBINE BYPASS (EXAMPLE)

C



COUPLING INSTALLATION FOR THE 1ST-STAGE TURBINE OUTLET, 2ND-STAGE TURBINE INLET, COMPRESSOR INLET AND COMPRESSOR OUTLET (EXAMPLE)

D

D14969 S0006403982_V2

Air Cycle Machine (ACM) Installation
Figure 401/21-52-02-990-801 (Sheet 3 of 4)

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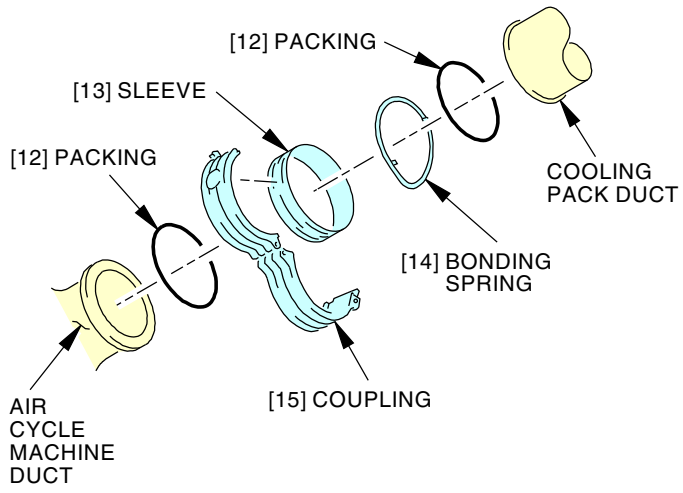
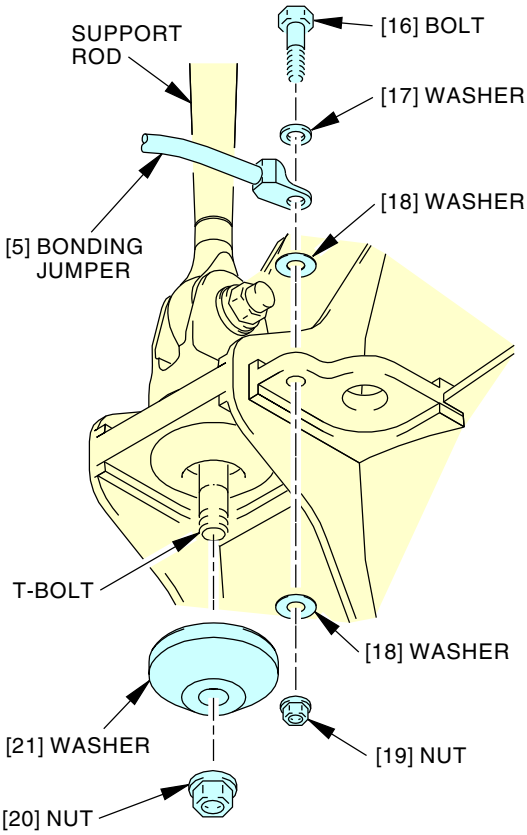


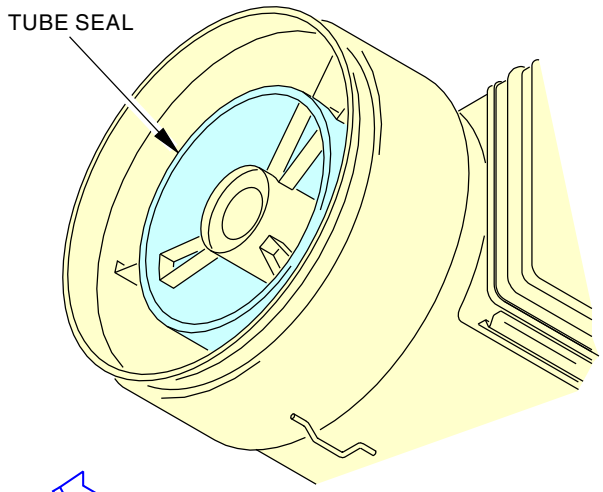
COUPLING INSTALLATION FOR THE 1ST-STAGE TURBINE INLET (EXAMPLE)

E



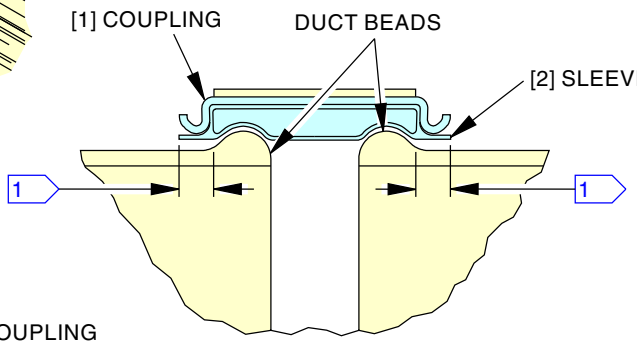
BONDING JUMPER AND AIR CYCLE MACHINE MOUNT PAD (EXAMPLE)

F



FAN INLET AND DIFFUSER HOUSING (FIDH)

G



A-A

1 THE DISTANCE FROM EACH EDGE OF THE COUPLING AND SLEEVE TO EACH DUCT BEAD MUST BE EQUAL ALL AROUND THE CIRCUMFERENCE OF THE DUCT.

D12409 S0006403983_V2

Air Cycle Machine (ACM) Installation
Figure 401/21-52-02-990-801 (Sheet 4 of 4)

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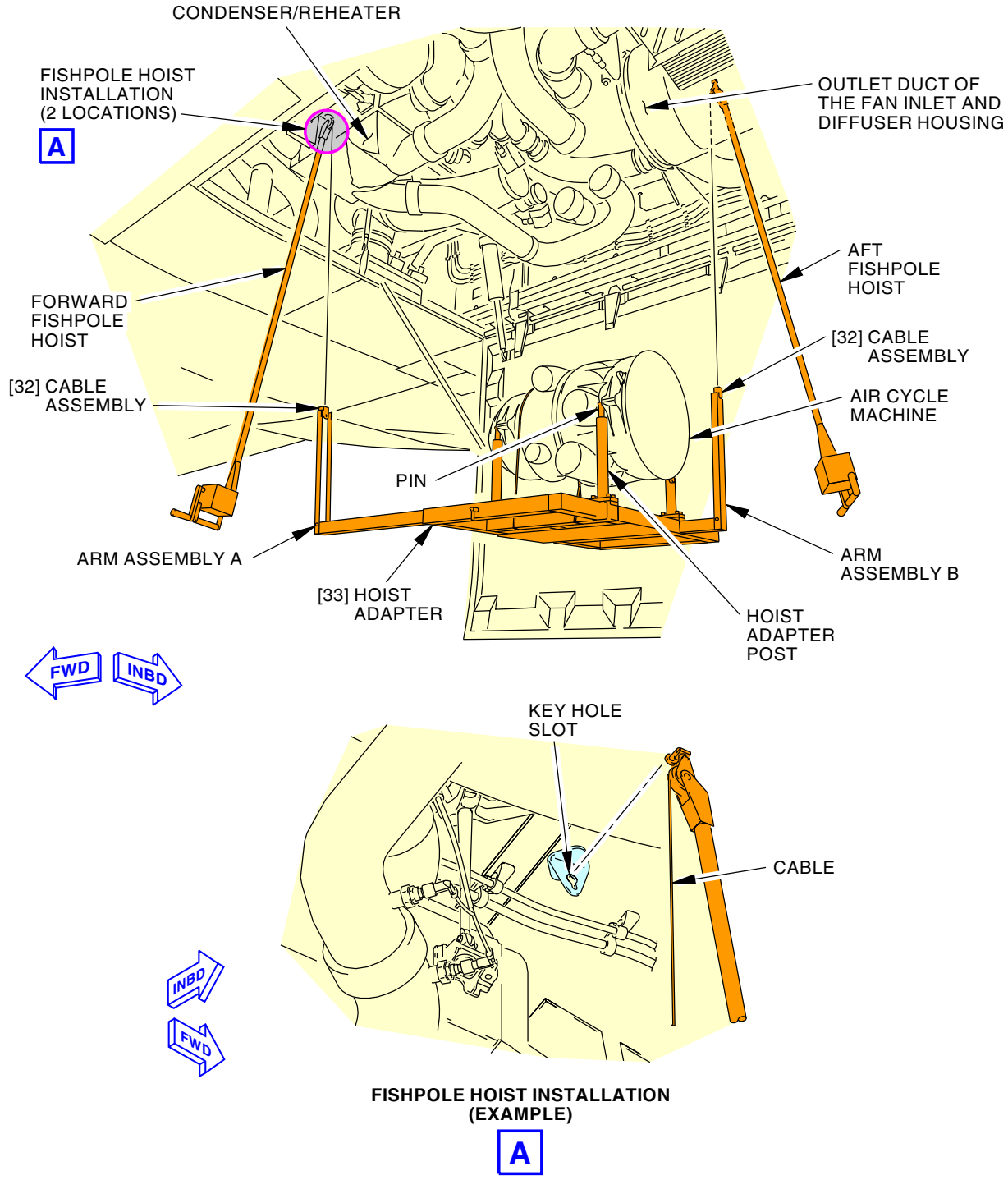

FISHPOLE HOIST INSTALLATION (EXAMPLE)

A

D12613 S0006403984_V3

Air Cycle Machine (ACM) Installation (Fishpole Hoist Method)
Figure 402/21-52-02-990-802

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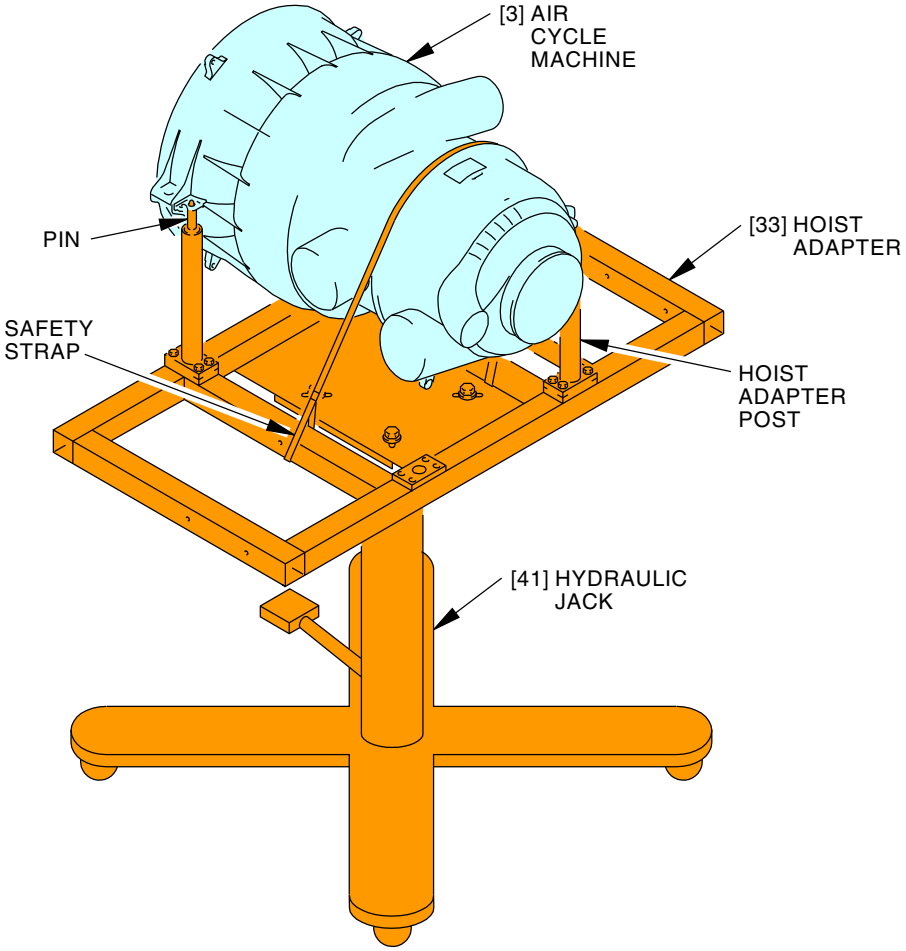

D12650 S0006403985_V3

Air Cycle Machine (ACM) Installation (Hydraulic Jack Method)
Figure 403/21-52-02-990-803

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TASK 21-52-02-400-801

3. Air Cycle Machine (ACM) Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-52-01-000-801	Dual Heat Exchanger Removal (P/B 401)
21-52-01-400-801	Dual Heat Exchanger Installation (P/B 401)
21-52-03-000-801	Condenser/Reheater Removal (P/B 401)
21-52-03-000-802	Condenser/Reheater Flow Restriction Test (P/B 501)
21-52-03-400-801	Condenser/Reheater Installation (P/B 401)
21-52-07-400-803-002	Outlet Duct/Muffler Assembly Installation (P/B 401)
21-52-20-800-801	Ram Air Inlet Door and Actuator Adjustment (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (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-1568	Jack - Hydraulic, General Low Profile Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
COM-1582	Hoist - Fishpole, Manually Powered Part #: PF51-009-1 Supplier: 1YRX6 Part #: PF51-103-5 Supplier: 1YRX6
SPL-1449	Adapter - Air Cycle Machine Part #: J21001-138 Supplier: 81205 Opt Part #: J21001-76 Supplier: 81205 Opt Part #: J21001-84 Supplier: 81205
SPL-1450	Adapter - Hoist, Air Conditioning Pack Part #: J21001-132 Supplier: 81205 Part #: J21001-133 Supplier: 81205 Opt Part #: J21001-72 Supplier: 81205 Opt Part #: J21001-73 Supplier: 81205 Opt Part #: J21001-79 Supplier: 81205 Opt Part #: J21001-80 Supplier: 81205
SPL-1603	Adapter - Heat Exchanger Part #: J21001-136 Supplier: 81205 Opt Part #: J21001-74 Supplier: 81205 Opt Part #: J21001-82 Supplier: 81205
SPL-1605	Rod - Alignment, Air Conditioning Pack Installation Part #: J21001-77 Supplier: 81205

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C. Consumable Materials

Reference	Description	Specification
D00649	Lubricant - O-Ring - Krytox GPL206	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	ACM	21-52-00-01-608	ARO ALL
6	Packing	21-52-00-01-605	ARO ALL
8	Packing	21-52-00-01-595	ARO ALL
12	Packing	21-52-00-01-583	ARO ALL

E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
195JL	Heat Exchanger Door
196ER	Environmental Control Systems (ECS) Access Door
196JR	Heat Exchanger Door

G. Prepare for Air Cycle Machine (ACM) Installation

NOTE: Airborne contaminants found in some operating environments can enter the ram air inlet circuit and degrade pack performance which can result in a shortened ACM life and increased occurrence of seized ACMs. Blockage or contamination in the ram air inlet circuit can cause an ACM fan rotor surge condition that induces severe loads on the ACM fan rotor blades and possible subsequent ACM failures. Broken ACM fan rotor blades from a prior ACM failure or other unwanted materials (nuts, bolts, etc.) that were inadvertently left inside the fan inlet diffuser housing (FIDH) can be drawn into the ACM fan rotor of a new ACM and cause subsequent damage. It is recommended that prior to the installation of a new ACM, that an examination be done to ensure there is no blockage, contamination, foreign object damage/debris (FOD), or other unwanted materials which could cause a subsequent ACM failure.

SUBTASK 21-52-02-212-001

(1) Examine these pack components for evidence of blockage, contamination, foreign object damage/debris (FOD), and other unwanted materials:

NOTE: The following preventative maintenance actions are recommended to help increase the ACM reliability and service life but can be performed at the operator's discretion (not mandatory).

(a) Ram air inlet door and actuator

NOTE: Improper adjustment or blockage of the ram air inlet door and actuator can cause an ACM fan rotor surge condition and subsequent ACM failure.

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1) Remove any blockage, contamination, FOD and other unwanted materials that you find.

2) Confirm that the ram air inlet door and actuator are adjusted correctly, do this task: Ram Air Inlet Door and Actuator Adjustment, TASK 21-52-20-800-801.

3) Examine the ram air inlet door, hinges, linkages, torque tube arms, roller bearings, and slide blocks, aft door seal for damage, cracks, wear, and binding conditions.

(b) Ram air inlet duct and dual heat exchanger (inlet side of the secondary heat exchanger) (Figure 404)

1) To get access to the ram air inlet duct and dual heat exchanger inlet,

Open these access panels:

Number	Name/Location
195JL	Heat Exchanger Door
196JR	Heat Exchanger Door

2) To get access to the inlet side of the secondary heat exchanger, remove the access panel from the lower surface of the ram air inlet duct outboard of the dual heat exchanger.

3) Remove any blockage, contamination, FOD, and unwanted materials that you find.

4) If the inlet side of the secondary heat exchanger has blockage or contamination that cannot be easily removed or has damage (bent core fins, dents, gouges, cracks), do these tasks to replace, clean, and/or repair the dual heat exchanger:

a) Dual Heat Exchanger Removal, TASK 21-52-01-000-801.

b) Clean and/or repair the dual heat exchanger as necessary. The dual heat exchanger must be cleaned and/or repaired off-aircraft. You can install a new dual heat exchanger if time is not available to perform an off-aircraft task.

c) Dual Heat Exchanger Installation, TASK 21-52-01-400-801.

5) Reinstall the access panel to the lower surface of the ram air inlet duct.

6) To close up the access to the ram air inlet and dual heat exchanger inlet,

Close these access panels:

Number	Name/Location
195JL	Heat Exchanger Door
196JR	Heat Exchanger Door

(c) Fan inlet diffuser housing (FIDH) and dual heat exchanger (outlet side of the primary heat exchanger)

1) Remove any blockage, contamination, FOD and other unwanted materials that you find.

2) If the outlet side of the primary heat exchanger core (inside of the FIDH) has contamination, core leaks (as indicated by dark streaks) or has damage (cracks, bent core fins, dents, gouges), do these tasks to replace, clean, and/or repair the dual heat exchanger

a) Dual Heat Exchanger Removal, TASK 21-52-01-000-801.

b) Clean and/or repair the dual heat exchanger as necessary. The dual heat exchanger must be cleaned and/or repaired off-aircraft. You can install a new dual heat exchanger if time is not available to perform an off-aircraft task.

c) Dual Heat Exchanger Installation, TASK 21-52-01-400-801.

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(d) Before you install the Air Cycle Machine (ACM), visually inspect the Condenser/Reheater assembly for the physical sign of damage or loose connections.

1) If necessary repair, clean or replace the Condenser/Reheater assembly. These are the tasks:

a) Condenser/Reheater Removal, TASK 21-52-03-000-801.

b) Condenser/Reheater Installation, TASK 21-52-03-400-801.

H. Air Cycle Machine (ACM) Installation

SUBTASK 21-52-02-640-001

(1) Do these steps to install the packings [8], packings [12], sleeves [9], and sleeve [13]:

NOTE: It is necessary to install the packings and the sleeves prior to installation of the ACM. There is not enough clearance between the ACM and the duct connections to install the sleeves if the ACM is raised in position prior to sleeve installation.

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(a) Lubricate the new packings [8], packings [12] and the inside diameter of the sleeves [9] and sleeve [13] with the Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, or Christo-lube MCG111 grease, D50011.

(b) Install the new packings [8] on the 2nd-stage turbine inlet, 1st-stage turbine outlet, compressor inlet and the compressor outlet ducts.

(c) Install the new packings [12] on the 1st-stage turbine inlet ducts.

(d) Install the sleeves [9] over the 2nd-stage turbine inlet, 1st-stage turbine outlet, compressor inlet and the compressor outlet ducts.

(e) Install the sleeve [13] over the 1st-stage turbine inlet duct.

SUBTASK 21-52-02-480-003

(2) Install the support equipment:

(a) If you use the fishpole hoist method, do the steps that follow (Figure 402):

WARNING DO AN INSPECTION OF THE FISHPOLE HOISTS BEFORE YOU INSTALL THEM OR YOU CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

1) Examine the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, as follows:

a) Pull the cable out of the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, and look for any damage to the cable.

CAUTION MAKE SURE YOU DO AN INSPECTION OF THE KEY HOLE SLOT AREAS. A DAMAGED KEY HOLE SLOT CAN CAUSE INCORRECT SUPPORT OF THE ACM. THIS CAN CAUSE DAMAGE TO THE ACM.

2) Examine the keyhole slots for any damage before you install the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582.

3) Install the forward fishpole hoist, COM-1582, in the keyhole slot that is forward and above the condenser/reheater.

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4) Install the aft fishpole hoist, COM-1582, in the keyhole slot that is inboard and above the outlet duct of the fan inlet and diffuser housing.

5) Attach the fishpole hoist cable assembly [32] to the hoist adapter [33].

NOTE: The hoist adapter [33] includes the heat exchanger adapter, SPL-1603, arm assembly A, J21001-11 and arm assembly B J21001-12 which are part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

(b) If you use the hydraulic jack method, do the steps that follow (Figure 403):

1) Install the hoist air cycle machine adapter, SPL-1449, and the ACM [3] onto the hydraulic low profile hydraulic jack, COM-1568.

NOTE: The heat exchanger adapter, SPL-1603, is part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

2) Put the maintenance stand and the hydraulic low profile hydraulic jack, COM-1568, in position below the cooling pack.

SUBTASK 21-52-02-420-001

CAUTION

MAKE SURE THE ACM IS RAISED SUCH THAT THE FORWARD AND AFT END OF THE ACM DOES NOT SHIFT FORWARD OR AFT. THE ACM (WEIGHT APPROXIMATELY 100 LBS) CAN HIT THE COOLING PACK DUCTS. THIS CAN CAUSE DAMAGE TO THE COOLING PACK DUCTS AND THE TUBE SEAL IN THE FIDH.

(3) Slowly raise the ACM [3] to its position below the three T-bolts.

NOTE: It is recommended that you hold the ACM and the hoist adapter while you raise the assembly to keep the assembly stable and clear of the connections.

SUBTASK 21-52-02-820-001

(4) Align the three T-bolts with the ACM mount pads.

SUBTASK 21-52-02-420-002

CAUTION

CAREFULLY RAISE THE ACM SO YOU DO NOT DAMAGE THE MOUNT SURFACE ON THE ACM MOUNT PADS.

(5) Continue to raise the ACM [3] until the T-bolts show.

(a) Make sure the three T-bolts come through the ACM mount pads at the same time and do not bind.

SUBTASK 21-52-02-820-002

(6) Make sure the ACM ducts align with the cooling pack ducts.

SUBTASK 21-52-02-080-001

(7) Remove the air conditioning pack installation alignment rod, SPL-1605, from each of the T-bolts.

SUBTASK 21-52-02-420-003

(8) Install washers [21] and nuts [20] to attach the ACM [3] to the three support rods.

(a) Tighten the nuts [20] from 90 in-lb (10 N·m) to 125 in-lb (14 N·m).

SUBTASK 21-52-02-020-009

(9) Remove the safety strap if installed.

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SUBTASK 21-52-02-080-002

(10) Remove the support equipment:

(a) If you used the fishpole hoist method, do the step that follows:

1) Lower the hoist air cycle machine adapter, SPL-1449 away from the ECS bay.

2) Disconnect the cable assembly [32] from the hoist air cycle machine adapter, SPL-1449.

3) Remove the hoist air cycle machine adapter, SPL-1449, the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582.

(b) If you used the hydraulic jack method, do the step that follows:

1) Lower the hoist air cycle machine adapter, SPL-1449, and the hydraulic low profile hydraulic jack, COM-1568, away from the ECS bay.

SUBTASK 21-52-02-420-004

(11) Connect these duct connections:

(a) Install the coupling [4] to connect the ACM [3] to the fan inlet and diffuser housing.

1) Tighten the nut on the coupling [4] from 65 in-lb (7 N·m) to 70 in-lb (8 N·m).

(b) Do the steps that follow to install the couplings [11] on the 2nd-stage turbine inlet, 1st stage turbine outlet, compressor outlet and the compressor inlet ducts.

CAUTION MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

1) Install the bonding springs [10].

NOTE: The tabs on the bonding springs go towards the duct flange that has the sleeve installed. Use the sleeve to hold the bonding spring in position while you align the ducts.

2) Put the sleeves [9] in position along the ducts. Use light rocking movement to facilitate installation along the ducts.

3) Make sure that you cannot see the flange grooves when you install the sleeves [9].

a) The sleeve must span the two flanges.

4) Install the couplings [11]. Make sure that latch pawls are fully connected.

(c) Do the steps that follow to install the coupling [15] on the 1st-stage turbine inlet duct:

CAUTION MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

1) Install the bonding spring [14].

NOTE: The tabs on the bonding springs go towards the duct flange that has the sleeve installed. Use the sleeve to hold the bonding spring in position while you align the ducts.

2) Put the sleeve [13] in position over the ducts.

NOTE: Make sure you cannot see the flange grooves when you install the sleeve [13].

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3) Install the coupling [15].

(d) Do the steps that follow to install the coupling [7] and packings [6] to connect the condenser low limit valve and the 2nd-stage turbine bypass valve to the ACM [3]:

1) Lubricate the new packings [6] with the Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, or Christo-lube MCG111 grease, D50011.

2) Install the new packings [6].

NOTE: The packings [6] are installed in the flange groove of the condenser low limit valve and the 2nd-stage turbine bypass valve.

3) Install the couplings [7].

4) Tighten the nut on the couplings [7] from 50 in-lb (6 N·m) to 55 in-lb (6 N·m).

SUBTASK 21-52-02-420-005

(12) Do the steps that follow to install the bonding jumper [5] onto the ACM mount pad.

NOTE: Make sure the bonding jumper [5], washer [17], two washers [18], and the nut [19] are clean.

(a) Put the bonding jumper [5] in its position on the ACM mount pad.

(b) Install the two washers [18], bolt [16], washer [17], and nut [19].

SUBTASK 21-52-02-020-011

(13) If you removed the cooling pack outlet duct/muffler assembly [24], do this task: Outlet Duct/Muffler Assembly Installation, TASK 21-52-07-400-803-002.

SUBTASK 21-52-02-020-012

(14) If you disconnected the cooling pack outlet duct/muffler assembly [24] from the ACM [3], do these steps:

(a) Move the sleeve [2] onto the duct beads of the cooling pack outlet duct/muffler assembly [24] and the ACM [3].

(b) Make sure the sleeve [2] is installed evenly over the duct beads before you install the coupling.

(c) Loosely install the coupling [1] onto the sleeve [2].

(d) Make sure the coupling [1] and the sleeve [2] are installed evenly over the duct beads.

(e) Tighten the nut on the coupling [1] from 70 in-lb (8 N·m) to 90 in-lb (10 N·m).

(f) Make sure the coupling [1] and the sleeve [2] are still installed evenly over the duct beads.

I. Air Cycle Machine (ACM) Installation Test

SUBTASK 21-52-02-860-003

WARNING

MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-02-860-004

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

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SUBTASK 21-52-02-860-005

(3) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the AUTO position.

SUBTASK 21-52-02-710-001

(4) Use a MAT to do the System test of the ACM:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) System Air On Test, L (or R as appropriate)
7) CONTINUE

(b) Do the instructions that show on the MAT 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) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE
2) EXIT MAINTENANCE

SUBTASK 21-52-02-790-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(5) Examine the ACM connections for air leakage.

SUBTASK 21-52-02-710-002

(6) Do this task to confirm that the pack airflow through the condenser/reheater is not restricted:

NOTE: The following preventative maintenance actions are recommended to help increase the ACM reliability and service life but can be performed at the operator's own discretion (not mandatory). Over time the pack airflow can become restricted due to a condenser/reheater that has internal corrosion/contamination (dirty, clogged) or due to a build up of ice formation at the pack outlet duct. A reduction of pack airflow can affect the efficiency of the pack operation and possibly contribute to an ACM failure.
In-service experience has shown that pack airflow reduction can be associated to a contaminated condenser/reheater. Airflow reduction through a condenser/reheater affects water separation from the pack air and causes excessive moisture to enter the ACM which can result in the formation of ice at the pack outlet duct. The buildup of ice at the pack outlet can create increased axial loads on the ACM which contributes to increased air bearing loads that can cause a premature failure of the ACM thrust bearings.

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(a) Condenser/Reheater Flow Restriction Test, TASK 21-52-03-000-802.

(b) If the results of the flow restriction test showed that the condenser/reheater performance is unacceptable, do these tasks to replace, clean, and/or repair the condenser/reheater:

1) Condenser/Reheater Removal, TASK 21-52-03-000-801.

2) Clean and/or repair the condenser/reheater as necessary. The condenser/reheater must be cleaned and/or repaired off-aircraft. You can install a new condenser/reheater if time is not available to perform an off-aircraft task.

3) Condenser/Reheater Installation, TASK 21-52-03-400-801.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-02-860-001

(1) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-52-02-860-006

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-02-410-001

(3) If the ACM [3]

for the right cooling pack that was removed, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-02-410-002

(4) If the ACM [3]

for the left cooling pack that was removed, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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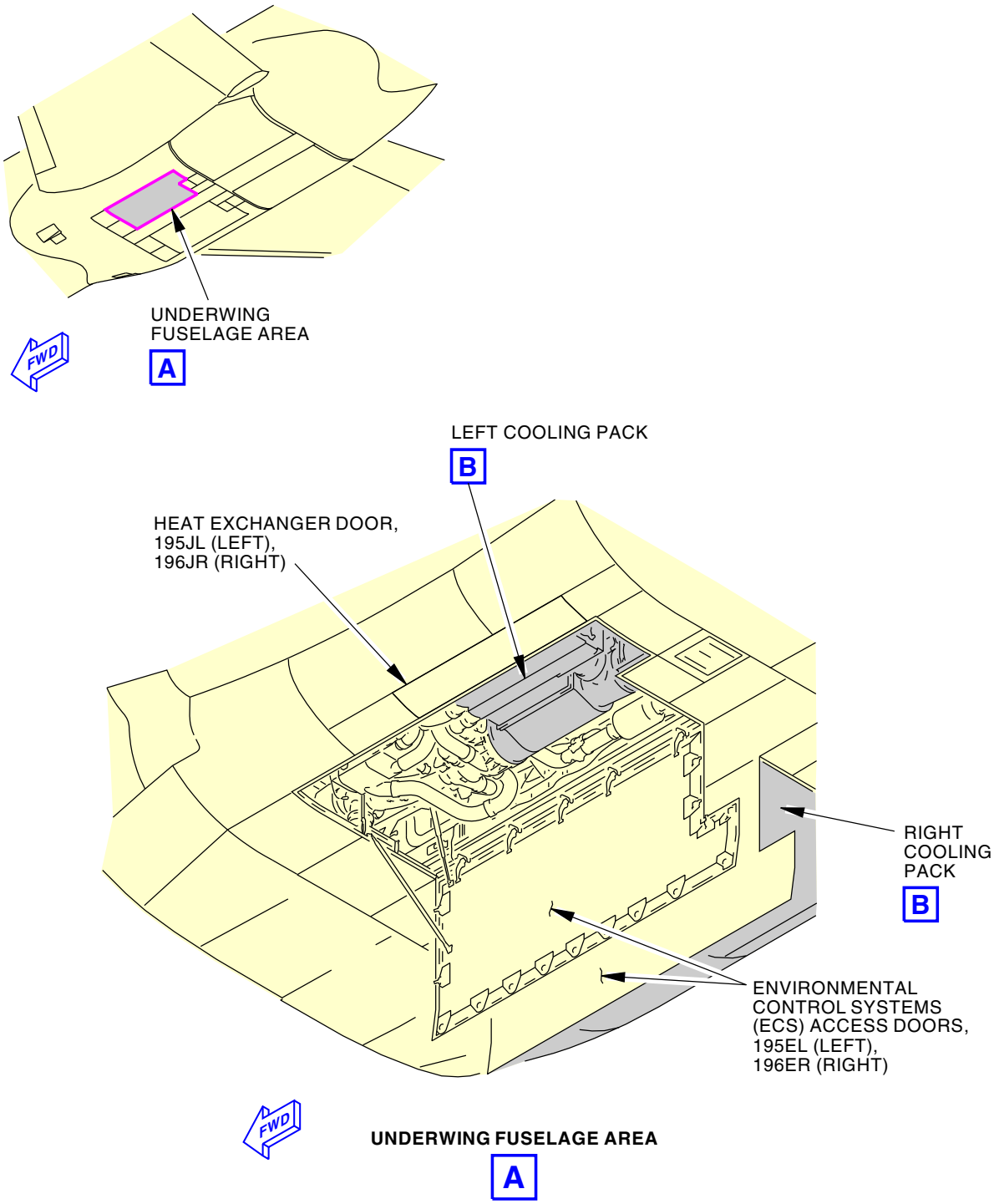

488735 S0000145161_V2

Ram Air Inlet Duct and Dual Heat Exchanger Inspection
Figure 404/21-52-02-990-804 (Sheet 1 of 3)

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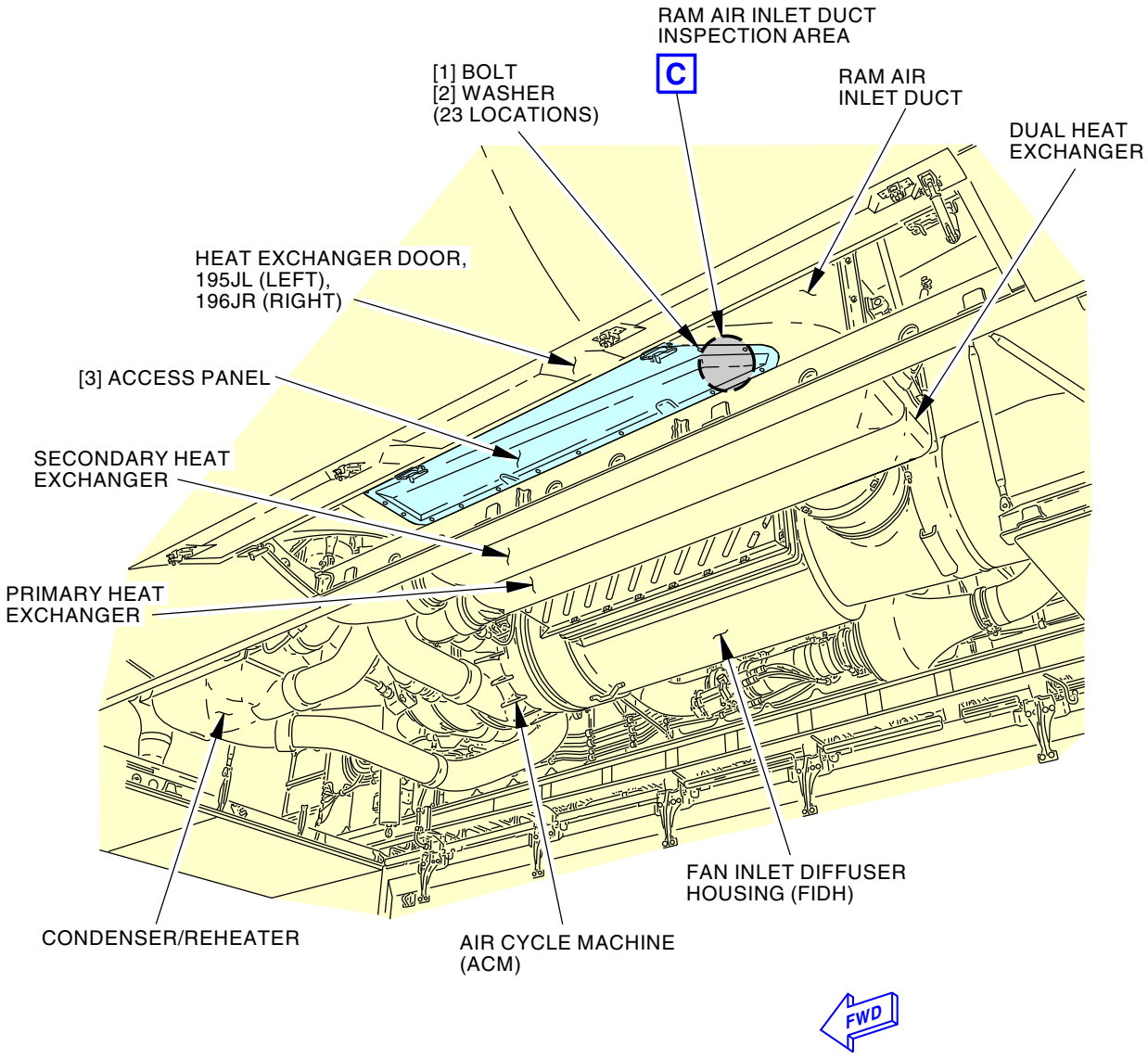

LEFT COOLING PACK SHOWN
(RIGHT COOLING PACK IS OPPOSITE)

B

488734 S0000145162_V2

Ram Air Inlet Duct and Dual Heat Exchanger Inspection
Figure 404/21-52-02-990-804 (Sheet 2 of 3)

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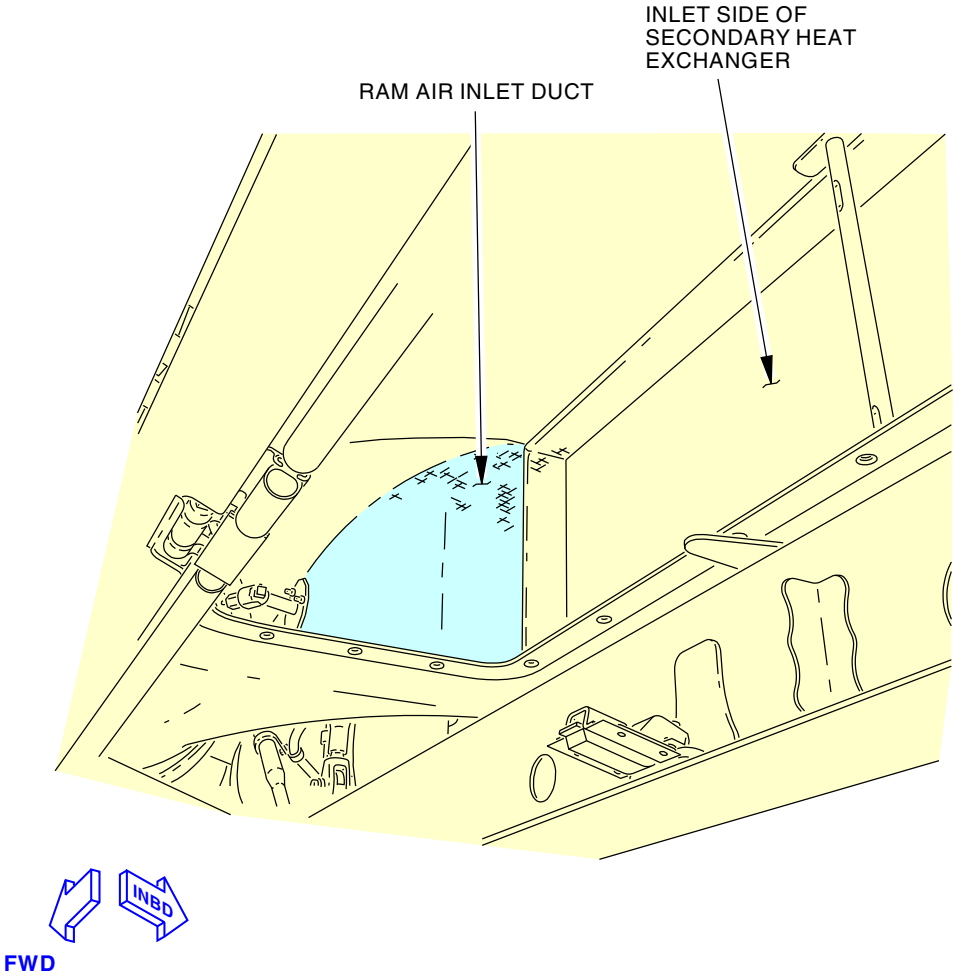

RAM AIR INLET DUCT INSPECTION AREA
(VIEW SHOWN WITH ACCESS PANEL REMOVED)

C

488736 S0000145163_V2

Ram Air Inlet Duct and Dual Heat Exchanger Inspection
Figure 404/21-52-02-990-804 (Sheet 3 of 3)

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CONDENSER/REHEATER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the condenser/reheater

(2) An installation of the condenser/reheater

B. There are two procedures available for the removal and installation of the condenser/reheater. Each procedure is optional to the other. The procedure that is used is given by the ground equipment that is available.

(1) Procedure 1:

(a) This procedure uses two fishpole hoists and hoist adapter to lift and lower the condenser/reheater and the water collector.

(2) Procedure 2:

(a) This procedure uses a hydraulic jack and a maintenance stand to lift and lower the condenser/reheater and the water collector assembly. The condenser/reheater hoist adapter is attached to the hydraulic jack with retaining plates. The maintenance stand is used to lift the condenser/reheater and the water collector assembly and the hydraulic jack to the Environmental Control Systems (ECS) bay. The hydraulic jack then moves the condenser/reheater and water collector assembly in and out of the ECS bay.

C. The condenser/reheater is removed and installed with the water collector as an assembly. This is done to balance the assembly when removed or installed with the hoist adapter for the condenser/reheater. The water collector is then removed from the condenser/reheater after removal of the assembly. The water collector is then installed on the condenser/reheater before the installation of the assembly.

TASK 21-52-03-000-801

2. Condenser/Reheater Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-52-43-000-801	Condenser Inlet Temperature Sensor Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (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-1568	Jack - Hydraulic, General Low Profile Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
COM-1582	Hoist - Fishpole, Manually Powered Part #: PF51-009-1 Supplier: 1YRX6 Part #: PF51-103-5 Supplier: 1YRX6

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(Continued)

Reference	Description
SPL-1450	Adapter - Hoist, Air Conditioning Pack Part #: J21001-132 Supplier: 81205 Part #: J21001-133 Supplier: 81205 Opt Part #: J21001-72 Supplier: 81205 Opt Part #: J21001-73 Supplier: 81205 Opt Part #: J21001-79 Supplier: 81205 Opt Part #: J21001-80 Supplier: 81205
SPL-1602	Adapter - Condenser/Reheater Part #: J21001-137 Supplier: 81205 Opt Part #: J21001-75 Supplier: 81205 Opt Part #: J21001-83 Supplier: 81205
SPL-1603	Adapter - Heat Exchanger Part #: J21001-136 Supplier: 81205 Opt Part #: J21001-74 Supplier: 81205 Opt Part #: J21001-82 Supplier: 81205
SPL-1605	Rod - Alignment, Air Conditioning Pack Installation Part #: J21001-77 Supplier: 81205

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Removal

SUBTASK 21-52-03-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-03-010-001

(2) To get access to the condenser/reheater [1] for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-03-010-002

(3) To get access to the condenser/reheater [1] for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

F. Left Cooling Pack Condenser/Reheater Removal

SUBTASK 21-52-03-020-029

(1) Disconnect the wire bundle support clamps from duct on the water collector [2].

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SUBTASK 21-52-03-020-022

(2) Disconnect the electrical connector from the condenser inlet temperature sensor 1 on the condenser inlet duct.

NOTE: If you plan to replace the condenser/reheater with a new one, remove the condenser inlet temperature sensor 1 from the condenser inlet duct and retain it for later installation on the new condenser/reheater.

(a) To remove the condenser inlet temperature sensor 1, do this task: Condenser Inlet Temperature Sensor Removal, TASK 21-52-43-000-801.

SUBTASK 21-52-03-020-001

(3) Do the steps that follow to remove these coupling assemblies:

NOTE: The clamshell coupling latches are designed such that they can not be disengaged when the system is pressurized. In order to disengage the latch, it is recommended that you pull the two ducts which are connected together towards each other. This will permit the latch to be easily lifted over the coupling in the unpressurized condition.

(a) Remove the couplings [16] from the condenser outlet, the condenser inlet, and the condenser/reheater inlet:

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

1) Move the sleeves [15] onto the condenser outlet, condenser inlet, and condenser/reheater inlet ducts.
2) Remove the bonding springs [14].

(b) Remove the coupling [20] from the reheater outlet:

1) Remove the coupling [20].
2) Move the sleeve [19] onto the reheater outlet duct.
3) Remove the bonding spring [18].

SUBTASK 21-52-03-020-002

(4) Disconnect the hose from the gravity drain boss on the water collector [2].

SUBTASK 21-52-03-020-003

(5) Disconnect the hose from the overflow drain boss on the water collector [2].

SUBTASK 21-52-03-480-001

(6) Use one of the two methods that follow to lower the condenser/reheater assembly:

(a) If you use the fishpole hoist method, do the steps that follow (Figure 402):

WARNING DO AN INSPECTION OF THE FISHPOLE HOISTS BEFORE YOU INSTALL THEM. IF YOU USE FISHPOLE HOISTS IN A UNSERVICEABLE CONDITION, THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

1) Examine the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, as follows:

a) Pull the cable out of the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, and look for any damage to the cable.

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CAUTION

MAKE SURE YOU DO AN INSPECTION OF THE KEY HOLE SLOT AREAS. A DAMAGE OF THE KEY HOLE SLOT CAN CAUSE INCORRECT SUPPORT OF THE CONDENSER/REHEATER ASSEMBLY. THIS CAN CAUSE DAMAGE TO THE CONDENSER/REHEATER ASSEMBLY.

2) Examine the keyhole slots for any damage before you install the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582.

3) Install the forward fishpole hoist, COM-1582, in the keyhole slot that is forward and above the condenser/reheater [1].

4) Install the aft fishpole hoist, COM-1582, in the keyhole slot that is inboard and above the water spray nozzle.

5) Attach the fishpole hoist cable assemblies [31] to the hoist condenser/reheater adapter, SPL-1602.

NOTE: The condenser/reheater adapter, SPL-1602, includes the heat exchanger adapter, SPL-1603, arm assembly A, J21001-11, arm assembly B J21001-12 and the counter balance assembly, J21001-13 which are part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

6) Raise the hoist condenser/reheater adapter, SPL-1602, in position below the condenser/reheater [1] and the water collector [2] assembly.

7) Make sure the three pins on the hoist adapter posts engage the condenser reheater mount pads.

CAUTION

LIFT THE CONDENSER/REHEATER CAREFULLY. IF YOU DO NOT, DAMAGE OF THE SUPPORT RODS CAN OCCUR.

8) Tighten the fishpole hoist cables a sufficient amount to take the weight off of the condenser/reheater mounts.

(b) If you use the hydraulic jack method, do the steps that follow (Figure 403):

1) Install the hoist condenser/reheater adapter, SPL-1602, on the hydraulic low profile hydraulic jack, COM-1568.

NOTE: The heat exchanger adapter, SPL-1603, is part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

2) Raise the hydraulic low profile hydraulic jack, COM-1568, to position the hoist condenser/reheater adapter, SPL-1602, below the condenser/reheater [1] and the water collector [2] assembly.

3) Make sure the three pins on the hoist adapter posts engage the condenser/reheater mount pads.

CAUTION

LIFT THE CONDENSER/REHEATER CAREFULLY. IF YOU DO NOT, DAMAGE OF THE SUPPORT RODS CAN OCCUR.

4) Raise the hydraulic low profile hydraulic jack, COM-1568, to remove the weight from the condenser/reheater mounts.

SUBTASK 21-52-03-020-004

(7) Remove the nuts [26] and the washers [25] from the three support rod T-bolts.

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SUBTASK 21-52-03-480-005

(8) Install the air conditioning pack installation alignment rod, SPL-1605, on each of the three support rod T-bolts.

SUBTASK 21-52-03-020-005

CAUTION

MAKE SURE THAT THE CONDENSER/REHEATER ASSEMBLY DOES NOT MOVE THE SIDE WHEN YOU LOWER IT. THE CONDENSER/REHEATER ASSEMBLY (WEIGHT APPROXIMATELY 70 LBS) CAN HIT THE COOLING PACK DUCTS. THIS CAN CAUSE DAMAGE TO THE COOLING PACK DUCTS AND THE CONDENSER/REHEATER ASSEMBLY.

(9) Carefully lower the condenser/reheater [1] and the water collector [2] assembly.

NOTE: It is recommended that you hold the condenser/reheater assembly and the hoist adapter while you lower the assembly to keep the assembly stable and clear of the connections.

SUBTASK 21-52-03-020-006

(10) Remove the sleeves [15] and the sleeve [19].

SUBTASK 21-52-03-020-007

(11) Remove and discard the packings [13] and the packings [17].

SUBTASK 21-52-03-020-008

(12) Do the steps that follow to remove the water collector [2] and the water collector outlet duct [12] as an assembly from the condenser/reheater [1]:

(a) While wearing gloves, hand squeeze the nut [28] to disconnect the reheater inlet coupling [30].

(b) Loosen the nut [28] by squeezing the ends and rotating.

1) If a tool is needed to loosen the nut [28], then use a strap wrench.

(c) Move the coupling [30] onto the water collector outlet duct.

(d) Remove the bonding spring [29].

(e) Remove and discard the packing [27].

(f) Remove the screws [11], washers [9], and nuts [8] to remove the duct support clamp [10] from the condenser/reheater housing.

(g) Remove the coupling [6] from the water collector inlet duct.

(h) Remove the water collector [2] and the water collector outlet duct [12] as an assembly from the condenser/reheater [1].

(i) Remove and discard the packing [7] from the flange groove on the water collector inlet duct.

G. Right Cooling Pack Condenser/Reheater Removal

SUBTASK 21-52-03-020-030

(1) Disconnect the wire bundle support clamps from the condenser/reheater ducts and the duct on the water collector [2].

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SUBTASK 21-52-03-020-023

(2) Disconnect the electrical connector from the condenser inlet temperature sensor 1 on the condenser inlet duct.

NOTE: If you plan to replace the condenser/reheater with a new one, remove the condenser inlet temperature sensor 1 from the condenser inlet duct and retain it for later installation on the new condenser/reheater.

(a) Do this task: Condenser Inlet Temperature Sensor Removal, TASK 21-52-43-000-801.

SUBTASK 21-52-03-020-009

(3) Do the steps that follow to remove the reheater outlet duct [5] and the 1st-stage turbine inlet duct [3] as an assembly:

(a) Remove the couplings [20] from the 1st-stage turbine inlet and the reheater outlet.

(b) Remove the coupling [24] from 1st-stage turbine outlet.

(c) Move the sleeves [19] and the sleeve [23] onto the 1st-stage turbine inlet duct [3] and the reheater outlet duct [5].

(d) Remove the bonding springs [18] and the bonding spring [22].

(e) Remove the reheater outlet duct [5] and the 1st-stage turbine inlet duct [3] as an assembly.

(f) Remove the sleeves [19] and the sleeve [23].

(g) Remove and discard the packings [17] and the packings [21].

SUBTASK 21-52-03-020-010

(4) Do the steps that follow to remove the condenser/reheater inlet duct [4]:

(a) Remove the couplings [16] from the condenser/reheater inlet and the secondary heat exchanger outlet.

(b) Remove the coupling [20] from the economy cooling inlet.

(c) Move the sleeves [15] and the sleeve [19] onto the condenser/reheater inlet duct [4].

(d) Remove the bonding springs [14] and the bonding spring [18].

(e) Remove the condenser/reheater inlet duct [4].

(f) Remove the sleeves [15] and the sleeve [19] from the condenser/reheater inlet duct [4].

(g) Remove and discard the packings [13] and the packings [17].

SUBTASK 21-52-03-020-011

(5) Do the steps that follow to remove couplings [16] from the condenser inlet and the condenser outlet:

(a) Remove the couplings [16].

(b) Move the sleeves [15] onto the condenser inlet and the condenser outlet of the condenser/reheater [1].

(c) Remove the bonding springs [14].

SUBTASK 21-52-03-020-012

(6) Disconnect the hose from the gravity drain boss on the water collector [2].

SUBTASK 21-52-03-020-013

(7) Disconnect the hose from the overflow drain boss on the water collector [2].

SUBTASK 21-52-03-480-006

(8) Use one of the two methods that follow to lower the condenser/reheater assembly:

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(a) If you use the fishpole hoist method, do the steps that follow (Figure 402):

WARNING DO AN INSPECTION OF THE FISHPOLE HOISTS BEFORE YOU INSTALL THEM. IF YOU USE FISHPOLE HOISTS IN A UNSERVICEABLE CONDITION, THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

1) Examine the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, as follows:

   a) Pull the cable out of the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, and look for any damage to the cable.

CAUTION MAKE SURE YOU DO AN INSPECTION OF THE KEY HOLE SLOT AREAS. A DAMAGE OF THE KEY HOLE SLOT CAN CAUSE INCORRECT SUPPORT OF THE CONDENSER/REHEATER ASSEMBLY. THIS CAN CAUSE DAMAGE TO THE CONDENSER/REHEATER ASSEMBLY.

2) Examine the keyhole slots for any damage before you install the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582.

3) Install the forward fishpole hoist, COM-1582, in the keyhole slot that is forward and above the condenser/reheater [1].

4) Install the aft fishpole hoist, COM-1582, in the keyhole slot that is inboard and above the water spray nozzle.

5) Attach the fishpole hoist cable assemblies [31] to the condenser/reheater adapter, SPL-1602.

   NOTE: The condenser/reheater adapter, SPL-1602 includes the heat exchanger adapter, SPL-1603, arm assembly A, J21001-11, arm assembly B J21001-12 and the counter balance assembly, J21001-13 which are part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

6) Raise the hoist condenser/reheater adapter, SPL-1602, in position below the condenser/reheater [1] and the water collector [2] assembly.

7) Make sure the three pins on the hoist adapter posts engage the condenser reheater mount pads.

CAUTION LIFT THE CONDENSER/REHEATER CAREFULLY. IF YOU DO NOT, DAMAGE OF THE SUPPORT RODS CAN OCCUR.

8) Tighten the fishpole hoist cables a sufficient amount to take the weight off of the condenser/reheater mounts.

(b) If you use the hydraulic jack method, do the steps that follow (Figure 403):

1) Install the hoist condenser/reheater adapter, SPL-1602, on the hydraulic low profile hydraulic jack, COM-1568.

   NOTE: The heat exchanger adapter, SPL-1603, is part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

2) Raise the hydraulic low profile hydraulic jack, COM-1568, to position the hoist condenser/reheater adapter, SPL-1602, below the condenser/reheater [1] and the water collector [2] assembly.

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3) Make sure the three pins on the hoist adapter posts engage the condenser/reheater mount pads.

CAUTION

LIFT THE CONDENSER/REHEATER CAREFULLY. IF YOU DO NOT, DAMAGE OF THE SUPPORT RODS CAN OCCUR.

4) Raise the hydraulic low profile hydraulic jack, COM-1568, to remove the weight from the condenser/reheater mounts.

SUBTASK 21-52-03-020-014

(9) Remove the nuts [26] and the washers [25] from the three support rod T-bolts.

SUBTASK 21-52-03-480-002

(10) Connect the strap onto the condenser/reheater mount pad.

SUBTASK 21-52-03-480-007

(11) Install the air conditioning pack installation alignment rod, SPL-1605, on each of the three support rod T-bolts.

SUBTASK 21-52-03-020-015

CAUTION

MAKE SURE THAT THE CONDENSER/REHEATER ASSEMBLY DOES NOT MOVE THE SIDE WHEN YOU LOWER IT. THE CONDENSER/REHEATER ASSEMBLY (WEIGHT APPROXIMATELY 70 LBS) CAN HIT THE COOLING PACK DUCTS. THIS CAN CAUSE DAMAGE TO THE COOLING PACK DUCTS AND THE CONDENSER/REHEATER ASSEMBLY.

(12) Carefully lower the condenser/reheater [1] and the water collector [2] assembly.

NOTE: It is recommended that you hold the condenser/reheater assembly and the hoist adapter while you lower the assembly to keep the assembly stable and clear of the connections.

SUBTASK 21-52-03-020-016

(13) Remove the sleeves [15] from the condenser outlet and the condenser inlet.

SUBTASK 21-52-03-020-017

(14) Remove and discard the packings [13] from the condenser outlet and the condenser inlet.

SUBTASK 21-52-03-020-018

(15) Do the steps that follow to remove the water collector [2] and the water collector outlet duct [12] as an assembly from the condenser/reheater [1].

(a) While wearing gloves, hand squeeze the nut [28] to disconnect the reheater inlet coupling [30].

(b) Loosen the nut [28] by squeezing the ends and rotating.

1) If a tool is needed to loosen the nut [28], then use a strap wrench.

(c) Move the coupling [30] onto the water collector outlet duct.

(d) Remove the bonding spring [29].

(e) Remove and discard the packings [27].

(f) Remove the screws [11], washers [9], and nuts [8] to remove the duct support clamp [10] from the condenser/reheater housing.

(g) Remove the coupling [6] from the water collector inlet duct.

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(h) Remove the water collector [2] and the water collector outlet duct [12] as an assembly from the condenser/reheater [1].

(i) Remove and discard the packing [7] from the flange groove on the water collector inlet duct.

——— END OF TASK ———

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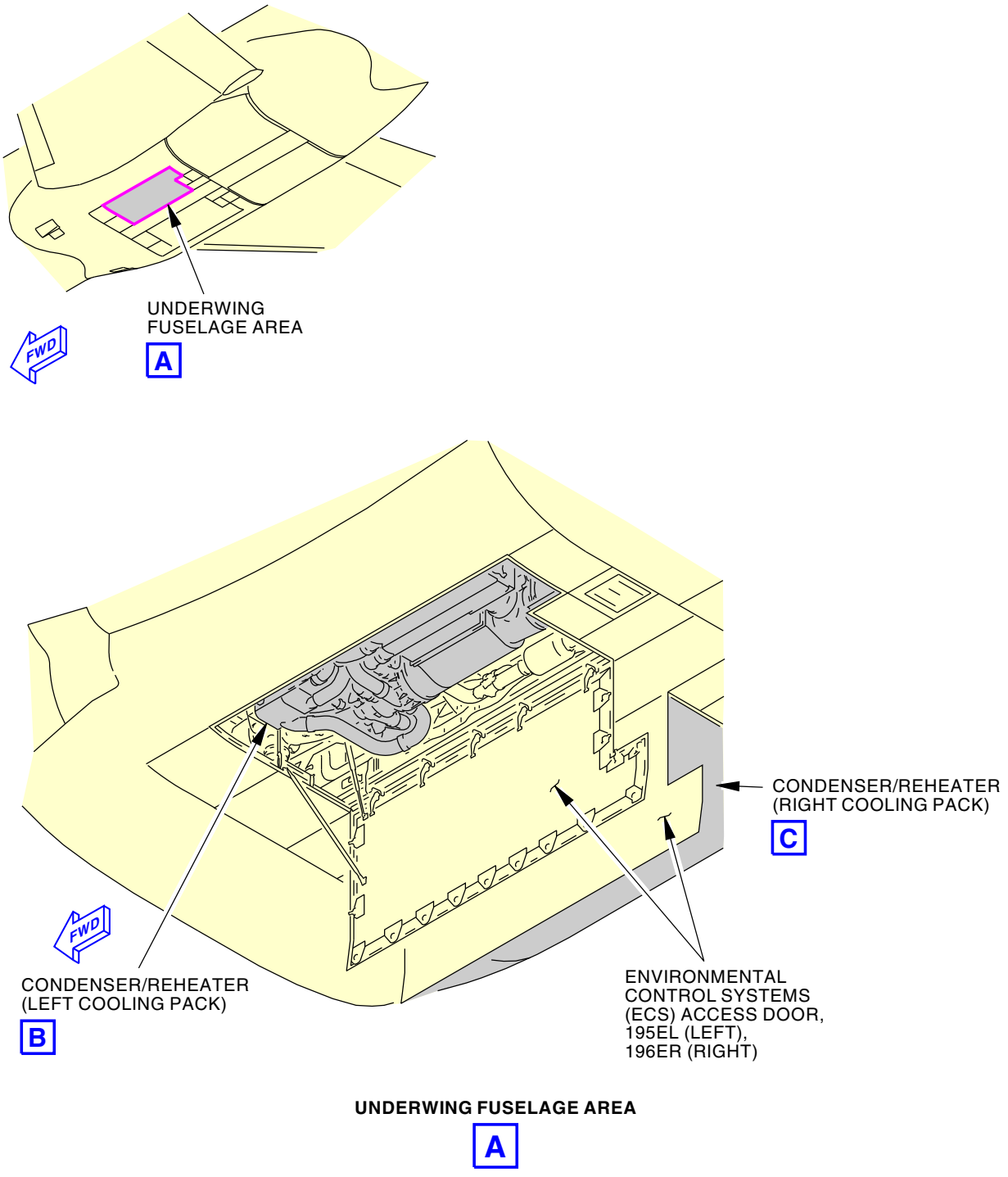

Condenser/Reheater Installation
Figure 401/21-52-03-990-801 (Sheet 1 of 5)

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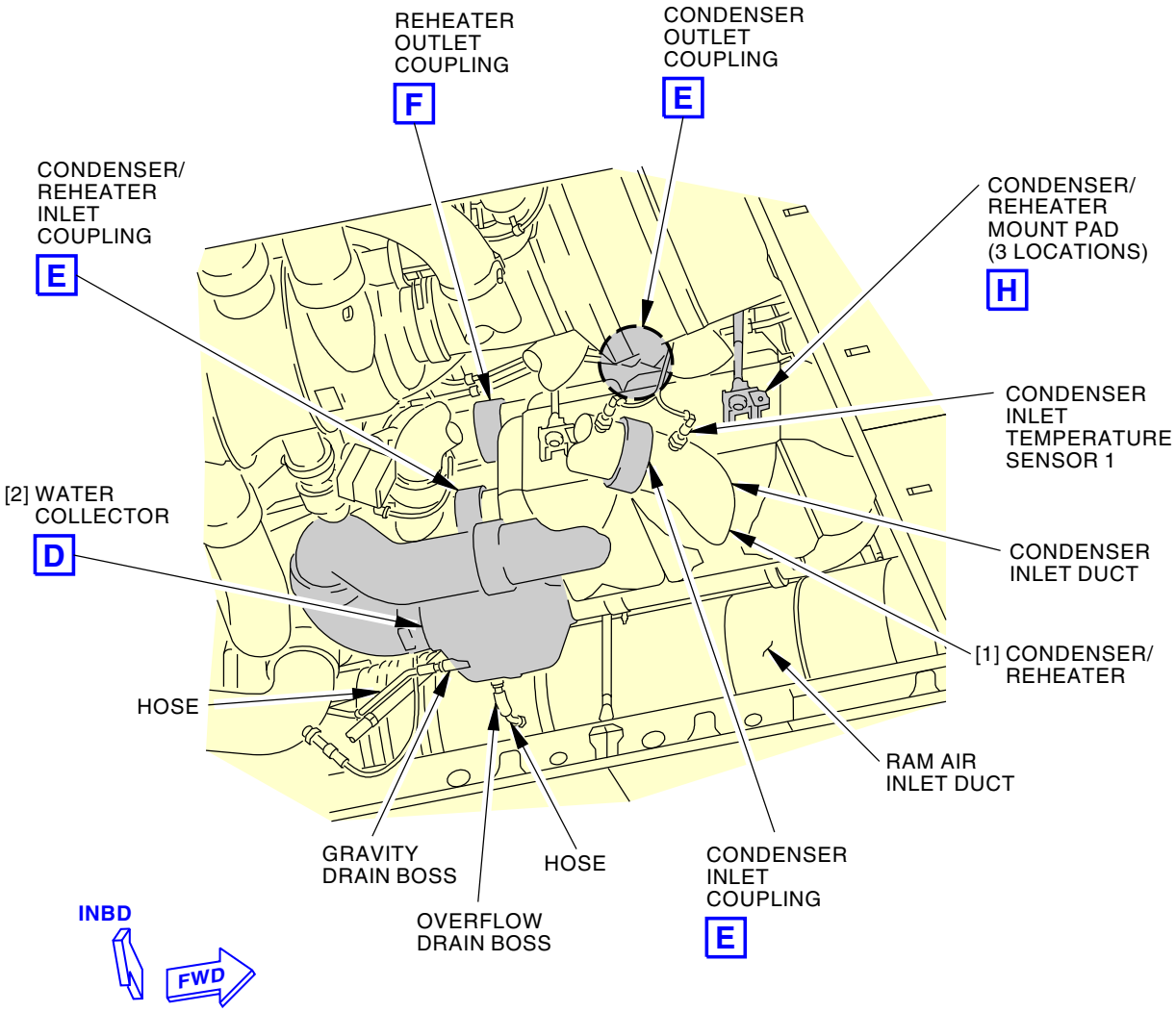

CONDENSER/REHEATER
(LEFT COOLING PACK)
B

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Condenser/Reheater Installation
Figure 401/21-52-03-990-801 (Sheet 2 of 5)

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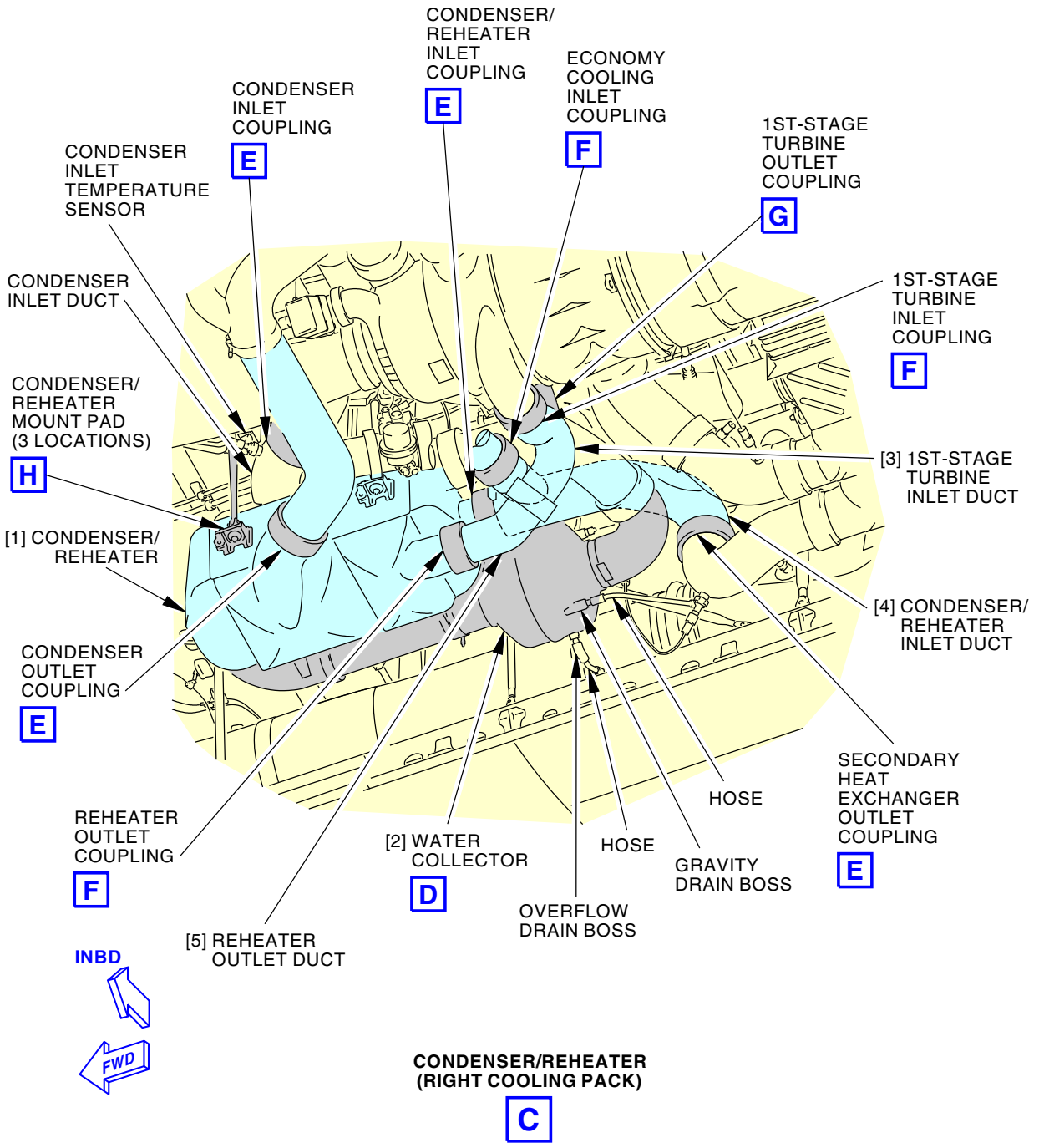

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Condenser/Reheater Installation
Figure 401/21-52-03-990-801 (Sheet 3 of 5)

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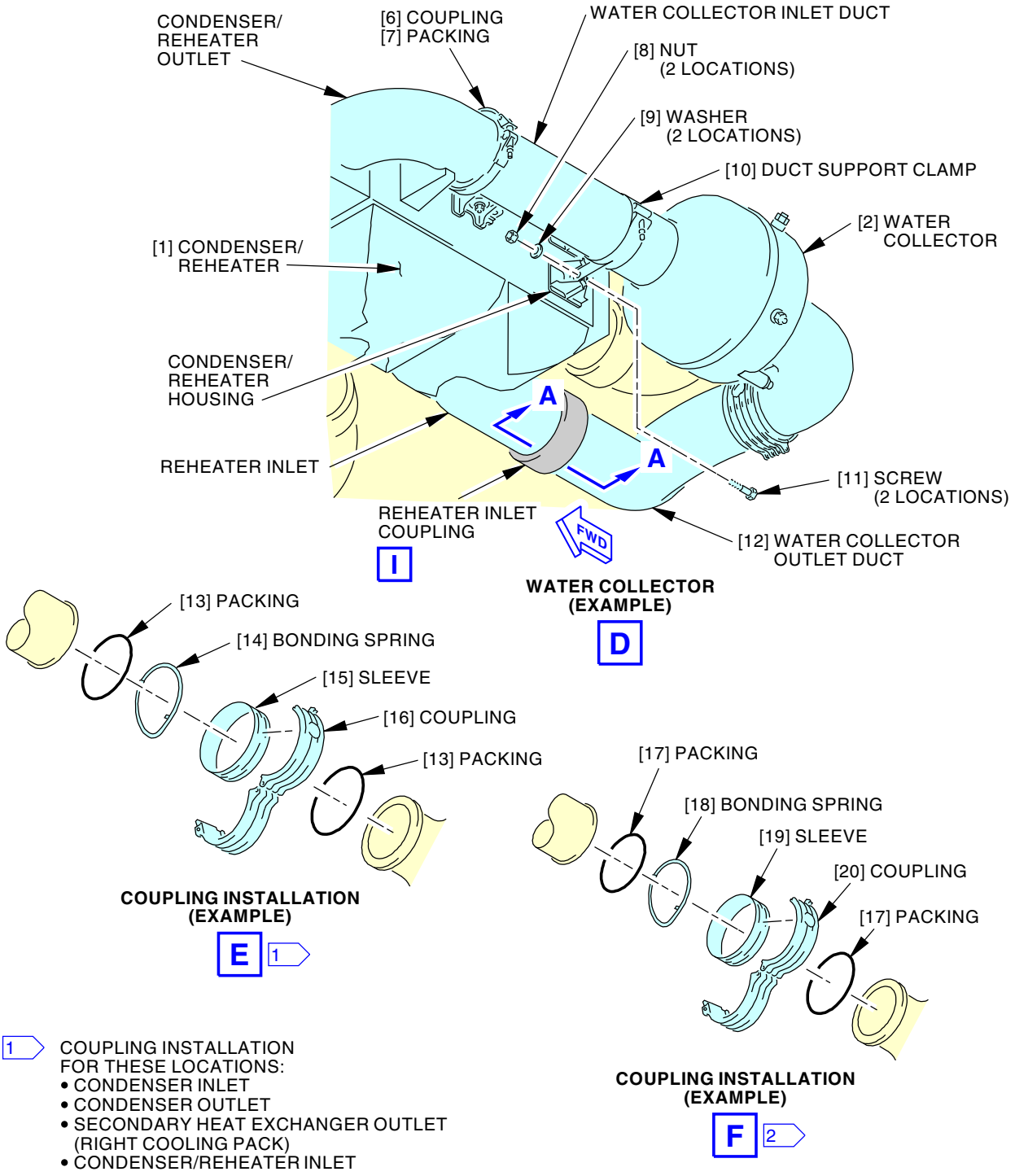

Condenser/Reheater Installation
Figure 401/21-52-03-990-801 (Sheet 4 of 5)

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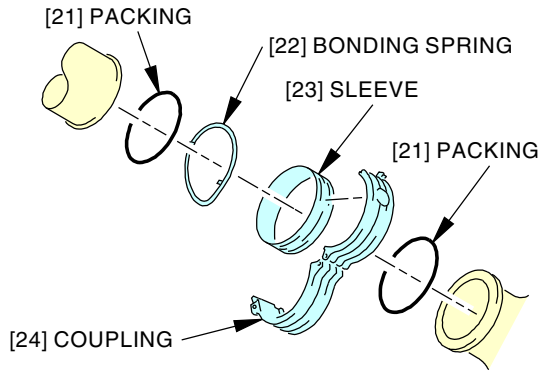
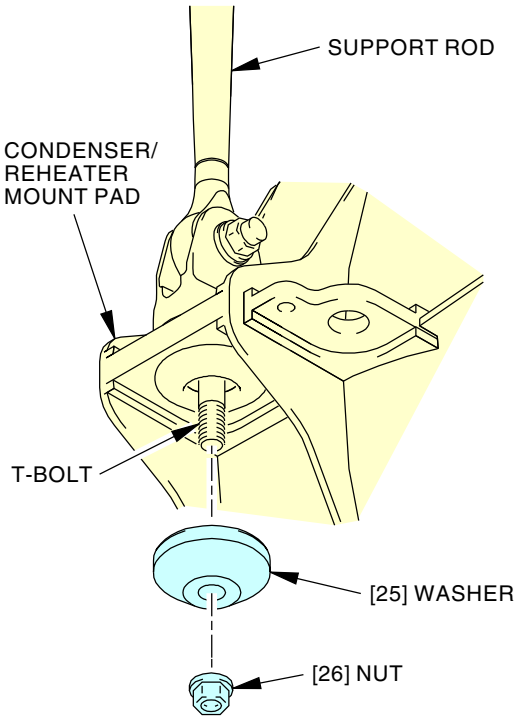


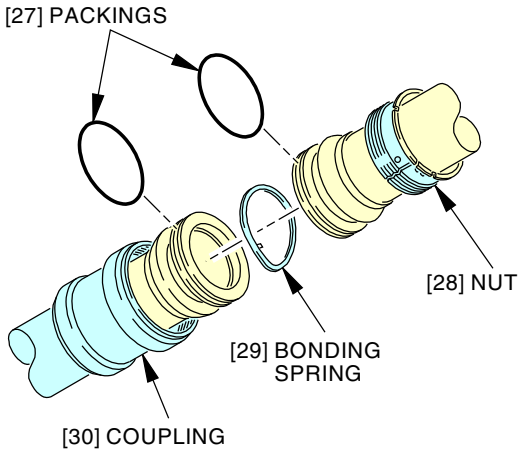
COUPLING INSTALLATION (EXAMPLE)

G 2



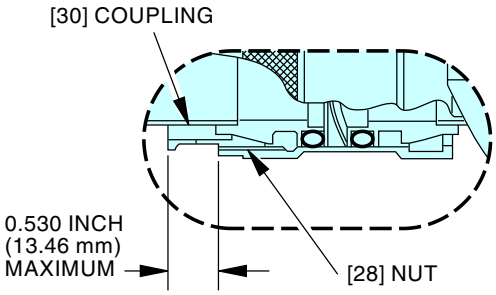
CONDENSER/REHEATER MOUNT PAD (EXAMPLE)

H



REHEATER INLET COUPLING INSTALLATION (EXAMPLE)

I



(AS INSTALLED)

A-A

2 COUPLING INSTALLATION FOR THESE LOCATIONS:
- REHEATER OUTLET
- ECONOMY COOLING INLET (RIGHT COOLING PACK)
- 1ST-STAGE TURBINE INLET (RIGHT COOLING PACK)
- 1ST-STAGE TURBINE OUTLET (RIGHT COOLING PACK)

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Condenser/Reheater Installation
Figure 401/21-52-03-990-801 (Sheet 5 of 5)

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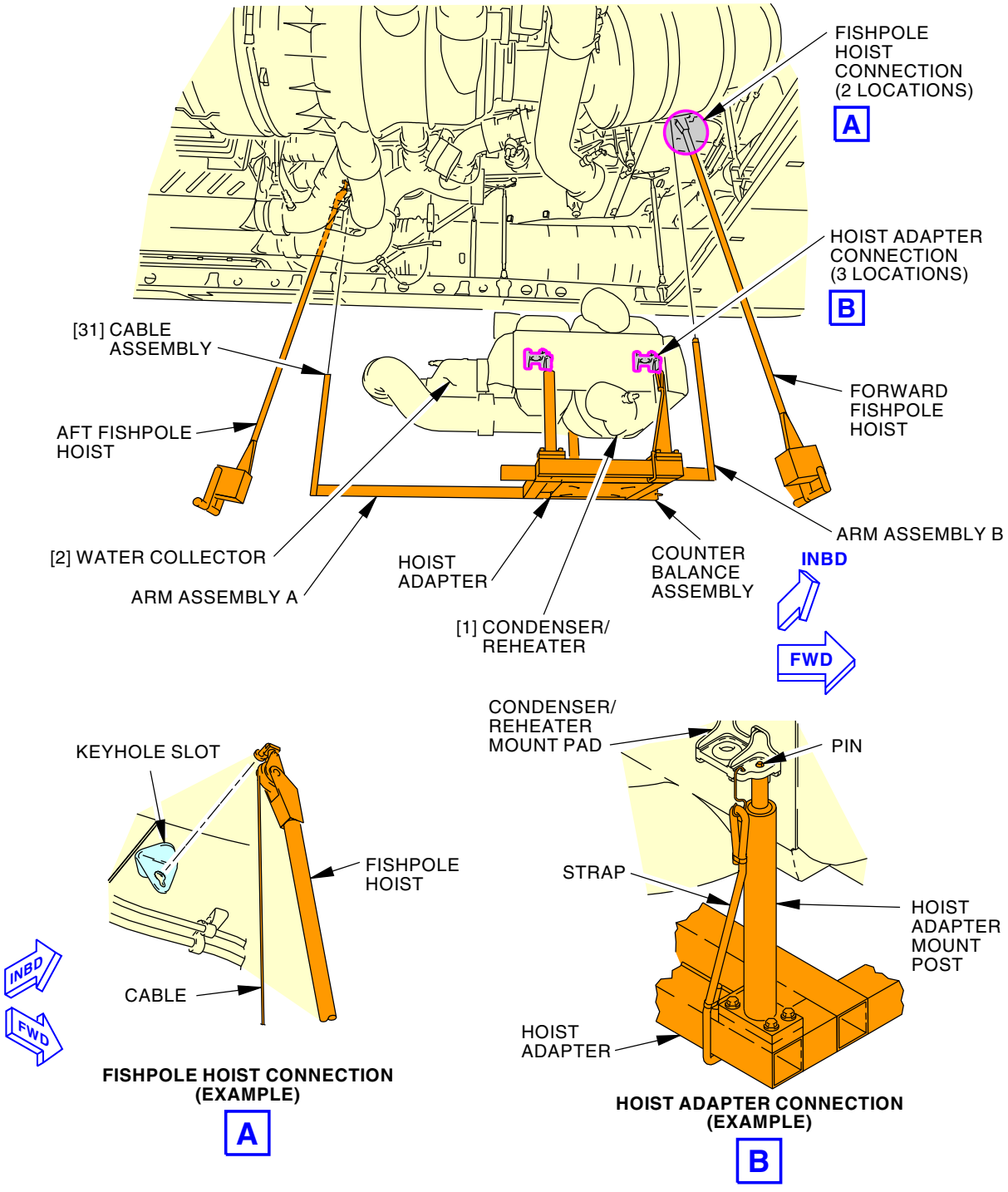

Condenser/Reheater Installation Equipment (Fishpole Hoist Method)
Figure 402/21-52-03-990-802

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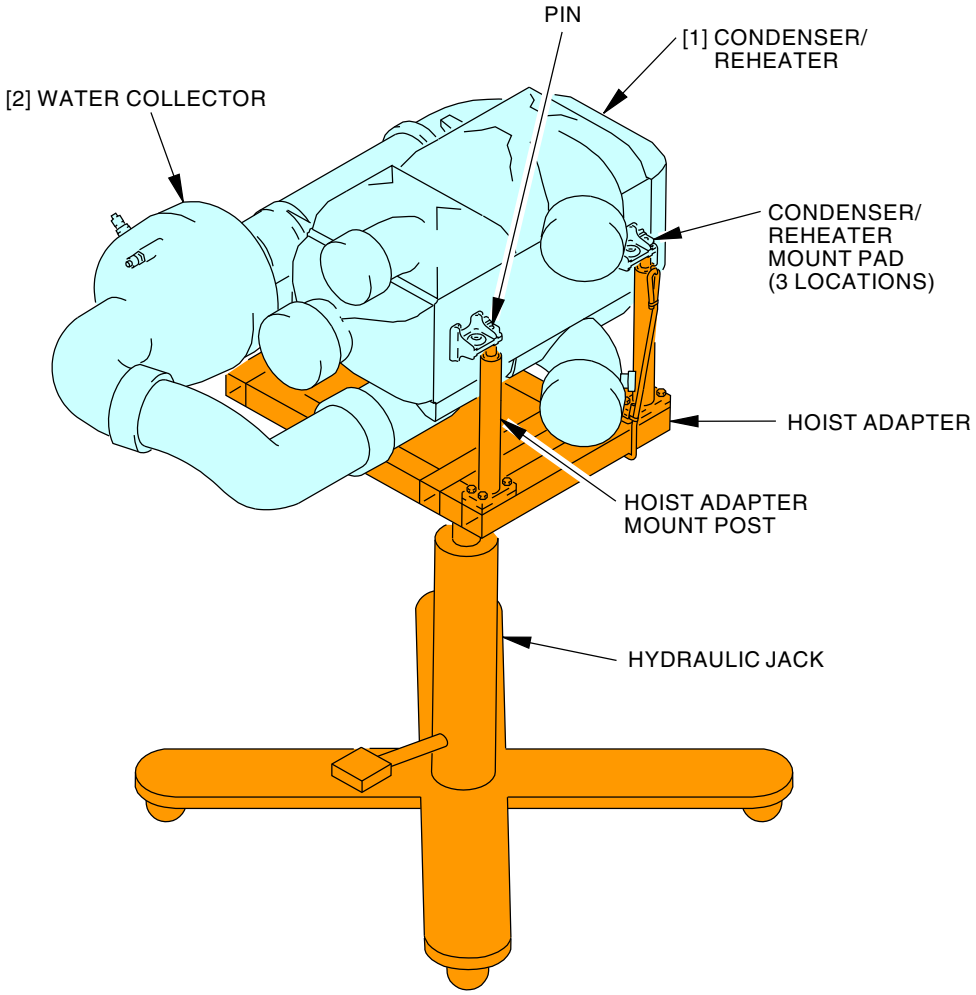

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Condenser/Reheater Installation Equipment (Hydraulic Jack Method)
Figure 403/21-52-03-990-803

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TASK 21-52-03-400-801

3. Condenser/Reheater Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-52-43-400-801	Condenser Inlet Temperature Sensor Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (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-1568	Jack - Hydraulic, General Low Profile Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
COM-1582	Hoist - Fishpole, Manually Powered Part #: PF51-009-1 Supplier: 1YRX6 Part #: PF51-103-5 Supplier: 1YRX6
SPL-1450	Adapter - Hoist, Air Conditioning Pack Part #: J21001-132 Supplier: 81205 Part #: J21001-133 Supplier: 81205 Opt Part #: J21001-72 Supplier: 81205 Opt Part #: J21001-73 Supplier: 81205 Opt Part #: J21001-79 Supplier: 81205 Opt Part #: J21001-80 Supplier: 81205
SPL-1602	Adapter - Condenser/Reheater Part #: J21001-137 Supplier: 81205 Opt Part #: J21001-75 Supplier: 81205 Opt Part #: J21001-83 Supplier: 81205
SPL-1603	Adapter - Heat Exchanger Part #: J21001-136 Supplier: 81205 Opt Part #: J21001-74 Supplier: 81205 Opt Part #: J21001-82 Supplier: 81205
SPL-1605	Rod - Alignment, Air Conditioning Pack Installation Part #: J21001-77 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00649	Lubricant - O-Ring - Krytox GPL206	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III

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D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Condenser/reheater	21-52-00-01-445	ARO ALL
7	Packing	21-52-00-01-442	ARO ALL
13	Packing	21-52-00-01-595	ARO ALL
17	Packing	21-52-00-01-583	ARO ALL
21	Packing	21-52-00-01-595	ARO ALL
27	Packing	21-52-00-01-550	ARO ALL

E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

G. Left Cooling Pack Condenser/Reheater Installation

SUBTASK 21-52-03-020-019

(1) Do the steps that follow to install the water collector [2] and the water collector outlet duct [12] as an assembly on the condenser/reheater [1].

(a) Put the water collector [2] and the water collector outlet duct [12] assembly in position between the condenser/reheater outlet and the reheater inlet.

(b) Loosely install the screws [11], washers [9], and nuts [8] to connect the duct support clamp [10] to the condenser/reheater housing.

(c) Apply the Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, to the new packings [27].

(d) Install the new packings [27] on the reheater inlet.

CAUTION MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(e) Install the bonding spring [29].

(f) Align the center lines of the reheater inlet and the water collector outlet duct [12].

NOTE: You can move the water collector outlet duct [12] at the coupling near the water collector [2], in order to align the center lines.

(g) Move the coupling [30] over the bonding spring [29] and both packings [27] to connect with the nut [28].

(h) Wearing gloves, tighten the nut [28] by squeezing the ends and rotating.

NOTE: With the correct alignment there is a maximum distance of 0.530 inch between the coupling [30] and the nut [28].

(i) Install the coupling [6] and the new packing [7] to connect the water collector inlet duct to the reheater/condenser outlet.

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1) Tighten the coupling [6] from 55 in-lb (6 N·m) to 60 in-lb (7 N·m).

(j) Tighten the screws [11] from 100 in-lb (11 N·m) to 125 in-lb (14 N·m).

SUBTASK 21-52-03-420-001

(2) Do these steps to install the packings [13], packings [17], sleeves [15], and sleeve [19]:

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(a) Apply the Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, or Christo-lube MCG111 grease, D50011, to the new packings [13], packings [17], and to the inside diameter of the sleeves [15], sleeve [19].

(b) Install the new packings [13] on the condenser outlet, condenser inlet and the condenser/reheater inlet.

(c) Install the new packings [17] on the reheater outlet.

(d) Put the sleeves [15] on the condenser outlet, condenser inlet and the condenser/reheater inlet ducts.

(e) Put the sleeve [19] on the reheater outlet duct.

SUBTASK 21-52-03-480-008

(3) Install the support equipment:

(a) If you use the fishpole hoist method, do the steps that follow (Figure 402):

WARNING DO AN INSPECTION OF THE FISHPOLE HOISTS BEFORE YOU INSTALL THEM. IF YOU USE FISHPOLE HOISTS IN A UNSERVICEABLE CONDITION, THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

1) Examine the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, as follows:

a) Pull the cable out of the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, and look for any damage to the cable.

CAUTION MAKE SURE YOU DO AN INSPECTION OF THE KEY HOLE SLOT AREAS. A DAMAGE OF THE KEY HOLE SLOT CAN CAUSE INCORRECT SUPPORT OF THE CONDENSER/REHEATER ASSEMBLY. THIS CAN CAUSE DAMAGE TO THE CONDENSER/REHEATER ASSEMBLY.

2) Examine the keyhole slots for any damage before you install the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582.

3) Install the forward fishpole hoist, COM-1582 in the keyhole slot that is forward and above the condenser/reheater [1].

4) Install the aft fishpole hoist, COM-1582, in the keyhole slot that is inboard and above the water spray nozzle.

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5) Attach the fishpole hoist cable assembly [31] to the air conditioning pack hoist adapter, SPL-1450.

NOTE: The condenser/reheater adapter, SPL-1602, includes the heat exchanger adapter, SPL-1603, arm assembly A, J21001-11, arm assembly B J21001-12 and the counter balance assembly, J21001-13 which are part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

(b) If you use the hydraulic jack method, do the steps that follow (Figure 403):

1) Install the hoist condenser/reheater adapter, SPL-1602, on the hydraulic low profile hydraulic jack, COM-1568.

NOTE: The heat exchanger adapter, SPL-1603, is part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

2) Put the maintenance stand and the hydraulic low profile hydraulic jack, COM-1568, in position below the cooling pack.

SUBTASK 21-52-03-480-003

(4) Connect the strap onto the condenser/reheater mount pad.

SUBTASK 21-52-03-420-002

CAUTION

MAKE SURE THAT THE CONDENSER/REHEATER ASSEMBLY DOES NOT MOVE THE SIDE WHEN YOU LOWER IT. THE CONDENSER/REHEATER ASSEMBLY (WEIGHT APPROXIMATELY 70 LBS) CAN HIT THE COOLING PACK DUCTS. THIS CAN CAUSE DAMAGE TO THE COOLING PACK DUCTS AND THE CONDENSER/REHEATER ASSEMBLY.

(5) Slowly raise the condenser/reheater [1] and water collector [2] assembly to its position below the three T-bolts.

NOTE: It is recommended that you hold the condenser/reheater assembly and the hoist condenser/reheater adapter, SPL-1602, while you raise the assembly to keep the assembly stable and clear of the connections.

SUBTASK 21-52-03-820-001

(6) Align the three T-bolts with the condenser/reheater mount pads.

SUBTASK 21-52-03-420-003

CAUTION

LIFT THE CONDENSER/REHEATER CAREFULLY. IF YOU DO NOT, DAMAGE OF THE MOUNTING SURFACE ON THE CONDENSER/REHEATER MOUNTING PADS CAN OCCUR.

(7) Continue to raise the condenser/reheater [1] and water collector [2] assembly until the T-bolts show.

(a) Make sure the three T-bolts come through the condenser/reheater mount pads at the same time and do not bind.

SUBTASK 21-52-03-820-002

(8) Make sure the condenser/reheater ducts align with the cooling pack ducts.

SUBTASK 21-52-03-080-002

(9) Remove the air conditioning pack installation alignment rod, SPL-1605, from each of the T-bolts.

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SUBTASK 21-52-03-420-004

(10) Install the washers [25] and nuts [26] to attach the condenser/reheater [1] and the water collector [2] assembly to the three support rods.

SUBTASK 21-52-03-020-020

(11) Disconnect the strap from the condenser/reheater mount pad.

SUBTASK 21-52-03-080-001

(12) Remove the support equipment:

(a) If you used the fishpole hoist method, do the steps that follow (Figure 402):

1) Remove the hoist condenser/reheater adapter, SPL-1602, from the fishpole hoist cable assembly [31].

2) Remove the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582.

(b) If you used the hydraulic jack method, do the step that follows (Figure 403):

1) Lower the hoist condenser/reheater adapter, SPL-1602, and the hydraulic low profile hydraulic jack, COM-1568, away from the ECS bay.

SUBTASK 21-52-03-420-005

CAUTION

MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(13) Install the bonding springs [14] and the bonding spring [18].

SUBTASK 21-52-03-420-006

(14) Put the sleeves [15] and the sleeve [19] in position over the ducts.

SUBTASK 21-52-03-420-007

(15) Install the couplings [16] and the coupling [20].

SUBTASK 21-52-03-420-008

(16) Connect the hose from the water spray nozzle to the gravity drain boss on the water collector [2].

SUBTASK 21-52-03-420-009

(17) Connect the hose from the ram air inlet duct to the overflow drain boss on the water collector [2].

SUBTASK 21-52-03-020-024

(18) If you removed the condenser inlet temperature sensor 1 from the condenser inlet duct, do this task: Condenser Inlet Temperature Sensor Installation, TASK 21-52-43-400-801.

SUBTASK 21-52-03-020-025

(19) If you did not remove the condenser inlet temperature sensor 1 from the condenser inlet duct, then re-connect the electrical connector.

SUBTASK 21-52-03-420-019

(20) Re-connect the wire bundle support clamps to the duct on the water collector [2].

H. Right Cooling Pack Condenser/Reheater Installation

SUBTASK 21-52-03-020-021

(1) Do the steps that follow to install the water collector [2] and the water collector outlet duct [12] as an assembly on the condenser/reheater [1].

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(a) Put the water collector [2] and the water collector outlet duct [12] assembly in position between the condenser/reheater outlet connection and the reheater inlet.

(b) Loosely install the screws [11], washers [9], and nuts [8] to connect the duct support clamp [10] to the condenser/reheater housing.

(c) Apply the Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, to the new packings [27].

(d) Install the new packings [27] on the reheater inlet.

CAUTION

MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(e) Install the bonding spring [29].

(f) Move the coupling [30] over the bonding spring [29] and both packings [27] to connect with the nut [28].

(g) Wearing gloves, tighten the nut [28] y squeezing the ends and rotating.

(h) Install the coupling [6] and the new packing [7] to connect the water collector inlet duct to the reheater/condenser outlet.

1) Tighten the coupling [6] from 55 in-lb (6 N·m) to 60 in-lb (7 N·m).

(i) Tighten the screws [11] from 100 in-lb (11 N·m) to 125 in-lb (14 N·m).

SUBTASK 21-52-03-420-010

(2) Do these steps to install the packings [13] and the sleeves [15] on the condenser outlet and the condenser inlet:

(a) Apply the Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, or Christo-lube MCG111 grease, D50011, to the new packings [13] and to the inside diameter of the sleeves [15].

(b) Install the new packings [13] on the duct flanges of the condenser outlet and the condenser inlet.

(c) Put the sleeves [15] on the condenser inlet and condenser outlet ducts.

SUBTASK 21-52-03-480-009

(3) Install the support equipment:

(a) If you use the fishpole hoist method, do the steps that follow (Figure 402):

WARNING

DO AN INSPECTION OF THE FISHPOLE HOISTS BEFORE YOU INSTALL THEM. IF YOU USE FISHPOLE HOISTS IN A UNSERVICEABLE CONDITION, THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

1) Examine the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, as follows:

a) Pull the cable out of the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582, and look for any damage to the cable.

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CAUTION

MAKE SURE YOU DO AN INSPECTION OF THE KEY HOLE SLOT AREAS. A DAMAGE OF THE KEY HOLE SLOT CAN CAUSE INCORRECT SUPPORT OF THE CONDENSER/REHEATER ASSEMBLY. THIS CAN CAUSE DAMAGE TO THE CONDENSER/REHEATER ASSEMBLY.

2) Examine the keyhole slots for any damage before you install the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582.

3) Install the forward fishpole hoist, COM-1582, in the keyhole slot that is forward and above the condenser/reheater [1].

4) Install the aft fishpole hoist, COM-1582, in the keyhole slot that is inboard and above the water spray nozzle.

5) Attach the fishpole hoist cable assembly [31] to the hoist condenser/reheater adapter, SPL-1602.

NOTE: The hoist condenser/reheater adapter, SPL-1602, includes the heat exchanger adapter, SPL-1603, arm assembly A, J21001-11, arm assembly B J21001-12 and the counter balance assembly, J21001-13 which are part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

(b) If you use the hydraulic jack method, do the steps that follow (Figure 403):

1) Install the hoist condenser/reheater adapter, SPL-1602, on the hydraulic low profile hydraulic jack, COM-1568.

NOTE: The heat exchanger adapter, SPL-1603, is part of the air conditioning pack hoist adapter, SPL-1450, tool kit.

2) Put the maintenance stand and the hydraulic low profile hydraulic jack, COM-1568, in position below the cooling pack.

SUBTASK 21-52-03-480-004

(4) Connect the strap onto the condenser/reheater mount pad.

SUBTASK 21-52-03-420-016

CAUTION

MAKE SURE THAT THE CONDENSER/REHEATER ASSEMBLY DOES NOT MOVE THE SIDE WHEN YOU LOWER IT. THE CONDENSER/REHEATER ASSEMBLY (WEIGHT APPROXIMATELY 70 LBS) CAN HIT THE COOLING PACK DUCTS. THIS CAN CAUSE DAMAGE TO THE COOLING PACK DUCTS AND THE CONDENSER/REHEATER ASSEMBLY.

(5) Slowly raise the condenser/reheater [1] and water collector [2] assembly to its position below the three T-bolts.

NOTE: It is recommended that you hold the condenser/reheater assembly and the hoist condenser/reheater adapter, SPL-1602, while you raise the assembly to keep the assembly stable and clear of the connections.

SUBTASK 21-52-03-820-003

(6) Align the three T-bolts with the condenser/reheater mount pads.

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SUBTASK 21-52-03-420-017

CAUTION

LIFT THE CONDENSER/REHEATER CAREFULLY. IF YOU DO NOT, DAMAGE OF THE MOUNTING SURFACE ON THE CONDENSER/REHEATER MOUNTING PADS CAN OCCUR.

(7) Continue to raise the condenser/reheater [1] and water collector [2] assembly until the T-bolts show.

(a) Make sure the three T-bolts come through the condenser/reheater mount pads at the same time and do not bind.

SUBTASK 21-52-03-820-004

(8) Make sure the condenser/reheater ducts align with the cooling pack ducts.

SUBTASK 21-52-03-080-003

(9) Remove the air conditioning pack installation alignment rod, SPL-1605, from each of the T-bolts.

SUBTASK 21-52-03-420-018

(10) Install the washers [25] and the nuts [26] to attach the condenser/reheater [1] and the water collector [2] assembly to the three support rods.

SUBTASK 21-52-03-020-026

(11) Disconnect the strap from the condenser/reheater mount pad.

SUBTASK 21-52-03-080-004

(12) Remove the support equipment:

(a) If you used the fishpole hoist method, do the steps that follow (Figure 402):

1) Remove the hoist condenser/reheater adapter, SPL-1602, from the fishpole hoist cable assembly [31].

2) Remove the forward fishpole hoist, COM-1582, and the aft fishpole hoist, COM-1582.

(b) If you used the hydraulic jack method, do the step that follows (Figure 403):

1) Lower the hoist condenser/reheater adapter, SPL-1602, and the hydraulic low profile hydraulic jack, COM-1568, away from the ECS bay.

SUBTASK 21-52-03-420-011

(13) Do these steps to install the couplings [16] on the condenser outlet and the condenser inlet ducts:

CAUTION

MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(a) Install the bonding springs [14].

(b) Put the sleeves [15] in position over the ducts.

(c) Install the couplings [16].

SUBTASK 21-52-03-420-012

(14) Do these steps to install the condenser/reheater inlet duct [4]:

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(a) Apply the Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, or Christo-lube MCG111 grease, D50011, to the new packings [13], packings [17], and to the inside diameter of the sleeves [15], sleeve [19].

(b) Install the new packings [13] on the secondary heat exchanger outlet.

(c) Install the new packings [17] on the economy cooling inlet.

(d) Install the new packings [13] on the condenser/reheater inlet.

(e) Put the sleeves [15] and the sleeve [19] on the condenser/reheater inlet duct [4].

CAUTION

MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(f) Install the bonding springs [14] and the bonding spring [18].

(g) Put the condenser/reheater inlet duct [4] in position between the secondary heat exchanger outlet, condenser/reheater inlet and the economy cooling inlet ducts.

(h) Put the sleeves [15] and the sleeve [19] in position over the ducts.

(i) Install the couplings [16] and the coupling [20].

SUBTASK 21-52-03-420-013

(15) Do the steps that follow to install the reheater outlet duct [5] and the 1st-stage turbine inlet duct [3] as an assembly:

(a) Apply the Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, or Christo-lube MCG111 grease, D50011, to the new packings [17], packings [21] and to the inside diameter of the sleeves [19], sleeve [23].

(b) Install the new packings [21] on duct flanges for the 1st-stage turbine outlet.

(c) Install the new packings [17] on duct flanges for the reheater outlet and the 1st-stage turbine inlet.

(d) Put the sleeve [23] on the 1st-stage turbine outlet.

(e) Put the sleeves [19] on the 1st-stage turbine inlet and the reheater outlet.

CAUTION

MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(f) Install the bonding springs [18] and the bonding spring [22].

(g) Put the reheater outlet duct [5] and the 1st-stage turbine inlet duct [3] assembly in position between the 1st-stage turbine inlet, reheater outlet and the 1st-stage turbine outlet.

(h) Put the sleeves sleeves [19] and sleeve [23] in position over the ducts.

(i) Install the couplings [20] and the coupling [24].

SUBTASK 21-52-03-420-014

(16) Connect the hose from the water spray nozzle to the gravity drain boss on the water collector [2].

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SUBTASK 21-52-03-420-015

(17) Connect the hose from the ram air inlet duct to the overflow drain boss on the water collector [2].

SUBTASK 21-52-03-020-027

(18) If you removed the condenser inlet temperature sensor 1 from the condenser inlet duct, do this task: Condenser Inlet Temperature Sensor Installation, TASK 21-52-43-400-801.

SUBTASK 21-52-03-020-028

(19) If you did not remove the condenser inlet temperature sensor 1 from the condenser inlet duct, then re-connect the electrical connector.

SUBTASK 21-52-03-420-020

(20) Re-connect the wire bundle support clamps to the condenser/reheater ducts and the duct on the water collector [2].

I. Condenser/Reheater Installation Test

SUBTASK 21-52-03-860-020

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-03-860-003

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-03-860-004

(3) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the AUTO position.

SUBTASK 21-52-03-790-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. HOT DUCTS CAN CAUSE INJURIES TO PERSONNEL.

(4) Make sure there is no air leakage at the condenser/reheater [1] and the water collector [2].

J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-03-860-005

(1) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-52-03-860-006

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-03-410-001

(3) If the condenser/reheater [1] for the right cooling pack that was removed, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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SUBTASK 21-52-03-410-002

(4) If the condenser/reheater [1] for the left cooling pack that was removed, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

END OF TASK

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CONDENSER/REHEATER - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has the following task:

(1) Condenser/Reheater Flow Restriction Test

TASK 21-52-03-000-802

2. Condenser/Reheater Flow Restriction Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task can be used for all condenser/reheater part numbers to find reduced airflow through the condenser/reheater caused by internal contamination or corrosion.

(2) The scheduled maintenance requirement is applicable only to condenser/reheaters with part number 810210-1. This task will find decreased airflow through the condenser/reheater caused by corrosion from sulfur dioxide (Service Letter SL 21-029).

(3) The following preventive maintenance actions are recommended for all condenser/reheaters to increase the ACM reliability and service life but can be performed at the operator's own discretion for condenser/reheaters with part number 810210-2 or later (not mandatory). Over time the pack airflow can become restricted due to a condenser/reheater that has internal corrosion/contamination (dirty, clogged) or due to a build up of ice formation at the pack outlet duct. A reduction of pack airflow can affect the efficiency of the pack operation and possibly contribute to an ACM failure. In-service experience has shown that pack airflow reduction can be associated to a contaminated condenser/reheater. Airflow reduction through a condenser/reheater affects water separation from the pack air and causes excessive moisture to enter the ACM which can result in the formation of ice at the pack outlet duct. The buildup of ice at the pack outlet can create increased axial loads on the ACM which contributes to increased air bearing loads that can cause a premature failure of the ACM thrust bearings (Service Letter SL 21-027-A).

B. References

Reference	Title
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-52-30-000-801	Low Limit Valve Removal (P/B 401)
21-52-30-400-801	Low Limit Valve Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-800-804	Showing a Maintenance Page (P/B 201)
31-61-00-800-808	Printing a Maintenance Page or Snapshot with the Page Menu (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
SL 21-027-A	Pack Flow Restriction Procedure (Condenser/Reheater Health Check)
SL 21-029	Air Conditioning - Condenser/Reheater Corrosion Protection

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C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Prepare for the Test

SUBTASK 21-52-03-860-008

(1) Make sure the ambient temperature is no less than 60 °F (16 °C).

SUBTASK 21-52-03-860-022

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

E. Condenser/Reheater Test

SUBTASK 21-52-03-212-001

(1) Do a visual check of the low limit valve:

NOTE: A low limit valve with an undiagnosed mechanical failure can let ice collect in the condenser/reheater.

(a) Remove the low limit valve. To remove the low limit valve, do this task: Low Limit Valve Removal, TASK 21-52-30-000-801.

(b) Do an inspection of the low limit valve shaft and butterfly disk for damage.

(c) If there is damage found, install a new valve.

(d) If there is no damage found, re-install the valve. To re-install the valve, do this task: Low Limit Valve Installation, TASK 21-52-30-400-801.

SUBTASK 21-52-03-860-025

(2) Pressurize the pneumatic system with the APU. To pressurize the pneumatic system, do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-03-740-001

(3) Use a maintenance access terminal (MAT) to do the Left or Right System Air On Test. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT to do the Left or Right System Air On Test:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) OPERATIONAL TEST
6) (Left or Right as applicable) System Air On
7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE
2) START TEST

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(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.

NOTE: You must repair all faults before you continue the test.

SUBTASK 21-52-03-860-011

(4) Supply conditioned air with the left and right air conditioning packs. To supply conditioned air, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-52-03-860-013

(5) Set a target temperature of 75 °F (24 °C) for the flight compartment and the passenger cabin zones.

SUBTASK 21-52-03-860-014

(6) Operate the air conditioning packs for ten minutes.

NOTE: This will let valve positions, pack flow and cabin temperatures become stable.

SUBTASK 21-52-03-860-024

(7) Set a target temperature of 65 °F (18 °C) for the flight compartment and the passenger cabin zones.

SUBTASK 21-52-03-860-015

(8) Get access to the Air Conditioning Maintenance Page on one of the control display units. To access a maintenance page, do this task: Showing a Maintenance Page, TASK 31-61-00-800-804.

SUBTASK 21-52-03-860-016

(9) Monitor the Air Conditioning Maintenance Page as you do the steps that follow:

(a) Make sure the left or right turbine bypass valve (TURB BYP VLV) is 0.35 or less on the display of the Air Conditioning Maintenance Page.

(b) Make a print of the Air Conditioning Maintenance Page. To make a print of a maintenance page, do this task: Printing a Maintenance Page or Snapshot with the Page Menu, TASK 31-61-00-800-808.

(c) Make a note of the readings for items that follow:

LOW LIMIT VLV POS

TURB BYP VLV

RAM AIR INLET

ECON COOL VLV

(d) Continue to make prints at one minute intervals until the cabin air conditioning and temperature control system (CACTCS) valve positions are stable or the TURB BYP VLV positions are more than 0.35 on the display.

NOTE: A minimum of five prints are recommended.

(e) To determine if the inlet pressure versus pack flow is acceptable, do this step:

1) Compare the pack inlet pressure and pack flow against the ambient temperature line (Figure 501).

2) If the data plots in the “Not Acceptable Region” of Figure 501, the condenser/reheater is degraded and it is recommended that it be replaced at the next convenient maintenance opportunity.

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F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-03-860-018

(1) Push the L and R PACK switch-lights, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-52-03-860-019

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

——— END OF TASK ———

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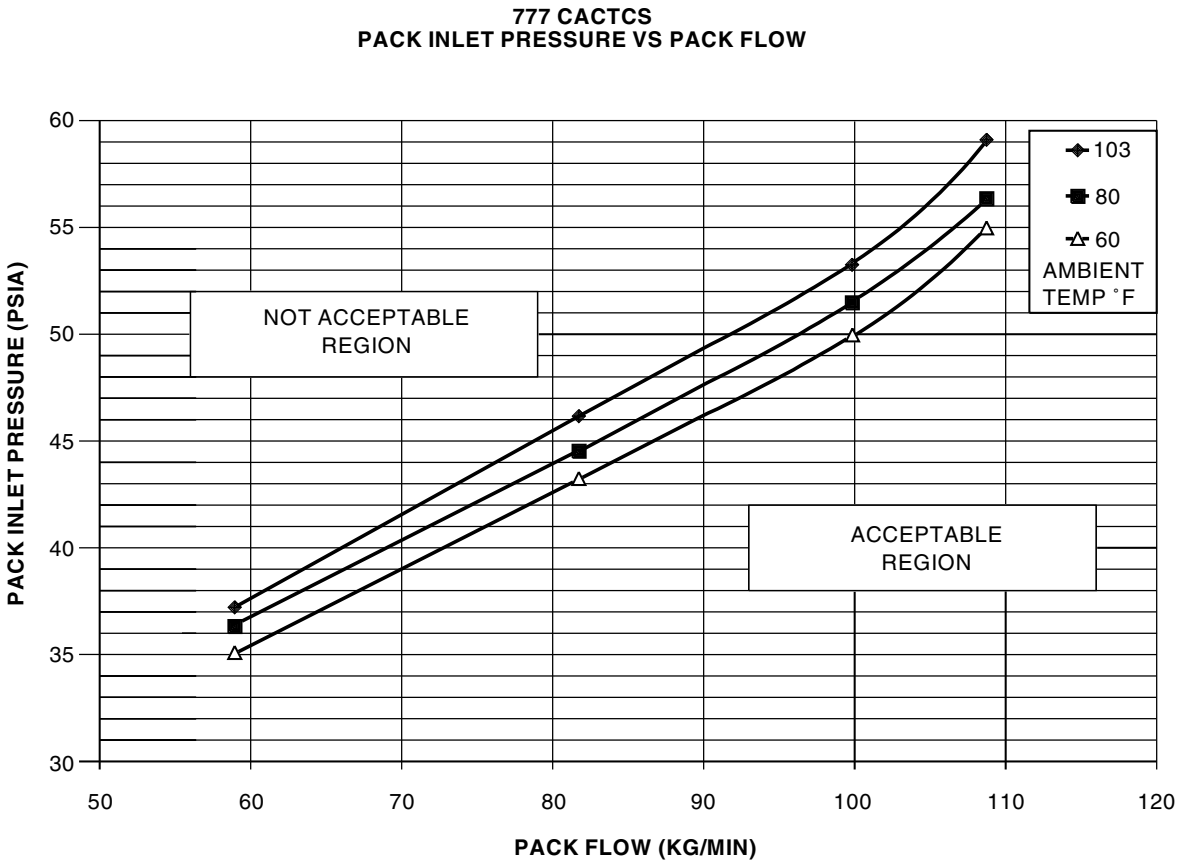

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Condenser/Reheater Flow Restriction Test
Figure 501/21-52-03-990-804

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WATER COLLECTOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the water collector

(2) An installation of the water collector.

TASK 21-52-04-000-801

2. Water Collector Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-04-860-003

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-04-010-001

(2) To get access to the water collector [5]

for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-04-010-002

(3) To get access to the water collector [5]

for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Water Collector Removal

SUBTASK 21-52-04-020-011

(1) Disconnect the wire bundle support clamp on the water collector [5].

SUBTASK 21-52-04-020-001

(2) Disconnect the hose from the gravity drain boss on the water collector [5].

SUBTASK 21-52-04-020-002

(3) Disconnect the hose from the overflow drain boss on the water water collector [5].

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SUBTASK 21-52-04-020-003

(4) Do the steps that follow to remove the coupling [8] that attaches the water collector [5] to the water collector outlet duct:

NOTE: The clamshell coupling latches are designed such that they can not be disengaged when the system is pressurized. In order to disengage the latch, it is recommended that you pull the two ducts which are connected together towards each other. This will permit the latch to be easily lifted over the coupling in the unpressurized condition.

(a) Remove the coupling [8].

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(b) Move the sleeve [7] onto the water collector outlet duct.

(c) Remove the bonding spring [9].

SUBTASK 21-52-04-020-004

(5) Remove the screws [4], washers [10] and nuts [11] to disconnect the duct support clamp [3] from the condenser/reheater housing.

SUBTASK 21-52-04-020-005

(6) Remove the coupling [1] that attaches the water collector inlet duct to the condenser outlet duct.

SUBTASK 21-52-04-020-006

(7) Remove the water collector [5].

SUBTASK 21-52-04-020-007

(8) Remove the sleeve [7].

SUBTASK 21-52-04-020-008

(9) Remove and discard the packings [6] from the flange groove on the water collector [5] and the water collector outlet duct.

SUBTASK 21-52-04-020-009

(10) Remove and discard the packing [2] from the flange groove on the water collector inlet duct.

SUBTASK 21-52-04-020-010

(11) Remove the duct support clamp [3] from the water collector inlet duct.

END OF TASK

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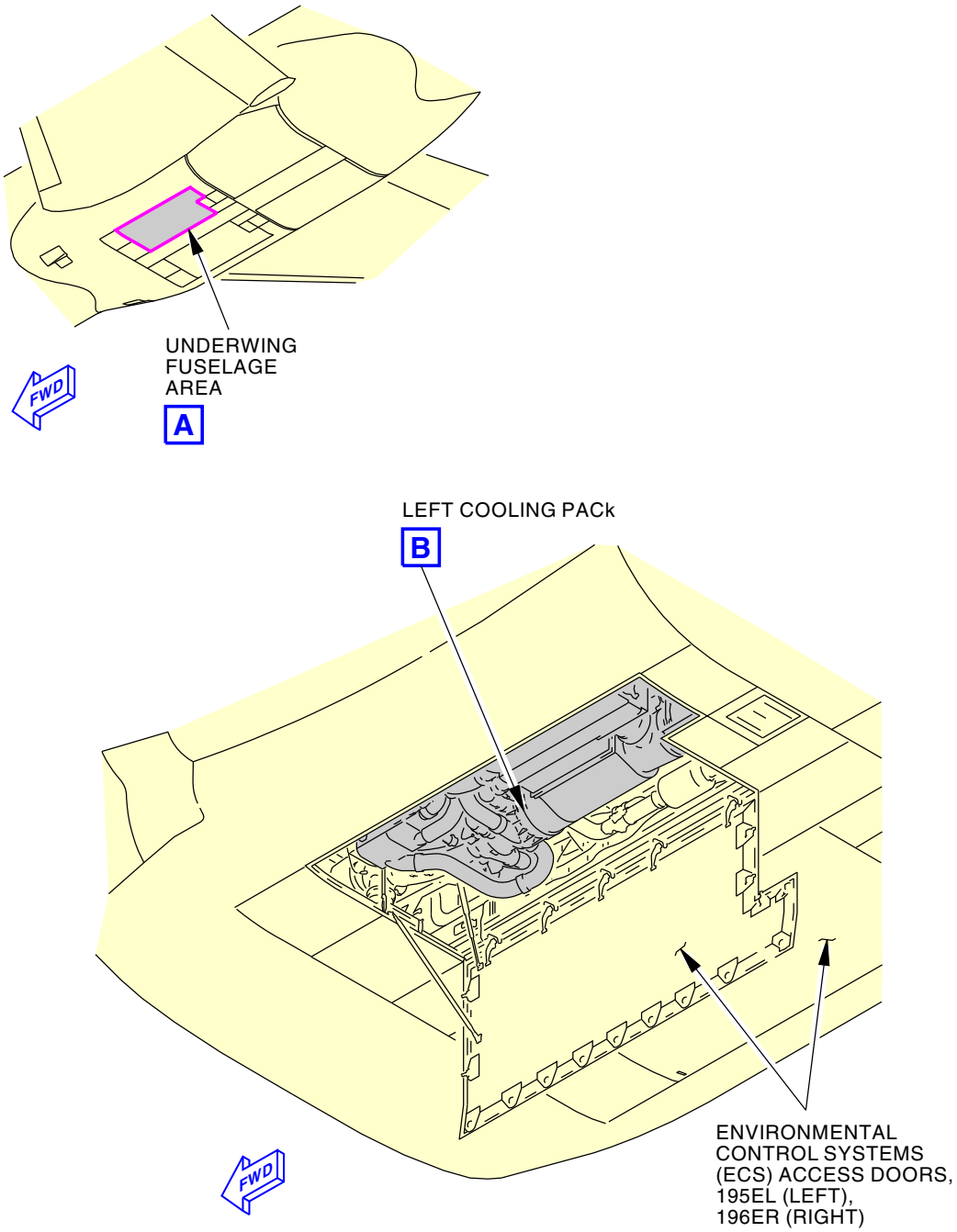

Water Collector Installation
Figure 401/21-52-04-990-801 (Sheet 1 of 3)

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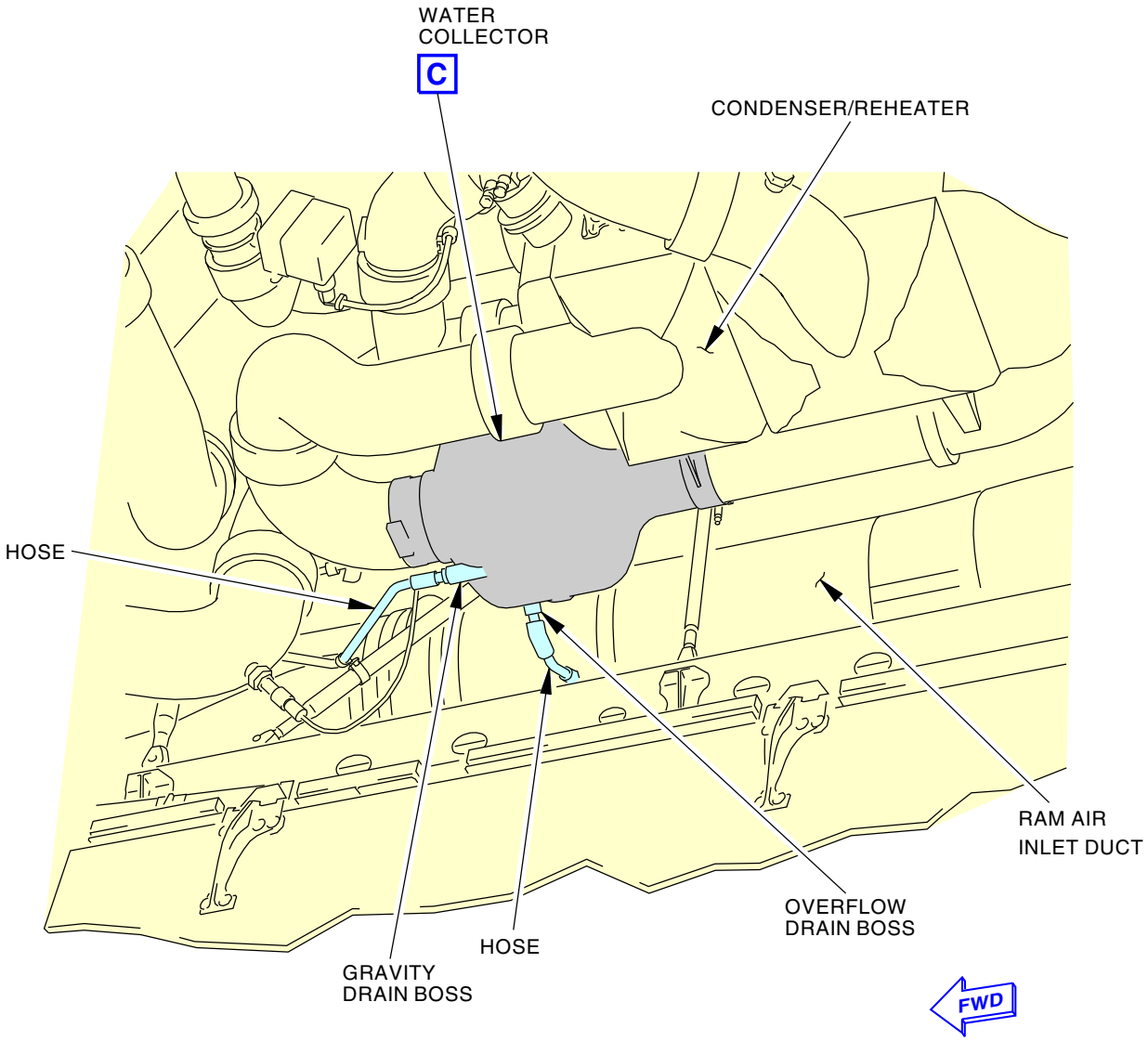

LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B

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Water Collector Installation
Figure 401/21-52-04-990-801 (Sheet 2 of 3)

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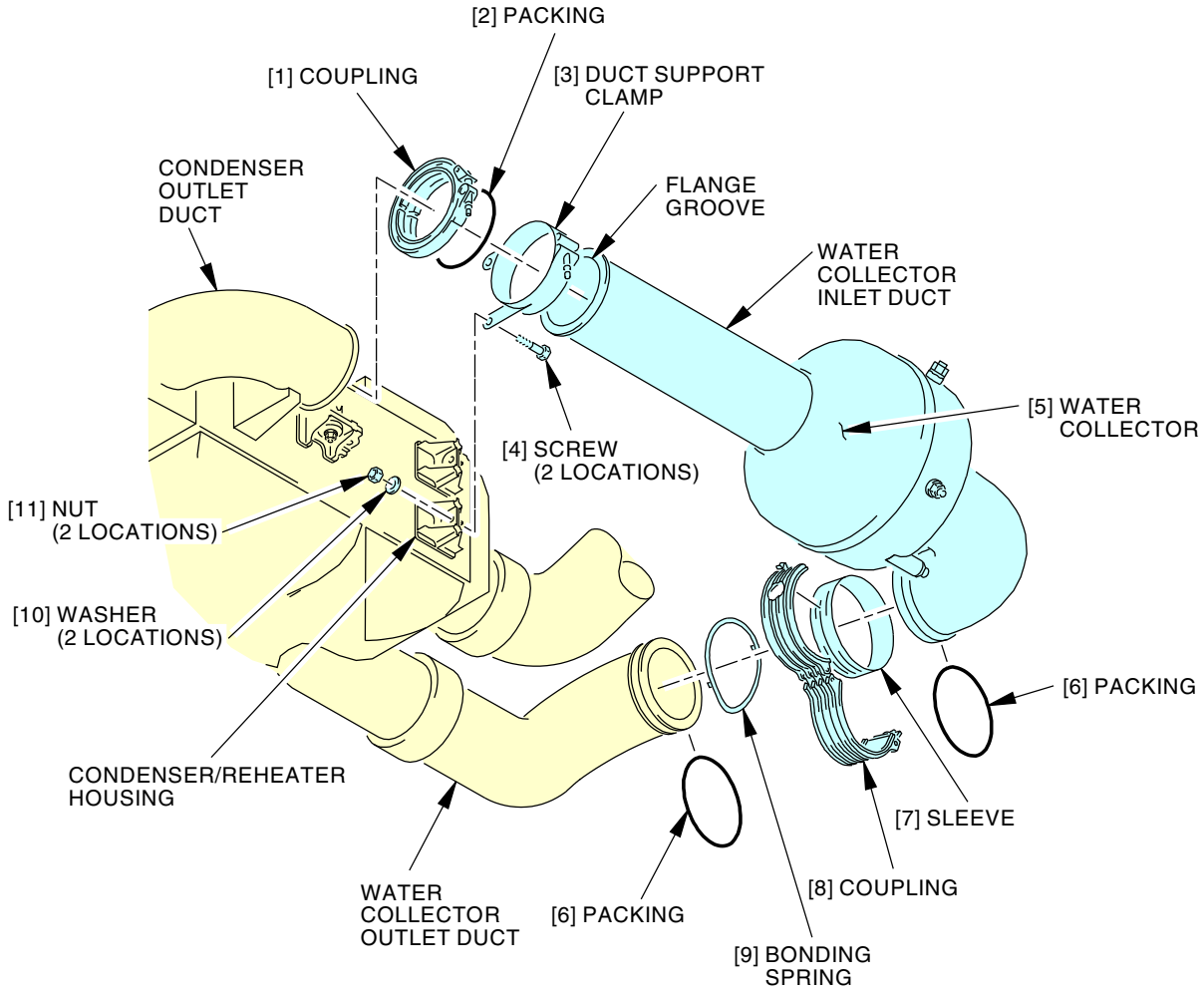

WATER COLLECTOR (EXAMPLE)

C

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Water Collector Installation
Figure 401/21-52-04-990-801 (Sheet 3 of 3)

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TASK 21-52-04-400-801

3. Water Collector Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00649	Lubricant - O-Ring - Krytox GPL206	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	21-52-00-01-442	ARO ALL
5	Water collector	21-52-00-01-433	ARO ALL
6	Packing	21-52-00-01-595	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Water Collector Installation

SUBTASK 21-52-04-420-001

(1) Install the duct support clamp [3] onto the water collector inlet duct but do not tighten the duct support clamp [3].

SUBTASK 21-52-04-420-002

(2) Put a new packing [2] in the flange groove of the water collector inlet duct.

SUBTASK 21-52-04-420-013

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(3) Apply the Krytox GPL206 lubricant, D00649 or Krytox 240AC perfluoropolyether grease, D50063 or Christo-lube MCG111 grease, D50011 to the new packings [6] and to the inside diameter of the sleeve [7].

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SUBTASK 21-52-04-420-003

(4) Install the new packings [6] in the flange groove of the water collector [5] and the water collector outlet duct.

SUBTASK 21-52-04-420-004

(5) Put the sleeve [7] over the water collector outlet duct flange.

SUBTASK 21-52-04-420-005

(6) Put the water collector [5] in its position between the condenser outlet duct and the water collector outlet duct.

SUBTASK 21-52-04-420-006

(7) Install the screws [4], washers [10] and nuts [11] to connect the duct support clamp [3] to the condenser/reheater housing but do not tighten the fasteners.

SUBTASK 21-52-04-420-007

(8) Install the coupling [1] to connect the water collector inlet duct to the condenser outlet duct.

(a) Tighten the coupling [1] to 55-60 pound-inches.

SUBTASK 21-52-04-420-008

(9) Do the steps that follow to install the coupling [8] that connects the water collector [5] to the water collector outlet duct:

CAUTION

MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(a) Install the bonding spring [9].

NOTE: The tabs on the bonding spring go towards the outlet duct flange. You can use the sleeve to help hold the bonding spring in position while you align the ducts.

(b) Put the sleeve [7] in position over the water collector outlet duct flanges.

NOTE: Make sure you cannot see the flange grooves when you install the sleeve [7].

(c) Install the coupling [8].

SUBTASK 21-52-04-420-009

(10) Connect the hose from the water spray nozzle to the gravity drain boss on the water collector [5].

SUBTASK 21-52-04-420-010

(11) Connect the hose from the ram air inlet duct to the overflow drain boss on the water collector [5].

SUBTASK 21-52-04-420-011

(12) Tighten the screws [4] to 100-125 pound-inches.

SUBTASK 21-52-04-420-012

(13) Tighten the duct support clamp [3] to 55-65 pound-inches.

SUBTASK 21-52-04-420-014

(14) Re-connect the wire bundle support clamp onto the water collector [5].

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G. Water Collector Installation Test

SUBTASK 21-52-04-860-007

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-04-860-005

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-04-860-001

(3) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5 to the AUTO position.

SUBTASK 21-52-04-790-001

(4) Examine the water collector connections for leakage.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-04-860-002

(1) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-52-04-860-006

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-04-410-001

(3) If the water collector [5]

for the left cooling pack that was removed, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-04-410-002

(4) If the water collector [5]

for the right cooling pack that was removed, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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WATER SPRAY NOZZLE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the water spray nozzle

(2) An installation of the water spray nozzle.

B. One water spray nozzle is installed in each ram air inlet duct of the left and right cooling packs.

TASK 21-52-05-000-801

2. Water Spray Nozzle Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-05-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-05-010-001

(2) To get access to the water spray nozzle [1]

for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-05-010-002

(3) To get access to the water spray nozzle [1]

for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Water Spray Nozzle Removal

SUBTASK 21-52-05-020-001

(1) Disconnect the supply hose from the water spray nozzle [1].

SUBTASK 21-52-05-020-002

(2) Remove the bolts [2] and the washers [3] that attach the water spray nozzle [1] to the ram air inlet duct.

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SUBTASK 21-52-05-020-003

(3) Carefully remove the water spray nozzle [1] from the ram air inlet duct.

——— END OF TASK ———

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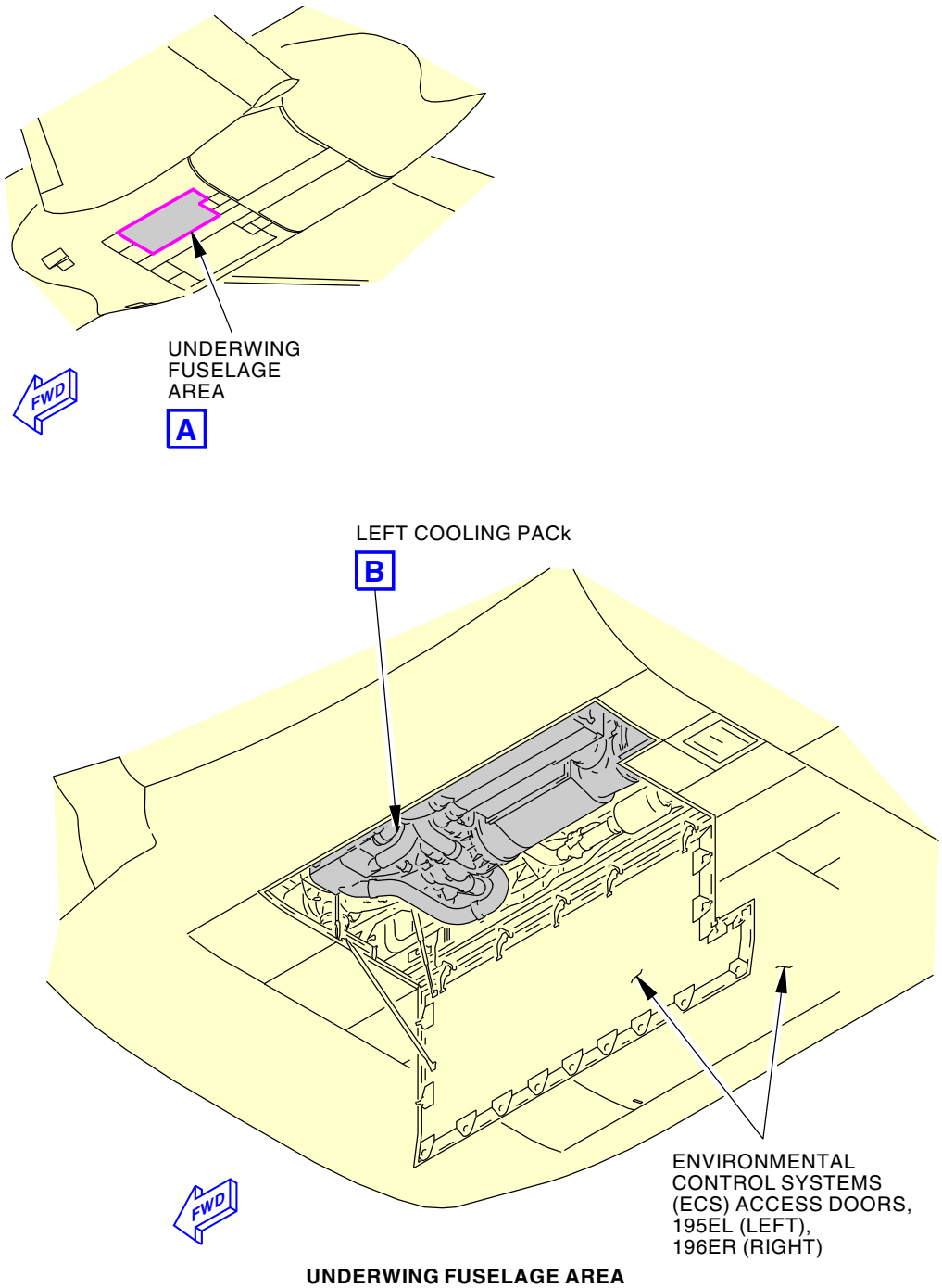

Water Spray Nozzle Installation
Figure 401/21-52-05-990-801 (Sheet 1 of 2)

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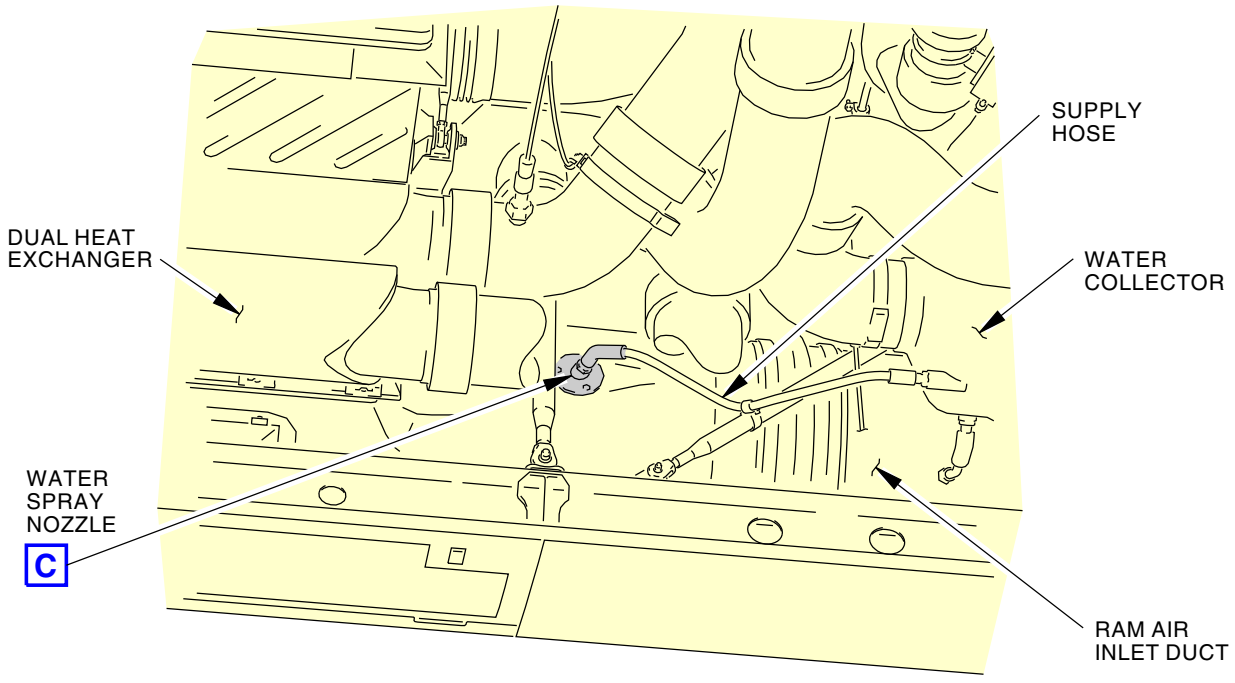
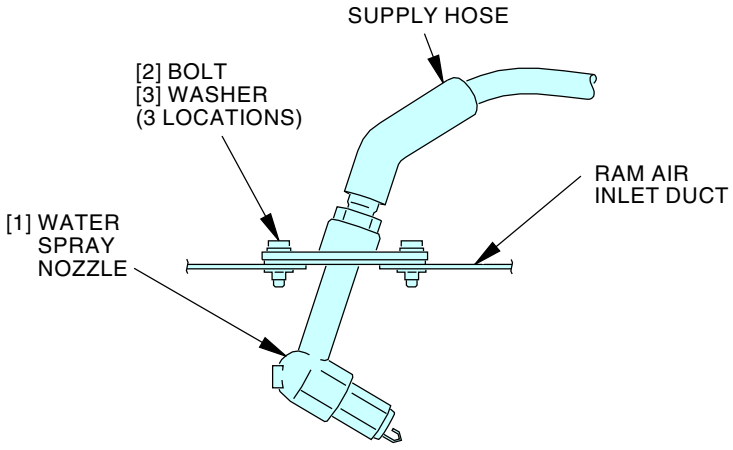


LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B

FWD



WATER SPRAY NOZZLE

C

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Water Spray Nozzle Installation
Figure 401/21-52-05-990-801 (Sheet 2 of 2)

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TASK 21-52-05-400-801

3. Water Spray Nozzle Installation

(Figure 401)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Nozzle	21-52-05-01-010	ARO ALL

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Water Spray Nozzle Installation

SUBTASK 21-52-05-420-001

(1) Carefully put the water spray nozzle [1] in its position in the ram air inlet duct.

(a) Make sure the offset hole in the water spray nozzle [1] aligns with the offset hole in the ram air inlet duct.

SUBTASK 21-52-05-420-002

(2) Install the bolts [2] and the washers [3].

SUBTASK 21-52-05-420-003

(3) Connect the supply hose to the water spray nozzle [1].

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-05-410-001

(1) If the water spray nozzle [1]

for the right cooling pack that was removed, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-05-410-002

(2) If the water spray nozzle [1]

for the left cooling pack that was removed, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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FAN INLET AND DIFFUSER HOUSING (FIDH) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the fan inlet and diffuser housing (FIDH)

(2) An installation of the fan inlet and diffuser housing (FIDH).

B. The fan inlet and diffuser housing will be called the FIDH throughout this procedure.

TASK 21-52-06-000-801

2. Fan Inlet and Diffuser Housing (FIDH) Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (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-4127	Durometer Part #: H-1000-X Supplier: 30878
STD-765	Scraper - Plastic

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Removal

SUBTASK 21-52-06-860-002

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-06-010-001

(2) To get access to the FIDH [1]

for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-06-010-002

(3) To get access to the FIDH [1]

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for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

F. Fan Inlet and Diffuser Housing (FIDH) Removal

SUBTASK 21-52-06-020-001

(1) Remove the clamp [6] from the flexible boot that attaches the FIDH [1] to the fan bypass check valve.

SUBTASK 21-52-06-020-002

(2) Move the flexible boot away from the fan bypass connector duct on the FIDH [1].

SUBTASK 21-52-06-200-001

(3) Inspect the flexible boot as follows:

(a) Inspect the flexible boot for any visible cracks.

(b) Measure the height of the flexible boot.

(c) If visible cracks of any length are found or the height of the flexible boot is not a minimum of 6.6 inches, replace the boot.

(d) Measure the Shore A hardness of the flexible boot as follows:

1) Loosen the outboard clamp [6] and slide it inboard.

2) Use a durometer, COM-4127 to determine the Shore A hardness in the areas where the tandem clamps contact the boot.

3) If the measured Shore A hardness values are 62 or greater in the contact areas where the tandem clamps contact the boot, replace the flexible boot.

SUBTASK 21-52-06-020-003

(4) Remove the twelve screws [12] and the washers [11] that connect the FIDH [1] to the dual heat exchanger.

SUBTASK 21-52-06-020-004

(5) Remove the coupling [7] that connects the air cycle machine to the FIDH [1].

SUBTASK 21-52-06-020-005

(6) Remove the clamp [5] from the flexible hose that connects the FIDH [1] to the ram air exhaust duct.

SUBTASK 21-52-06-020-006

(7) Move the sleeve that connects the FIDH [1] to the ram air exhaust duct away from the FIDH [1].

SUBTASK 21-52-06-020-007

(8) Remove the bolt [8], washer [9] and strap [10] from the top of the FIDH [1].

SUBTASK 21-52-06-020-008

(9) Remove the bolts [2], washers [3] and nuts [4] from the support rods at the aft end of the FIDH [1].

SUBTASK 21-52-06-020-009

(10) Remove the FIDH [1].

NOTE: To remove the FIDH [1] you must push the FIDH [1] up and then outboard. This will allow the flange connector to disengage from the primary heat exchanger flange.

(a) If the FIDH [1] will be replaced, remove the flange connector [13] from the FIDH.

NOTE: Save the flange connector and the fasteners for installation on the new FIDH.

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(b) If the FIDH [1] is to be replaced, Use a plastic scraper, STD-765 to remove the identification plate and the adhesive backing from the FIDH [1].

——— END OF TASK ———

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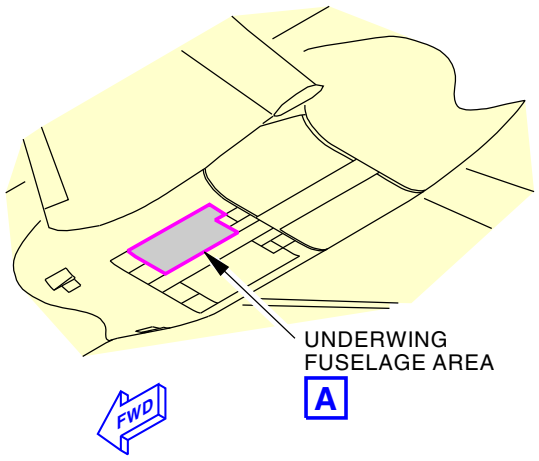

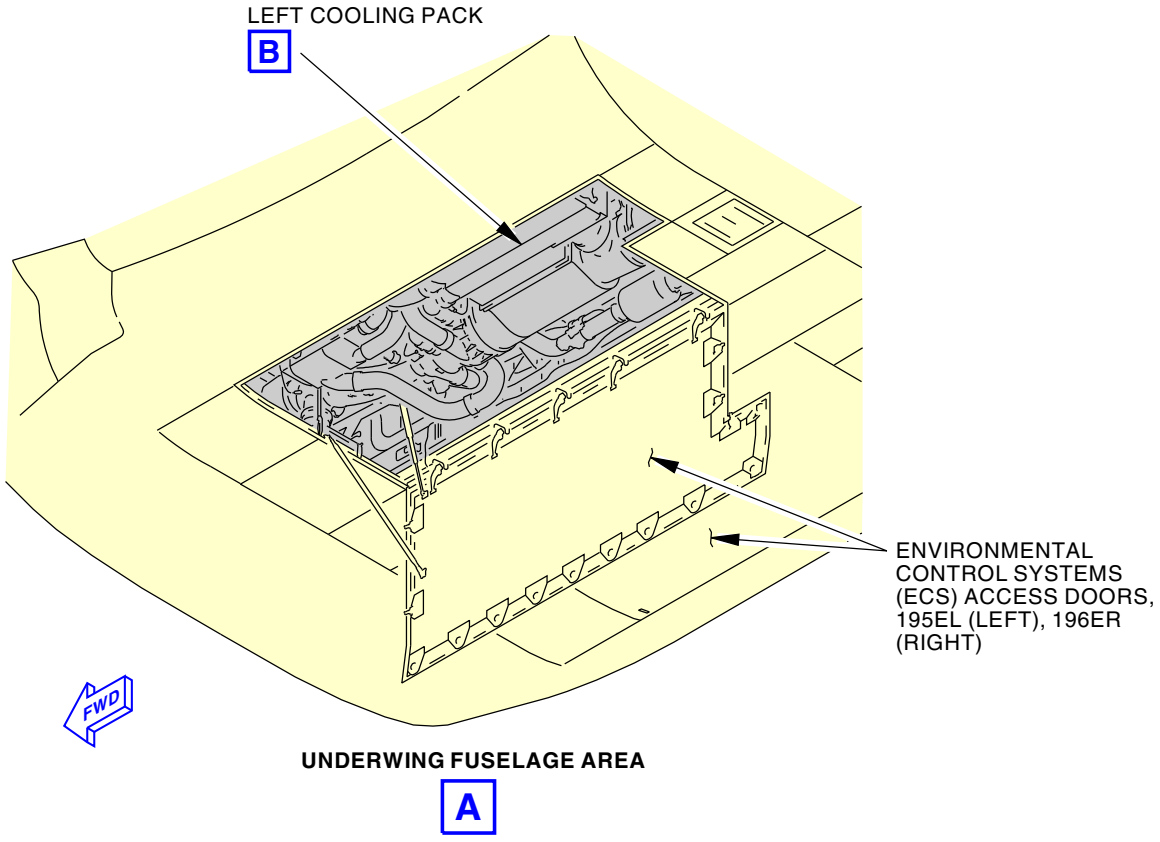

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Fan Inlet and Diffuser Housing (FIDH) Installation
Figure 401/21-52-06-990-801 (Sheet 1 of 4)

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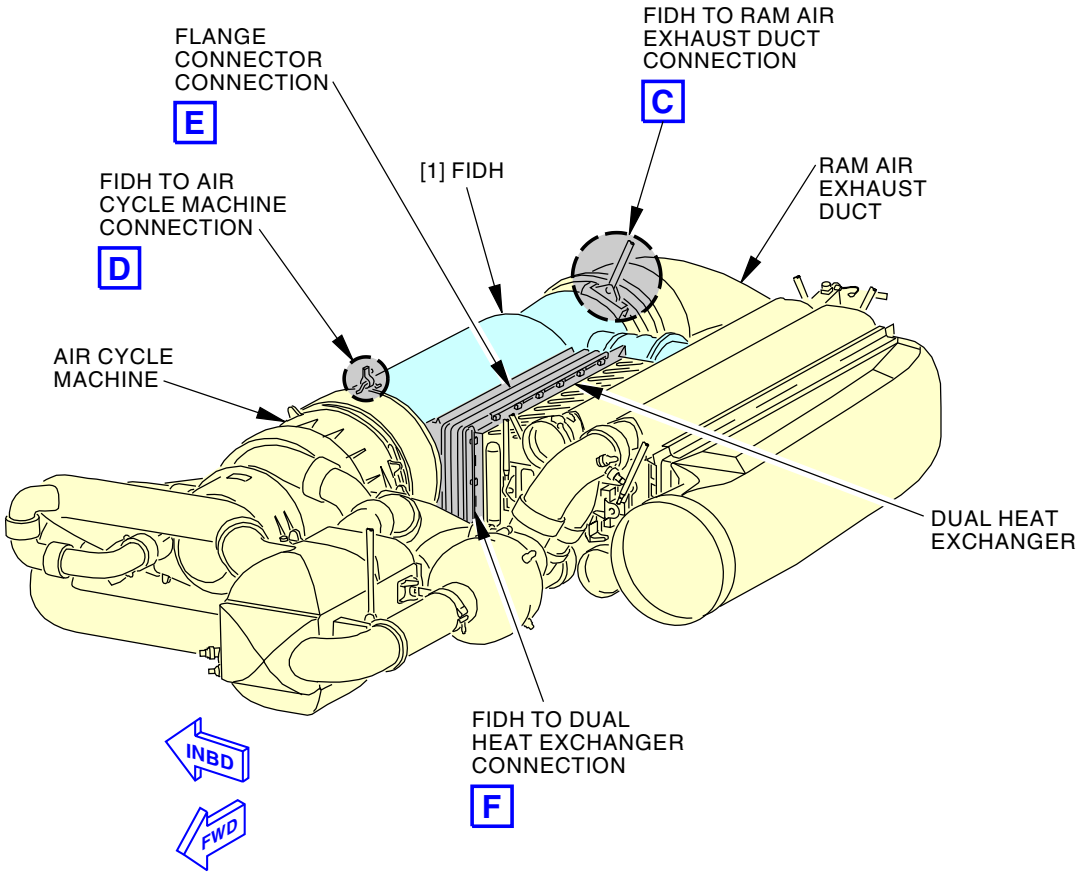

LEFT COOLING PACK
(RIGHT COOLING PACK EQUIVALENT)

B

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Fan Inlet and Diffuser Housing (FIDH) Installation
Figure 401/21-52-06-990-801 (Sheet 2 of 4)

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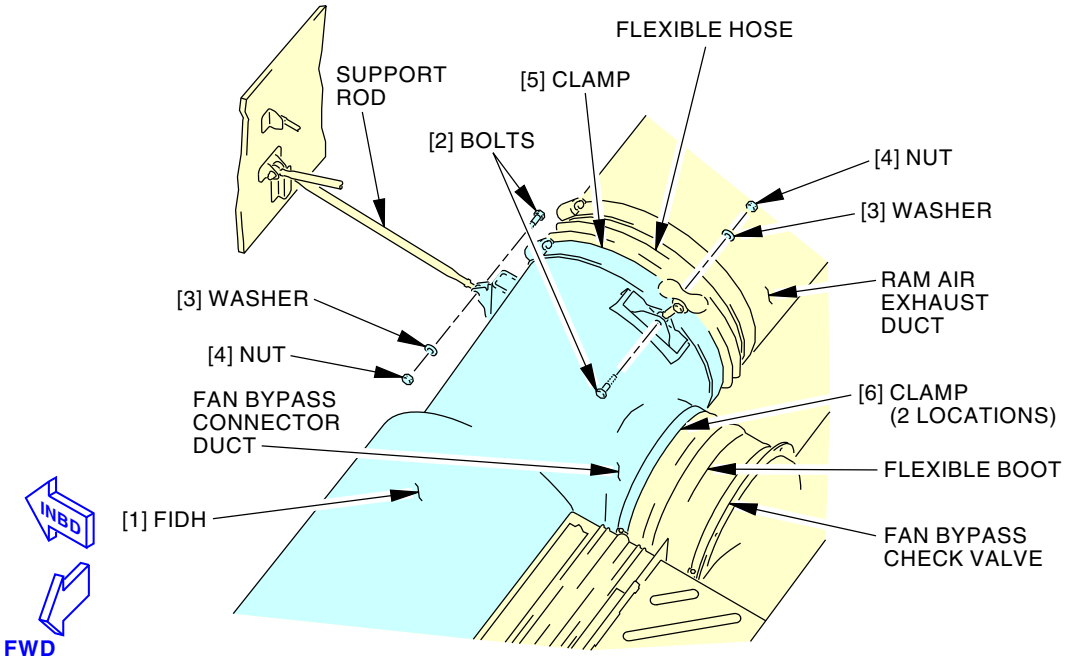
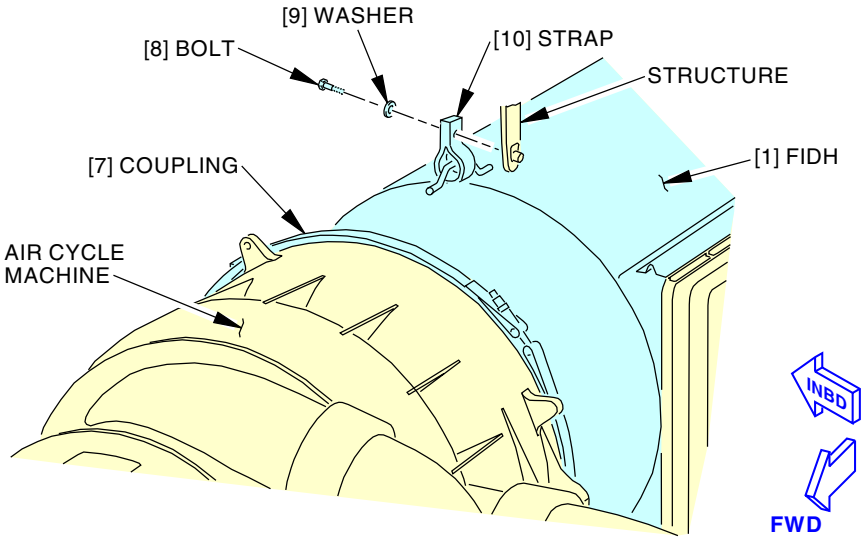


FIDH TO RAM AIR EXHAUST DUCT CONNECTION

C



FIDH TO AIR CYCLE MACHINE CONNECTION

D

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Fan Inlet and Diffuser Housing (FIDH) Installation
Figure 401/21-52-06-990-801 (Sheet 3 of 4)

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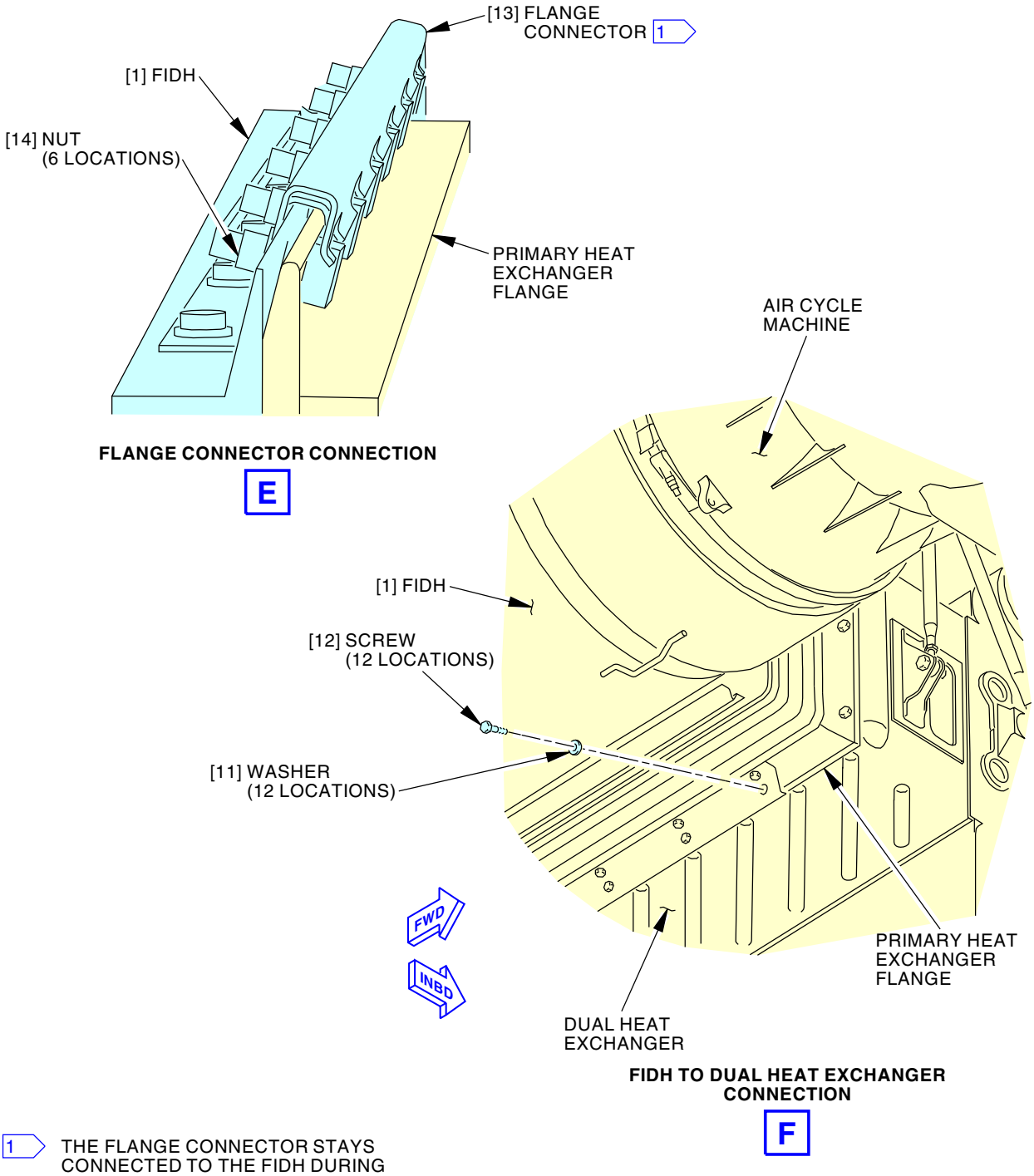

Fan Inlet and Diffuser Housing (FIDH) Installation
Figure 401/21-52-06-990-801 (Sheet 4 of 4)

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TASK 21-52-06-400-801

3. Fan Inlet and Diffuser Housing (FIDH) Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)

B. Tools/Equipment

Reference	Description
STD-12595	Torque Wrench - 1/4" Square Drive (35-50 in-lb)

C. Consumable Materials

Reference	Description	Specification
A50414	Adhesive - Silicone Rubber - RTV 108 (Clear)	BAC5010 Type 60 Class A Grade 2 / MIL-A-46106 Type 1
B50201	Wipe - Alcohol (Isopropyl Alcohol)	
D00669	Multi-Purpose, Moly-Lithium Type, Lubriplate Mo-Lith No. 2	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	FIDH	21-52-00-01-427	ARO ALL

E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

G. Fan Inlet and Diffuser Housing (FIDH) Installation

SUBTASK 21-52-06-420-013

(1) If the FIDH [1] was replaced, install the flange connector [13] on the new FIDH [1].

(a) Tighten the nuts [14] to 50 in-lb (5.65 N·m)-80 in-lb (9.04 N·m).

SUBTASK 21-52-06-420-015

(2) If the FIDH [1] was replaced, do these steps:

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WARNING

USE ISOPROPYL ALCOHOL, TT-I-735 OR ASTM D770, CORRECTLY. ISOPROPYL ALCOHOL IS FLAMMABLE, EXPLOSIVE, AND A MILD POISON. IT CAN HAVE A BAD EFFECT ON YOUR HEALTH OR SAFETY. BEFORE YOU USE THE ALCOHOL, GET THE MATERIAL SAFETY DATA SHEET FROM THE MANUFACTURER OR SUPPLIER OF THE MATERIAL AND READ IT CAREFULLY. READ THE DETAILED WARNING, W0046SE, IN THE WARNINGS REGISTRY SPM 20-00-04. BEFORE YOU USE THE ALCOHOL, PUT ON CHEMICAL-SPLASH GOGGLES. MAKE SURE THAT YOU HAVE SUFFICIENT AIRFLOW TO KEEP THE ALCOHOL FUMES BELOW THE MATERIAL-SAFETY DATA-SHEET LIMIT. IF YOU DO NOT, INJURY CAN OCCUR.

(a) Use a alcohol wipes, B50201 to clean the surfaces to be bonded on the identification plates and the fan inlet diffuser housing.

WARNING

USE SILICONE RUBBER SEALANT (ALSO KNOWN AS RTV102, RTV103, RTV106, RTV108, RTV109 SILICONE RUBBER) CORRECTLY. THE SEALANT CAN CAUSE IRRITATION TO YOUR EYES. IT CAN HAVE A BAD EFFECT ON YOUR HEALTH OR SAFETY. BEFORE YOU USE THE SEALANT, GET THE MATERIAL SAFETY DATA SHEET FROM THE MANUFACTURER OR SUPPLIER OF THE MATERIAL AND READ IT CAREFULLY. READ THE DETAILED WARNING, W0041SE, IN THE WARNING REGISTRY SPM 20-00-04. REMOVE CONTACT LENSES FROM YOUR EYES BEFORE YOU USE THE SEALANT. BEFORE YOU USE THE SEALANT, PUT ON SAFETY GLASSES AND SOLVENT-RESISTANT GLOVES. MAKE SURE THAT YOU HAVE SUFFICIENT AIRFLOW TO KEEP THE SEALANT FUMES BELOW THE MATERIAL SAFETY DATA SHEET LIMIT. IF NOT, INJURIES CAN OCCUR.

(b) Apply a thin uniform coat of RTV 108 adhesive, A50414 to the back of the identification plates.

(c) Assemble in a manner that the adhesive thickness is uniform and free of air pockets.

NOTE: Make sure that the corners and edges are flat.

(d) Retain the identification plates to the surface with tape to prohibit movement during curing.

(e) Allow the RTV 108 adhesive, A50414 to air dry for 72 hours or longer at room temperature.

(f) Remove the tape from the fan inlet diffuser housing.

SUBTASK 21-52-06-420-001

(3) Put the FIDH [1] in its position between the air cycle machine and the ram air exhaust duct.

(a) Make sure the flange connector engages the top flange of the primary heat exchanger.

(b) Make sure you align the FIDH [1] flange with the primary heat exchanger flange.

SUBTASK 21-52-06-640-001

(4) Apply a thin layer of the Lubriplate Mo-Lith No. 2 Lubricant, D00669 to the threads of the 12 screws [12].

SUBTASK 21-52-06-420-012

(5) Loosely install the 12 screws [12] and 12 washers [11].

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SUBTASK 21-52-06-420-003

(6) Install the coupling [7] to connect the FIDH [1] to the air cycle machine.

(a) Tighten the coupling [7] to 65 in-lb (7.34 N·m)-70 in-lb (7.91 N·m).

SUBTASK 21-52-06-420-004

(7) To tighten the 12 screws [12] that connect the primary heat exchanger to the fan inlet and diffuser housing, do these steps:

(a) Measure the self-locking torque that is required to turn each of the screws [12] before it touches the heat exchanger flange.

NOTE: The self-locking torque is also referred to as the run on torque.

1) If the self-locking torque for any of the screws [12] is less than 3.5 in-lb (0.40 N·m) or more than 30 in-lb (3.39 N·m), then discard that screw and install a new screw.

a) Measure the self-locking torque of the new screw while you install it.

b) If the self-locking torque of the new screw is less than 3.5 in-lb (0.40 N·m) or more than 30 in-lb (3.39 N·m), then replace the nutplate.

c) If you replaced the nutplate, measure the self-locking torque of the new screw while you install it in the new nutplate.

(b) Tighten each of the 12 screws [12] to 8 in-lb (0.90 N·m)-12 in-lb (1.36 N·m) higher than its self-locking torque.

SUBTASK 21-52-06-420-005

(8) Move the flexible hose that connects the FIDH [1] to the ram air exhaust duct onto the aft end of the FIDH [1].

SUBTASK 21-52-06-420-006

(9) Install the clamp [5] onto the flexible hose.

SUBTASK 21-52-06-420-007

(10) Move the flexible boot onto the fan bypass connector duct on the FIDH [1].

SUBTASK 21-52-06-420-014

(11) If not already done, move the outboard clamp [6] into position to secure the flexible boot to the fan bypass check valve.

SUBTASK 21-52-06-420-008

(12) Install the inboard clamp [6] onto the flexible boot.

NOTE: Each clamp [6] consists of two MS35842-16 clamps connected together.

(a) Use a 1/4" Torque Wrench, STD-12595 to determine the run-on torque needed to tighten the clamps without actually tightening the clamp on the flexible boot.

1) Do this for each screw on the two clamps that make up each clamp [6].

2) Make a record of these values.

(b) Position the two clamps [6].

(c) Make sure that the clamps [6] are aligned and are flat against the flexible boot.

(d) Tighten the screws on each clamp [6] to 20 in-lb (2.26 N·m)-25 in-lb (2.82 N·m) plus the run-on torque value as follows:

1) If the run-on torque was determined to be 5 in-lb (0.56 N·m), tighten each of the screws on the two clamps that make up clamp [6] to 25 in-lb (2.82 N·m)-30 in-lb (3.39 N·m):

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a) Use a 1/4" Torque Wrench, STD-12595 to tighten the hex heads on the clamp screws.

b) Do not over tighten the clamps as overtightening can cause damage to the flexible boots.

SUBTASK 21-52-06-420-009

(13) Do the steps that follow to install the support rods onto the FIDH [1].

(a) Put the support rods in their position on the FIDH [1].

(b) Install the bolts [2], washers [3] and nuts [4].

SUBTASK 21-52-06-420-010

(14) Install the strap [10], bolt [8] and washer [9].

H. Fan Inlet and Diffuser Housing (FIDH) Installation Test

SUBTASK 21-52-06-860-003

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-06-860-004

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-06-860-005

(3) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5 to the AUTO position.

SUBTASK 21-52-06-790-001

(4) Make sure there is no air leakage at the FIDH connections.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-06-860-001

(1) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-52-06-860-006

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-06-410-001

(3) If the FIDH [1]

for the left cooling pack that was removed, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-06-410-002

(4) If the FIDH [1]

for the right cooling pack that was removed, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

END OF TASK

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FAN INLET AND DIFFUSER HOUSING (FIDH) - REPAIRS

1. General

A. This procedure has one task to repair the tube seal located at the forward end of the fan inlet and diffuser housing (FIDH).

B. This repair procedure is used to repair a tube seal that may have been damaged during the removal or installation of the air cycle machine (ACM).

TASK 21-52-06-300-801

2. Fan Inlet and Diffuser Housing (FIDH) Seal Repair

(Figure 801)

A. Tools/Equipment

Reference	Description
STD-1064	Scraper - Phenolic, Hard Resin

B. Consumable Materials

Reference	Description	Specification
A00933	Sealant - Silicone Rubber - RTV 159	
B00130	Alcohol - Isopropyl	TT-I-735
C00064	Coating - Aluminum Chemical Conversion	BAC5719 Type II Class A (MIL-DTL-5541 Class 1A)
C00511	Primer - Adhesion	BAC5010 Type 68
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Tube seal	21-52-06-01-055	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

E. Prepare the Seal Surface

SUBTASK 21-52-06-140-001

(1) Use a hard resin phenolic scraper, STD-1064 or equivalent to remove the damaged tube seal [1] from the FIDH flange.

SUBTASK 21-52-06-160-001

(2) Clean the seal surface with a clean cotton wiper, G00034 that is wet with alcohol, B00130.

(a) Immediately rub the seal surface dry with a clean cotton wiper, G00034.

SUBTASK 21-52-06-370-001

(3) If you can see bare metal, do these steps to repair the seal surface:

(a) Use a brush to apply a thin layer of coating, C00064.

(b) Use a heat gun or equivalent to dry the coating, C00064.

SUBTASK 21-52-06-370-002

(4) Apply a thin layer of primer, C00511 to the seal surface on the flange.

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(a) Do not apply primer to the tube seal [1].

(b) Let the primer dry for approximately one hour or longer.

F. Tube Seal Repair

SUBTASK 21-52-06-820-001

(1) Do these steps to check the fit of the tube seal [1]:

(a) If necessary, cut the tube seal material to a length of approximately 36 in. (914 mm).

(b) Temporarily install the tube seal [1] on the flange.

(c) Cut any unwanted material from the end of the tube seal [1].

1) Make sure the gap between the ends of the tube seal [1] is 0.150 in. (3.81 mm) or less.

2) Make sure the gap between the edge of the tube seal [1] and the lip of the flange is 0.060 in. (1.52 mm) or less.

(d) Remove the tube seal [1] from the flange.

SUBTASK 21-52-06-390-001

(2) Apply a bead of RTV 159 sealant, A00933 to the area of the flange where the tube seal [1] will be installed.

SUBTASK 21-52-06-420-011

(3) Install the tube seal [1] in the necessary position on the flange of the FIDH.

(a) Make sure the gap between the ends of the tube seal [1] is 0.150 in. (3.81 mm) or less.

(b) Make sure the gap between the edge of the tube seal [1] and the lip of the flange is 0.060 in. (1.52 mm) or less.

1) You can fill the gap with sealant if necessary.

(c) Apply even pressure to the tube seal [1] to set it against the flange.

(d) Remove any unwanted adhesive from the tube seal [1].

(e) Make sure you let the adhesive cure the minimum time necessary.

——— END OF TASK ———

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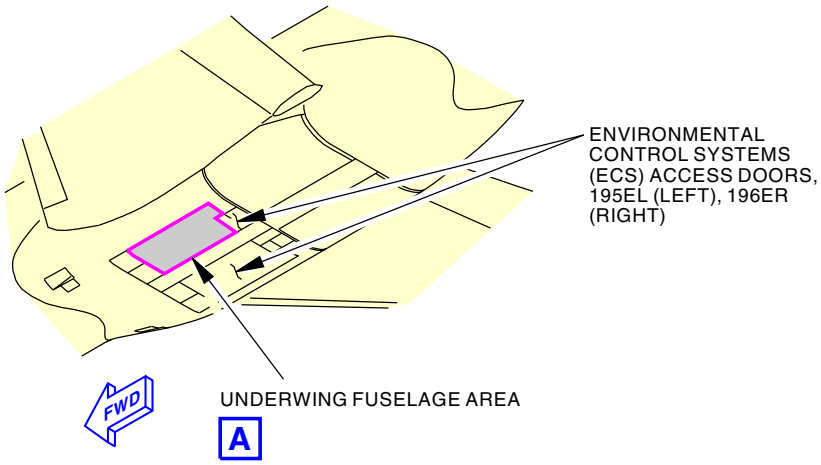

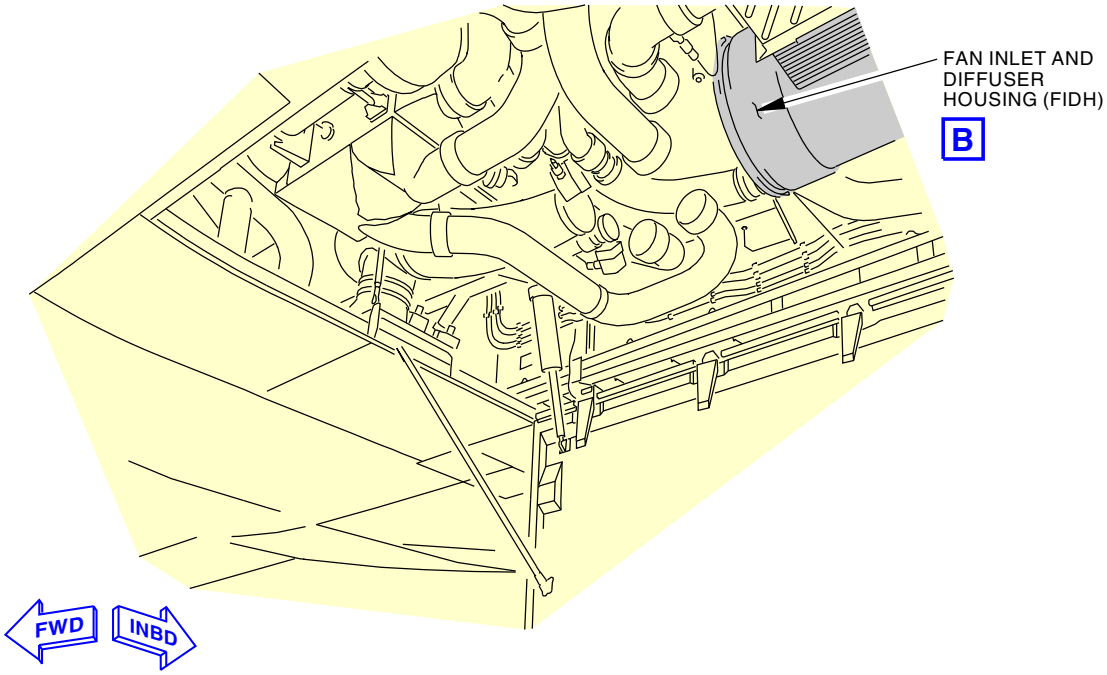

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Fan Inlet and Diffuser Housing (FIDH) Tube Seal Repair
Figure 801/21-52-06-990-802 (Sheet 1 of 2)

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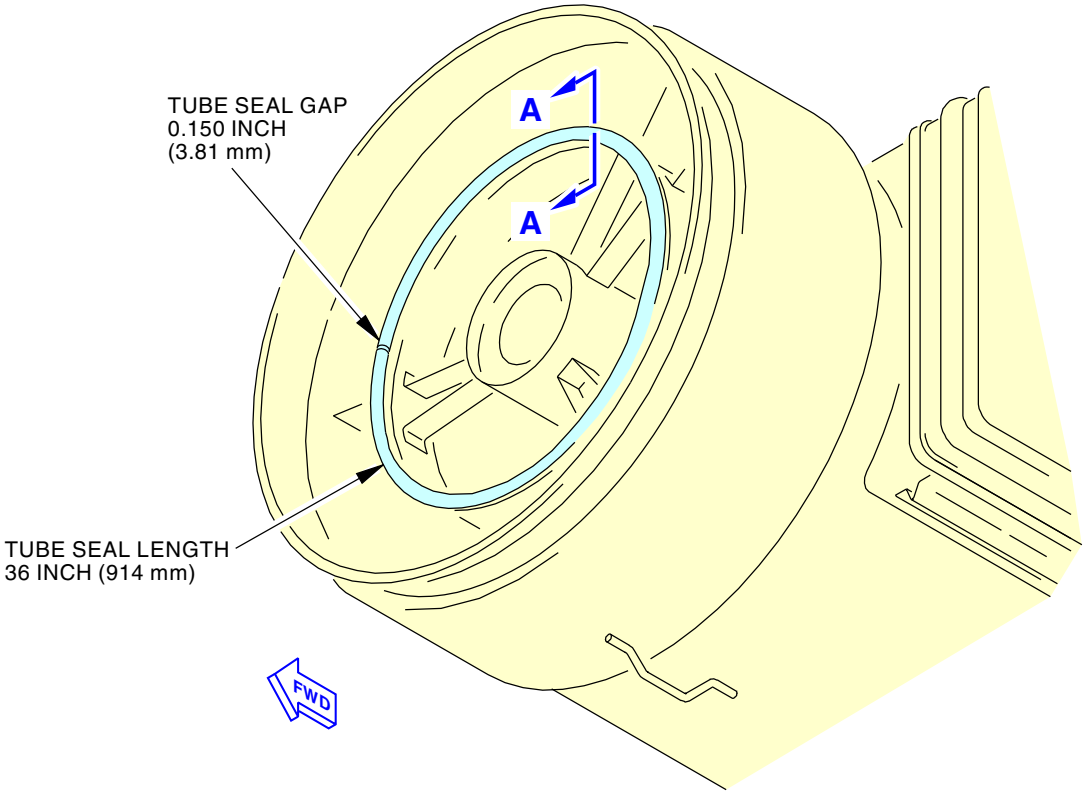
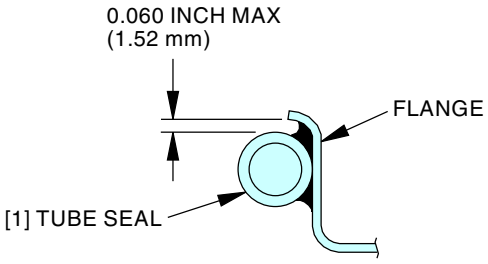


FAN INLET DIFFUSER HOUSING (FIDH)

B



A-A

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Fan Inlet and Diffuser Housing (FIDH) Tube Seal Repair
Figure 801/21-52-06-990-802 (Sheet 2 of 2)

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COOLING PACK OUTLET DUCT/MUFFLER ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the outlet duct/muffler assembly for the left and right cooling packs.

(2) Installation of the outlet duct/muffler assembly for the left and right cooling packs.

TASK 21-52-07-000-804-002

2. Outlet Duct/Muffler Assembly Removal

(Figure 401)

A. References

Reference	Title
21-52-45-000-801	Pack Discharge Temperature Sensor Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-07-860-010-002

WARNING REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-07-010-009-002

(2) To get access to the outlet duct/muffler assembly for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-07-010-010-002

(3) To get access to the outlet duct/muffler assembly for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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E. Outlet Duct/Muffler Assembly Removal

SUBTASK 21-52-07-020-032-002

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the strut assembly [21] from the fitting on the underwing fairing platform assembly:

NOTE: This will allow you to have sufficient clearance to remove the outlet duct/muffler assembly.

(a) Remove the bolt [18], washer [19], bushing [20], washer [22], and nut [23].

(b) Move the strut assembly [21] out of the way and use a safety wire to keep it in a stowed position so that it does not swing down and hit a person.

SUBTASK 21-52-07-020-033-002

(2) Disconnect the electrical connector from each pack discharge temperature sensor [12].

SUBTASK 21-52-07-020-034-002

(3) If you need to replace the tee duct [1] of the outlet duct/muffler assembly, then remove each pack discharge temperature sensor [12].

(a) Keep the sensors for installation on the new outlet duct/muffler assembly.

(b) To remove each pack discharge temperature sensor [12], do this task: Pack Discharge Temperature Sensor Removal, TASK 21-52-45-000-801.

SUBTASK 21-52-07-020-035-002

(4) Disconnect the two lower tie rod assemblies [30] from the two fittings on the tee duct [1]:

(a) Remove the bolt [28], bushing [29], washer [31] and nut [32] at each fitting.

(b) Make a note of the location where each end of the bonding jumper [41] attaches to the conditioned air check valve and the pack outlet muffler [2].

(c) Remove the bolt [39], washer [36], washer [40] that attach each end of the bonding jumper [41] to the conditioned air check valve and the pack outlet muffler [2].

(d) Move each tie rod assembly [30] out of the way.

SUBTASK 21-52-07-020-036-002

(5) Disconnect the two upper tie rod assemblies [9] from the two fittings on the tee duct [1]:

(a) Remove the bolt [7], bushing [8], washer [10] and nut [11] at each fitting.

(b) Move each tie rod assembly [9] out of the way.

SUBTASK 21-52-07-010-011-002

(6) Do these steps to remove the gusset assembly [4] from the ECS bay:

(a) Remove the bolt [13], washer [14], bushing [15], washer [16] and nut [17] at each of the two attach points which connect the gusset assembly to the pack outlet muffler [2].

(b) Remove the bolt [24], washer [25], bushing [26] and nut [27] at each of the two attach points which connect the gusset assembly to the underwing fairing platform assembly.

(c) Remove the gusset assembly [4] from the ECS bay.

SUBTASK 21-52-07-020-037-002

(7) Remove the coupling [3] to disconnect the outlet duct/muffler assembly from the air cycle machine.

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SUBTASK 21-52-07-020-038-002

(8) Disconnect the outlet duct/muffler assembly from the check valve duct assembly:

(a) Remove the coupling [5].

(b) Move the sleeve [6] down onto the check valve duct assembly.

SUBTASK 21-52-07-020-039-002

(9) Disconnect the outlet duct/muffler assembly from the conditioned air check valve:

(a) Remove the bolt [35] and the washer [36], at 12 locations, from the conditioned air check valve.

SUBTASK 21-52-07-020-040-002

(10) Remove the outlet duct/muffler assembly.

SUBTASK 21-52-07-420-038-002

(11) Install covers on the duct openings to prevent the entry of unwanted materials.

F. Disassemble the Outlet Duct/Muffler

SUBTASK 21-52-07-020-041-002

(1) To remove the pack outlet muffler [2] from the tee duct [1], do these steps:

(a) Mark the position of the pack outlet muffler [2] and the tee duct [1]. The muffler must be reinstalled in the same position.

1) Make sure to put an equivalent mark on the new component when a new muffler or tee duct will be installed.

(b) Remove the bolts [35] and washers [36] from the flange on the pack outlet muffler [2].

(c) Remove the pack outlet pack outlet muffler [2] from the tee duct [1].

NOTE: The duct on the muffler extends approximately 6 in. (152.4 mm) into the tee duct.

SUBTASK 21-52-07-020-042-002

(2) To remove the boot [33] and boot [34] from the tee duct [1], do these steps:

(a) Remove the bolt [35] and washer [36], at 24 locations, from the flanges on the tee duct [1].

(b) Remove the boot [33] and boot [34] from the tee duct [1].

(c) If the boots are to be replaced, remove the backing plates [38] from the boot [33], and the backing plates [37] from the boot [34].

——— END OF TASK ———

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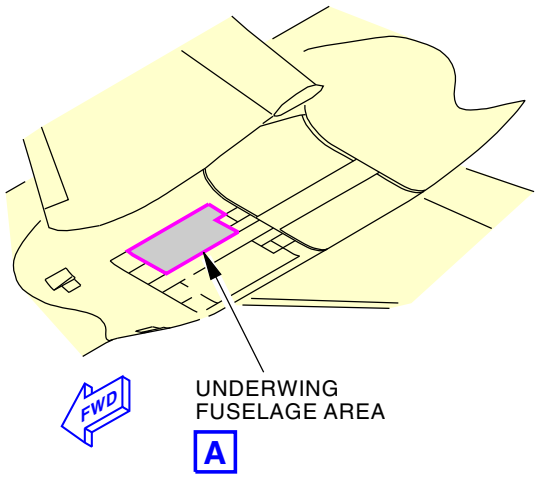

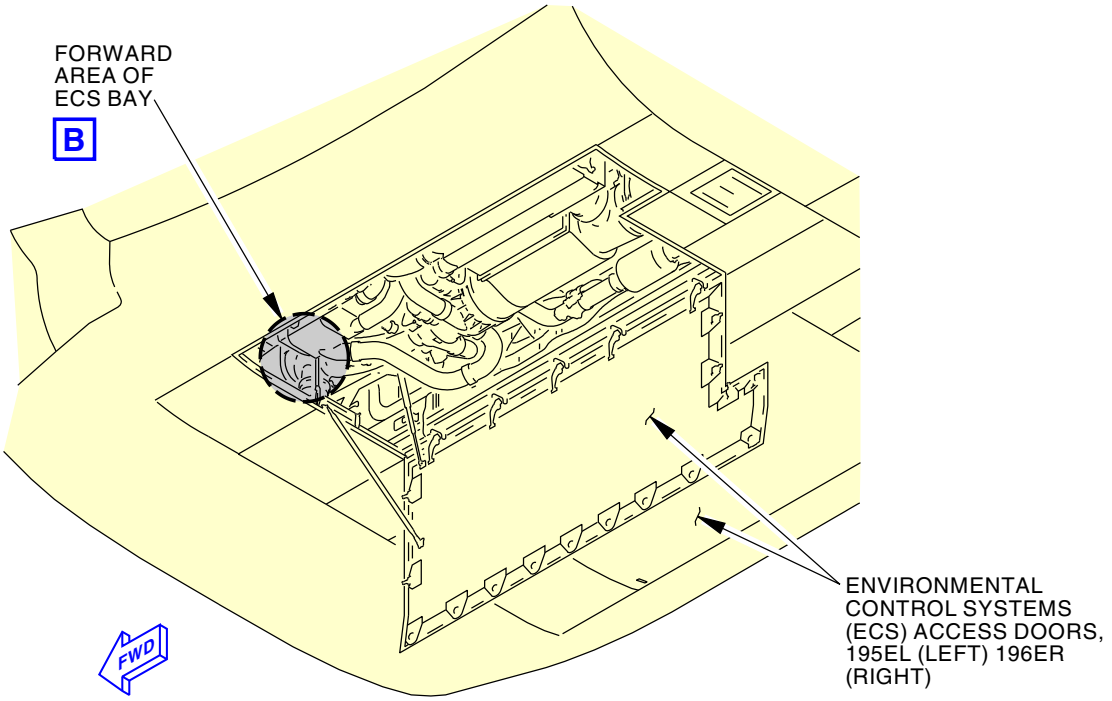

UNDERWING FUSELAGE AREA

A

NOTE:

LEFT COOLING PACK IS SHOWN, RIGHT COOLING PACK IS EQUIVALENT.

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Cooling Pack Outlet Duct/Muffler Installation
Figure 401/21-52-07-990-804-002 (Sheet 1 of 4)

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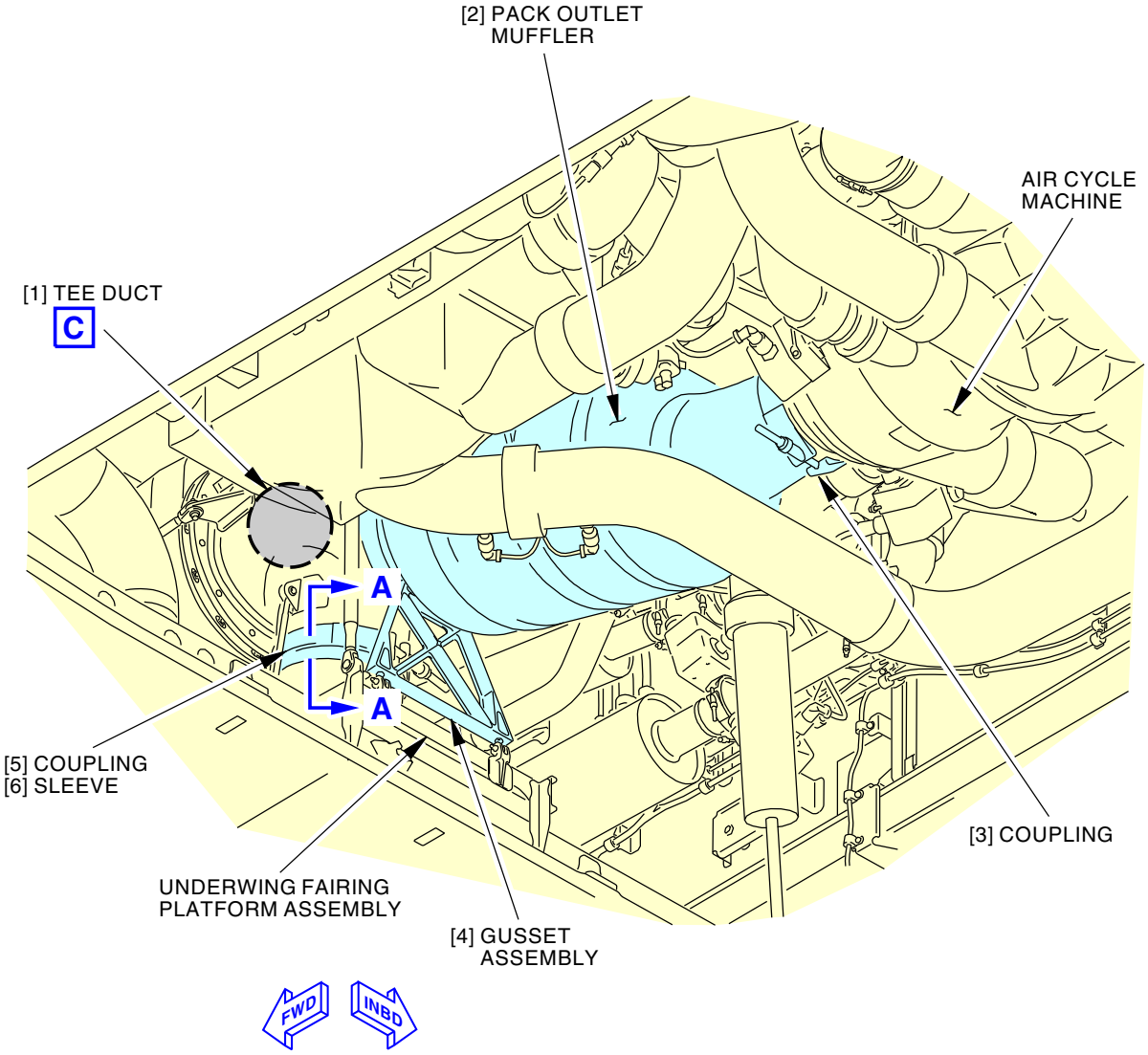

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Cooling Pack Outlet Duct/Muffler Installation
Figure 401/21-52-07-990-804-002 (Sheet 2 of 4)

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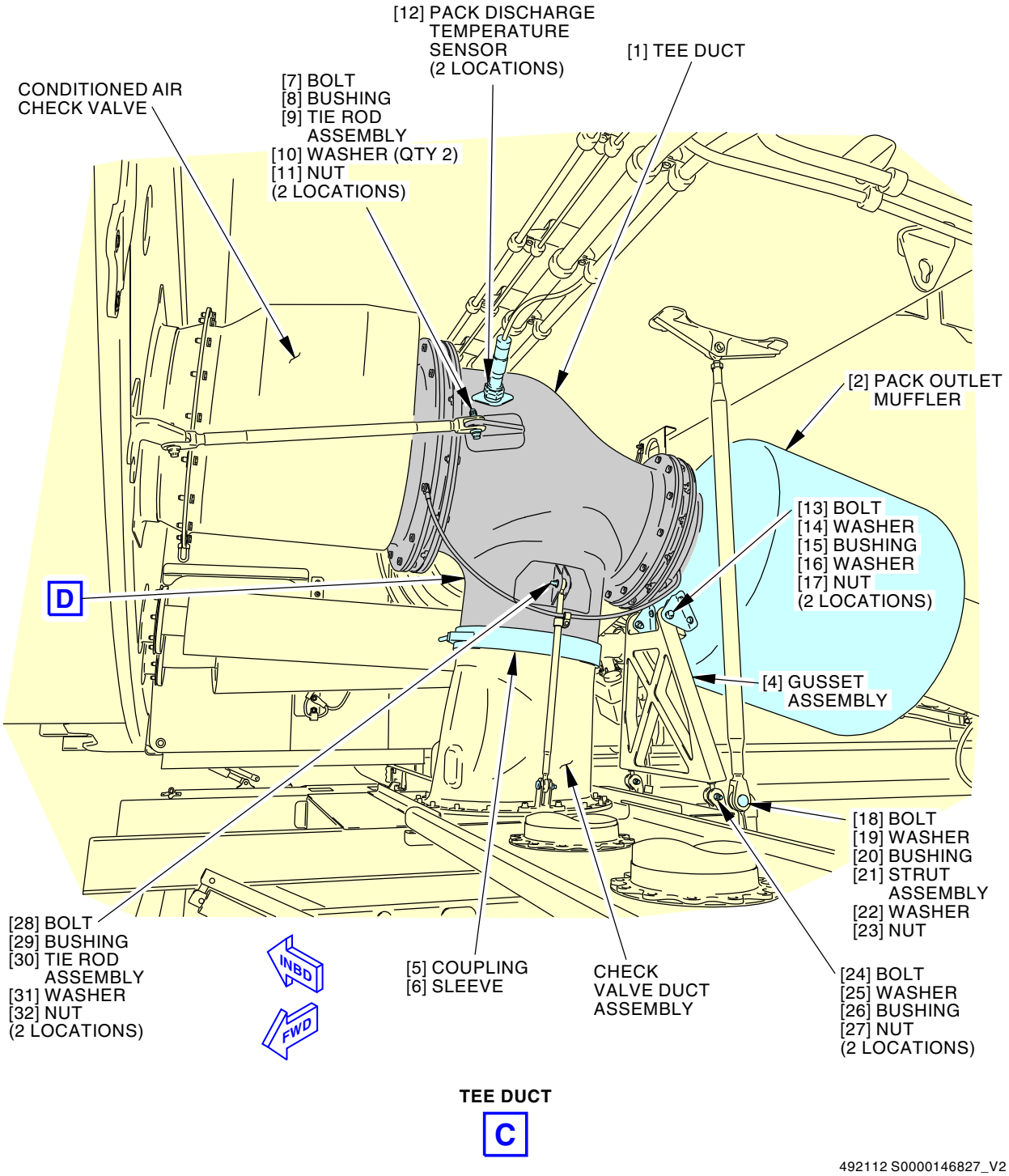

Cooling Pack Outlet Duct/Muffler Installation
Figure 401/21-52-07-990-804-002 (Sheet 3 of 4)

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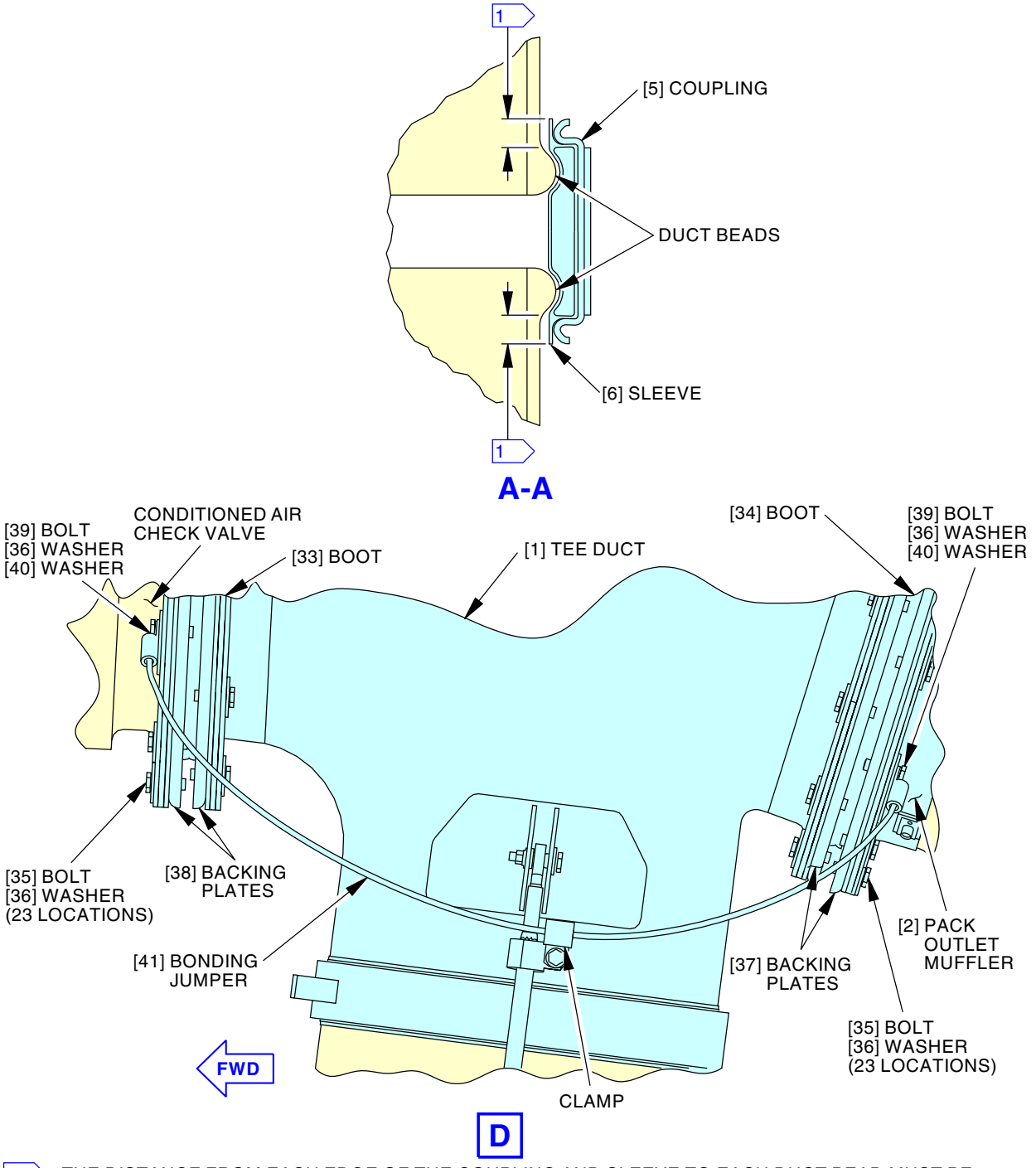

1 THE DISTANCE FROM EACH EDGE OF THE COUPLING AND SLEEVE TO EACH DUCT BEAD MUST BE EQUAL ALL AROUND THE CIRCUMFERENCE OF THE DUCT.

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Cooling Pack Outlet Duct/Muffler Installation
Figure 401/21-52-07-990-804-002 (Sheet 4 of 4)

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TASK 21-52-07-400-803-002

3. Outlet Duct/Muffler Assembly Installation

(Figure 401)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-52-45-400-801	Pack Discharge Temperature Sensor Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Tee duct	21-52-07-03-470	ARO ALL
		21-52-07-03-515	ARO ALL
2	Pack outlet muffler	21-52-07-03-355	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Assemble the Outlet Duct/Muffler

SUBTASK 21-52-07-020-043-002

(1) To install the boot [33] and boot [34] on the tee duct [1], do these steps:

NOTE: Do these steps for each of the two boots.

(a) Put the backing plate [37] in their positions on the boot [34].

(b) Put the backing plate [38] in their positions on the boot [33].

(c) Put the boot in its positions on the tee duct [1].

(d) Align the holes in the boot and backing plate with the holes on the flange of the tee duct [1].

(e) Install the bolts [35] and washer [36], on the flange of the tee duct [1].

SUBTASK 21-52-07-020-044-002

(2) To install the pack outlet muffler [2] in the tee duct [1], do these steps:

(a) Move the end of pack outlet muffler [2] with the flange, into the tee duct [1].

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(b) Use the marks you made to align the pack outlet muffler [2] in the correct position on the tee duct [1].

NOTE: The muffler must be installed in the position it was in when you removed it. If it is not in the same position the outlet duct/muffler assembly can not be installed in the ECS bay.

(c) Install the bolts [35] and washers [36] to connect the muffler to the tee duct [1].

1) Make sure you do not install a bolt and washer in the location for the bonding jumper attach point.

G. Outlet Duct/Muffler Assembly Installation

SUBTASK 21-52-07-020-045-002

(1) Remove the covers from the duct openings.

SUBTASK 21-52-07-210-006-002

(2) Make sure there are no unwanted materials in the ducts.

SUBTASK 21-52-07-420-039-002

(3) Put the pack outlet duct/muffler assembly (tee duct [1] and pack outlet muffler [2]) in its position between the conditioned air check valve, the check valve duct assembly, and the air cycle machine.

SUBTASK 21-52-07-420-040-002

(4) Connect the two upper tie rod assemblies [9] to the two fittings on the tee duct [1]:

(a) Move each tie rod assembly [9] into its fitting on the tee duct.

(b) If a tie rod assembly [9] does not align with the fitting, do these steps to adjust the length of the tie rod assembly [9]:

1) Cut and remove the lockwire from the jamnut on the rod end.

2) Loosen the jamnut.

3) Turn the rod end to adjust the length of the tie rod assembly.

4) Tighten the jamnut.

5) Install a new lockwire to the jamnut.

(c) Install the bolt [7], bushing [8], washer [10], and nut [11] at each fitting.

SUBTASK 21-52-07-420-041-002

(5) Connect the two lower tie rod assemblies [30] to the two fittings on the tee duct [1]:

(a) Move each tie rod assembly [30] into its fitting on the tee duct.

(b) If a tie rod assembly [30] does not align with the fitting, do these steps to adjust the length of the tie rod assembly [30]:

1) Cut and remove the lockwire from the jamnut on the rod end.

2) Loosen the jamnut.

3) Turn the rod end to adjust the length of the tie rod assembly.

4) Tighten the jamnut.

5) Install a new lockwire to the jamnut.

(c) Install the bolt [28], bushing [29], washer [31], and nut [32] at each fitting.

SUBTASK 21-52-07-010-012-002

(6) Do these steps to install the gusset assembly [4]:

(a) Put the gusset assembly [4] in its position in the ECS bay.

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(b) Put the bushings [15] in the two fittings on the pack outlet muffler [2].

(c) Install the bolt [13], washer [14], washer [16] and nut [17] at each of the two fittings to connect the gusset assembly to the muffler assembly.

(d) Put the bushing [26] in the two fittings on the underwing fairing platform assembly.

(e) Install the bolt [24], washer [25] and nut [27] at each of the two fittings to connect the gusset assembly to the underwing fairing platform assembly.

SUBTASK 21-52-07-420-042-002

(7) Loosely install the coupling [3] onto the pack outlet muffler [2] and the air cycle machine.

SUBTASK 21-52-07-420-043-002

(8) Connect the tee duct [1] to the check valve duct assembly:

(a) Move the sleeve [6] over the duct ends of the check valve duct assembly and the tee duct [1].

(b) Loosely install the coupling [5] onto the sleeve [6].

(c) Make sure the coupling [5] and the sleeve [6] are installed equally over the duct beads.

SUBTASK 21-52-07-420-044-002

(9) Connect the tee duct [1] to the conditioned air check valve:

(a) Align the holes in the backing plate [38] with the holes in the boot [33] and the check valve.

(b) Install the bolts [35] and washers [36] to connect the muffler to the tee duct [1].

1) Make sure you do not install a bolt and washer in the location for the bonding jumper attach point.

SUBTASK 21-52-07-420-045-002

(10) Tighten the nut on the coupling [3] from 70 in-lb (7.9 N·m) to 90 in-lb (10.2 N·m).

SUBTASK 21-52-07-420-046-002

(11) Tighten the nut on coupling [5] from 45 in-lb (5.1 N·m) to 55 in-lb (6.2 N·m).

(a) Make sure the coupling [5] and the sleeve [6] are still installed equally over the duct beads.

SUBTASK 21-52-07-420-047-002

(12) If you removed the pack discharge temperature sensors [12] from the outlet duct/muffler assembly, do this task: Pack Discharge Temperature Sensor Installation, TASK 21-52-45-400-801.

SUBTASK 21-52-07-420-048-002

(13) Connect the electrical connector to each pack discharge temperature sensor [12].

SUBTASK 21-52-07-420-049-002

(14) Connect the strut assembly [21] to the fitting on the underwing fairing platform assembly:

(a) Move the strut assembly [21] from its stowed position into the fitting.

(b) Apply the grease, D00633 to the bolt [18].

(c) Install the bolt [18], washer [19], bushing [20], washer [22] and nut [23].

SUBTASK 21-52-07-420-053

(15) Connect the bonding jumper [41] bonding jumper to the pack outlet pack outlet muffler [2] and the conditioned air check valve:

(a) Install the bolt [39], washer [36], and washer [40] which attach the bonding jumper [41] to the pack outlet muffler [2].

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(b) Install the bolt [39], washer [36], and washer [40] which attach the bonding jumper [41] to the conditioned air check valve.

H. Do a Leakage Check of the Outlet Duct/Muffler Assembly

SUBTASK 21-52-07-860-011-002

(1) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-52-07-790-004-002

(2) Make sure there is no air leakage where the outlet duct/muffler assembly connects to the conditioned air check valve, the check valve duct assembly, and the air cycle machine.

(a) If there is air leakage, make adjustments to the coupling/sleeve and clamp/sleeve connections until there is no air leakage.

1) Before you make adjustments to the connections, stop the operation of the cooling pack or the ground air source which supplies the conditioned air to the airplane.

SUBTASK 21-52-07-860-012-002

(3) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-07-410-007-002

(1) If you installed the outlet duct/muffler assembly for the left cooling pack, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-07-410-008-002

(2) If you installed the outlet duct/muffler assembly for the right cooling pack, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

END OF TASK

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FAN BYPASS CHECK VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A removal of the fan bypass check valve

(2) An installation of the fan bypass check valve.

C. There is one fan bypass check valve for each cooling pack. The fan bypass check valve is installed between the Fan Inlet and Diffuser Housing (FIDH) and the dual heat exchanger. You can get access to the fan bypass check valve through the Environmental Control System (ECS) access doors. The fan bypass check valve will be called the bypass check valve throughout the procedure.

D. There are two types of FIDH: composite or metal. Work instructions are given for each type of FIDH.

TASK 21-52-10-000-801

2. Fan Bypass Check Valve Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (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-4127	Durometer Part #: H-1000-X Supplier: 30878

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Removal

SUBTASK 21-52-10-860-002

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

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SUBTASK 21-52-10-010-001

(2) To get access to the fan bypass check valve [1] for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-10-010-002

(3) To get access to the fan bypass check valve [1] for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

F. Fan Bypass Check Valve Removal

ARO 001-016 PRE SB 777-21-0188

SUBTASK 21-52-10-030-001

(1) Remove the clamps [2] from the flexible boot [3].

ARO 017-999; ARO 001-016 POST SB 777-21-0188

SUBTASK 21-52-10-020-006

(2) Remove the clamps [9] from the flexible boot [8].

ARO 001-016 PRE SB 777-21-0188

SUBTASK 21-52-10-020-001

(3) Remove the flexible boot [3].

ARO 017-999; ARO 001-016 POST SB 777-21-0188

SUBTASK 21-52-10-020-007

(4) Remove the flexible boot [8].

ARO ALL

SUBTASK 21-52-10-020-002

(5) Remove the screws [4] and washers [5] that attach the fan bypass check valve [1] to the dual heat exchanger flange.

SUBTASK 21-52-10-020-003

(6) Remove the fan bypass check valve [1].

SUBTASK 21-52-10-020-004

(7) Put a cover on the duct openings.

ARO 001-016

SUBTASK 21-52-10-210-001

(8) Examine the fan bypass check valve [1]:

(a) If the fan bypass check valve [1] has one or more of these conditions, replace the fan bypass check valve [1] with a new fan bypass check valve [1]:

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ARO 001-016 (Continued)

1) The fan bypass check valve [1] has missing parts.

NOTE: The check valve (p/n 810205-1 L1) has spring roller assemblies that return each of the check valve flappers to the closed position. Tests have shown that the spring roller assembly is not necessary for correct operation of the check valve. Therefore, on check valves (p/n 810205-1 L1) it is a satisfactory condition if one or more spring roller assemblies is missing from the check valve. It is not necessary to replace the check valve because of a missing or broken spring roller assembly.

NOTE: The check valves (p/n 810205-2 and p/n 810205-1 L2) do not have spring roller assemblies installed with each flapper. The check valve (p/n 810205-2) has non-metallic bumpers to prevent damage or wear on the flappers.

2) Some parts of the fan bypass check valve [1] are not attached correctly.

3) The fan bypass check valve [1] has cracks.

4) The fan bypass check valve [1] has corrosion.

5) The flappers do not move freely.

6) The flappers show signs of wear.

7) The flapper hinge pins show signs of wear.

8) The check valve P/N 810205-2 has one or more non-metallic bumpers missing.

ARO 001-016 PRE SB 777-21-0188

SUBTASK 21-52-10-200-001

(9) Examine the flexible boot [3] as follows:

(a) Examine the flexible boot [3] for any visible cracks.

(b) Measure the height of the flexible boot [3].

(c) If visible cracks of any length are found or the height of the flexible boot [3] is not a minimum of 6.6 in. (167.6 mm), replace the flexible boot [3].

(d) Measure the Shore A hardness of the flexible boot [3] as follows:

1) Use a durometer, COM-4127 to determine the Shore A hardness in the areas where the tandem clamps [2] contact the flexible boot [3].

2) If the measured Shore A hardness values are 62 or greater in the contact areas where the tandem clamps [2] contact the flexible boot [3], replace the flexible boot [3].

ARO 017-999; ARO 001-016 POST SB 777-21-0188

SUBTASK 21-52-10-200-002

(10) Examine the flexible boot [8] as follows:

(a) Examine the flexible boot [8] for ply separation, dirt, cracks, flash blisters, porosity and exposed fabric.

NOTE: Exposed fabric on the ends of the boot is permitted.

(b) Make sure that the maximum diameter is 13.5 in. (342.9 mm).

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ARO 017-999; ARO 001-016 POST SB 777-21-0188 (Continued)

(c) Replace the flexible boot [8] if the requirements above are not met.

ARO ALL

——— END OF TASK ———

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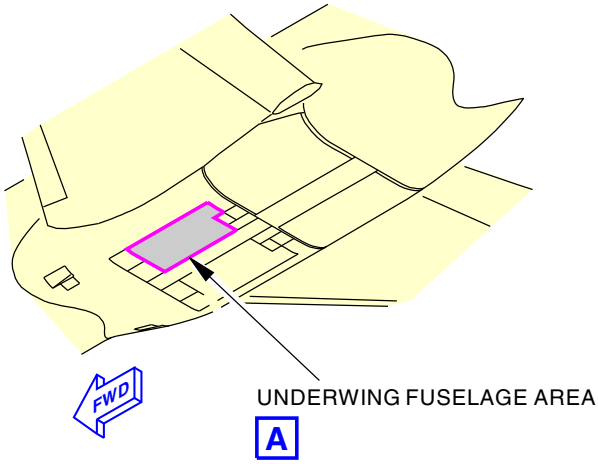

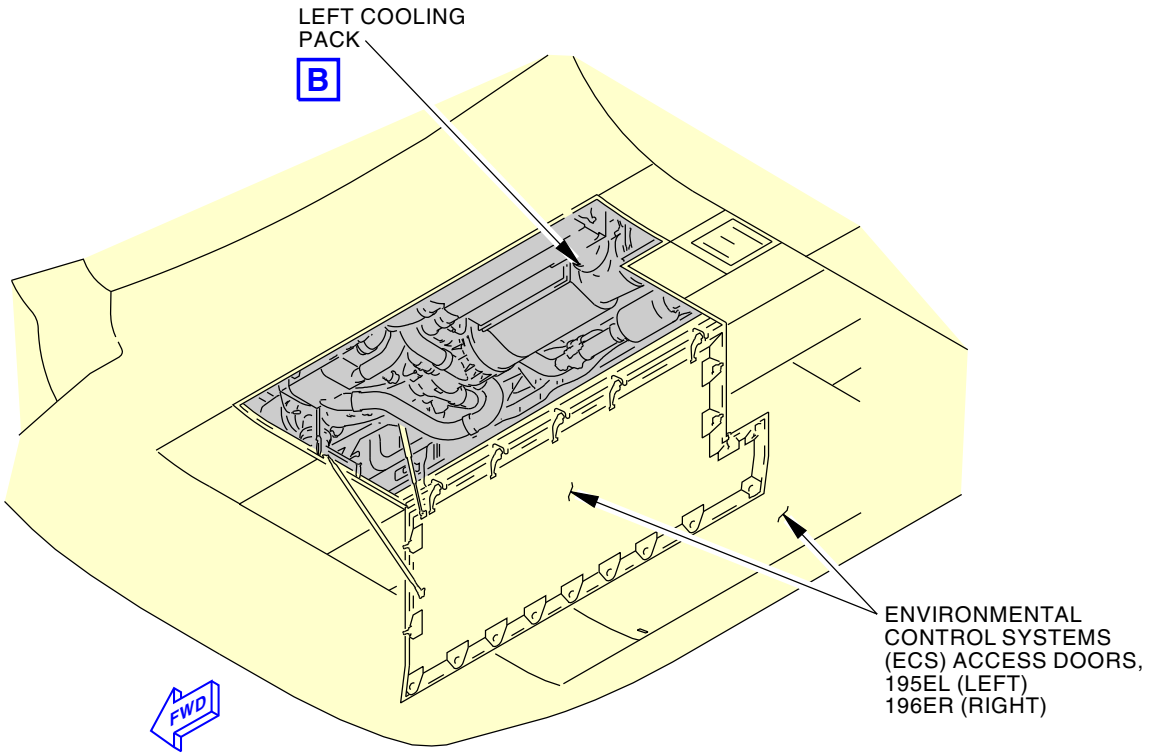

UNDERWING FUSELAGE AREA

A

C95245 S0006404068_V2

Fan Bypass Check Valve Installation
Figure 401/21-52-10-990-801 (Sheet 1 of 6)

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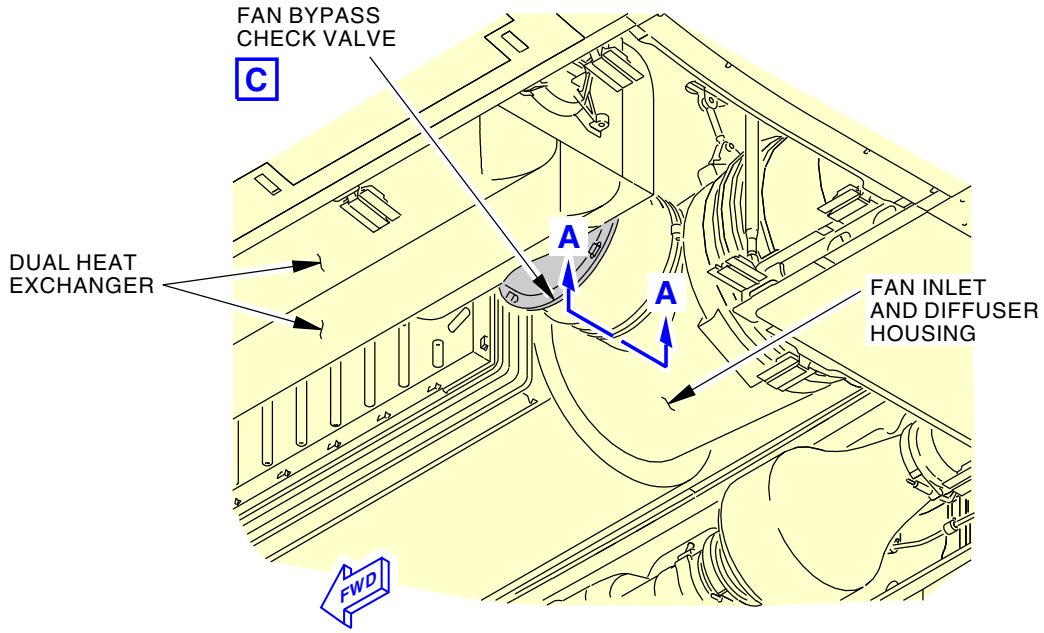
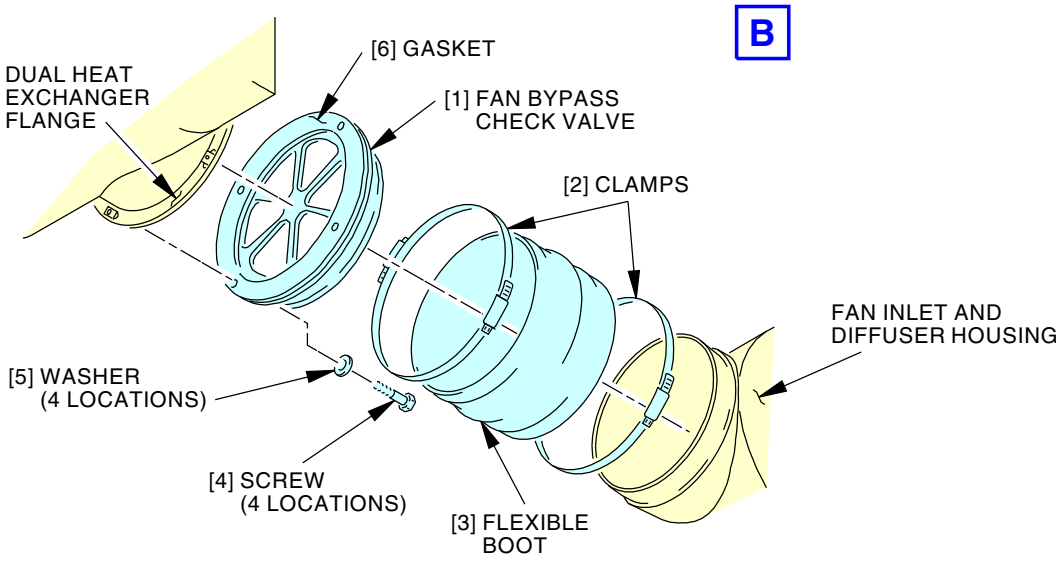


LEFT COOLING PACK
(RIGHT COOLING PACK EQUIVALENT)

B



FAN BYPASS CHECK VALVE
(EXAMPLE)

C

C95244 S0006404069_V5

Fan Bypass Check Valve Installation
Figure 401/21-52-10-990-801 (Sheet 2 of 6)

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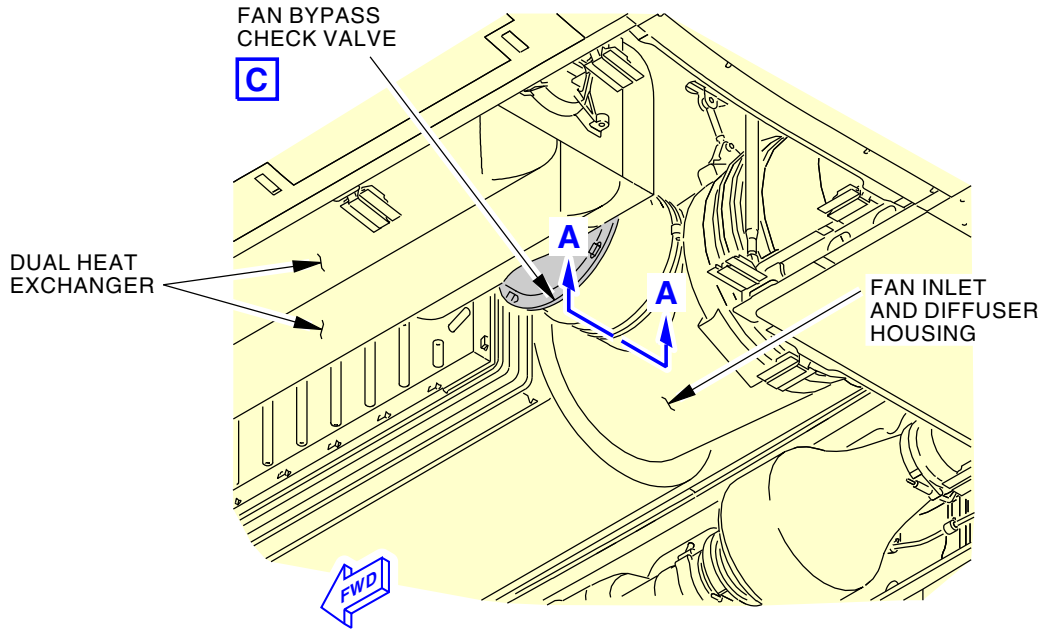
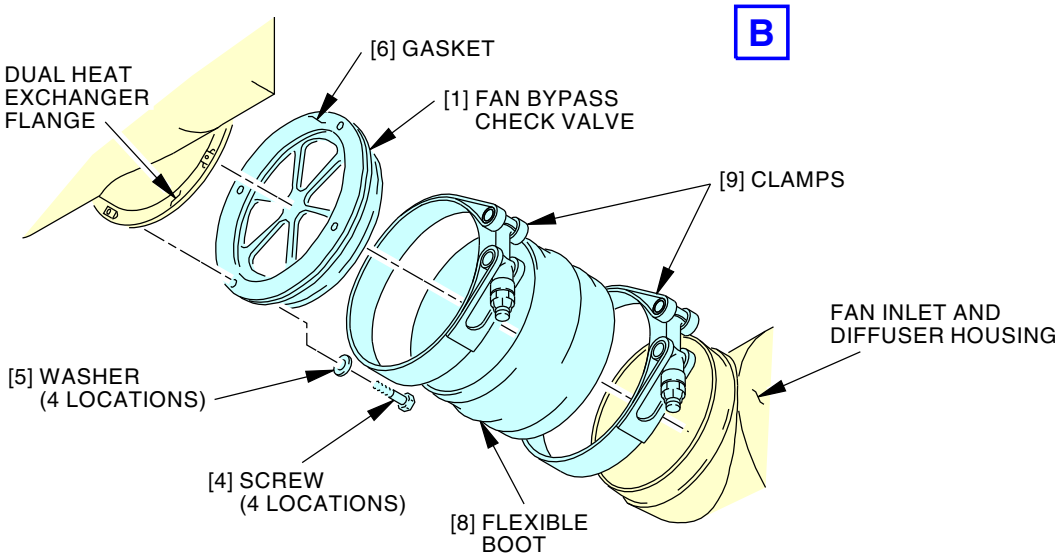


LEFT COOLING PACK
(RIGHT COOLING PACK EQUIVALENT)

B



FAN BYPASS CHECK VALVE
(EXAMPLE)

C

2821690 S0000652759_V1

Fan Bypass Check Valve Installation
Figure 401/21-52-10-990-801 (Sheet 3 of 6)

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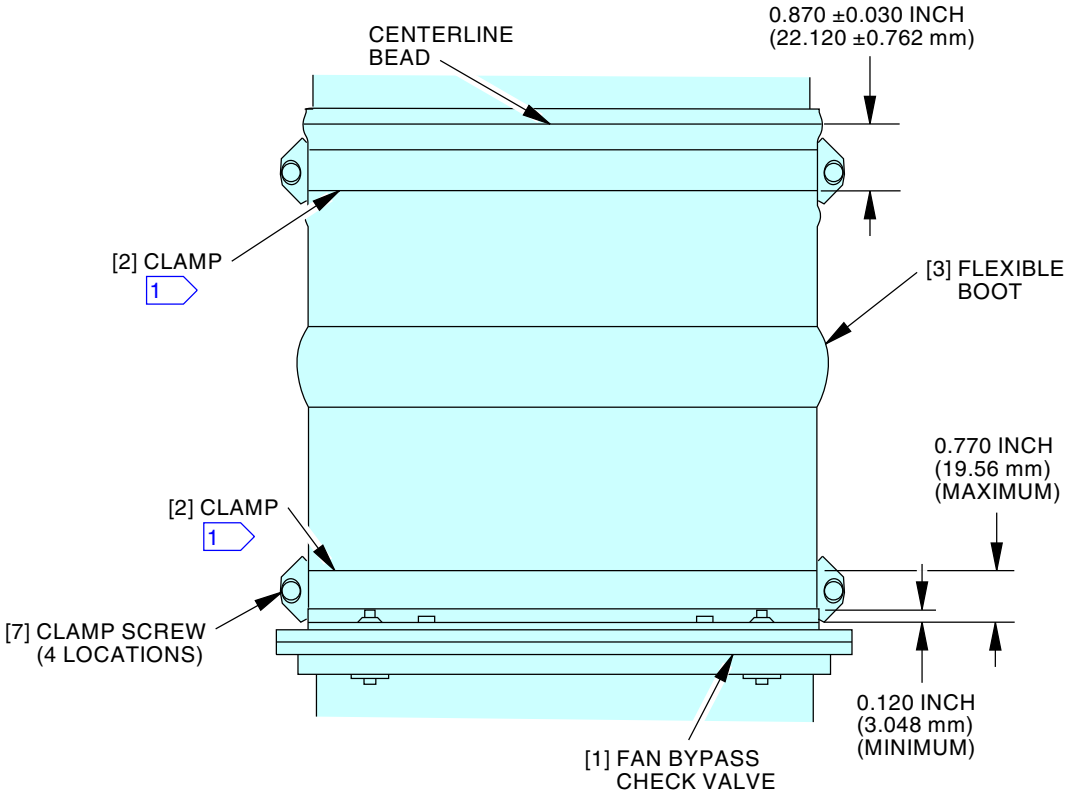

COMPOSITE / DUAL BEAD
FIDH
(CLAMP INSTALLATION DIMENSIONS)
A-A

1 TWO CLAMPS CONNECTED MAKE ITEM [2]

2291586 S0000517969_V4

Fan Bypass Check Valve Installation
Figure 401/21-52-10-990-801 (Sheet 4 of 6)

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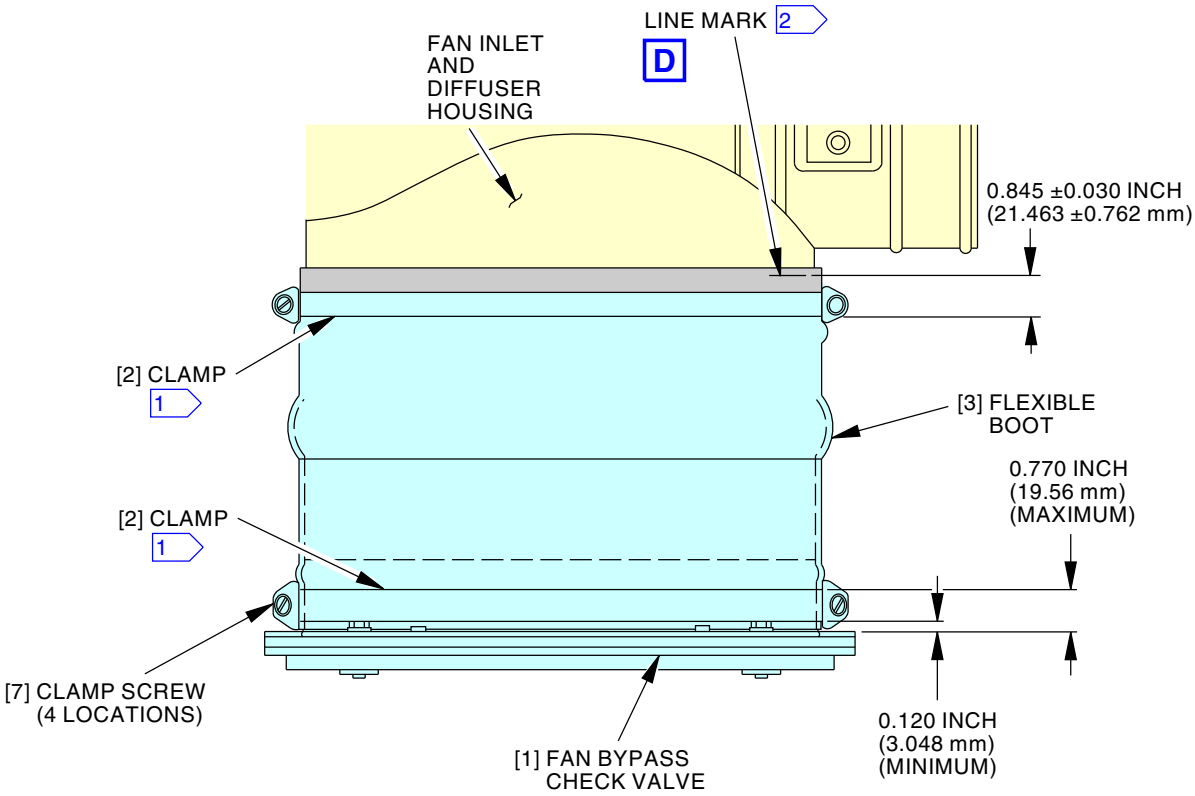
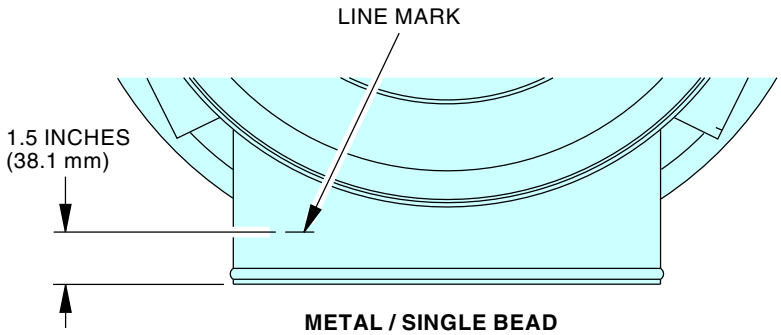


METAL / SINGLE BEAD
FIDH
(CLAMP INSTALLATION DIMENSIONS)

A-A



METAL / SINGLE BEAD
FIDH

D

1 TWO CLAMPS CONNECTED MAKE ITEM [2]

2 ROLL BACK END OF BOOT TO SEE MARKED LINE.

2568440 S0000615300_V1

Fan Bypass Check Valve Installation
Figure 401/21-52-10-990-801 (Sheet 5 of 6)

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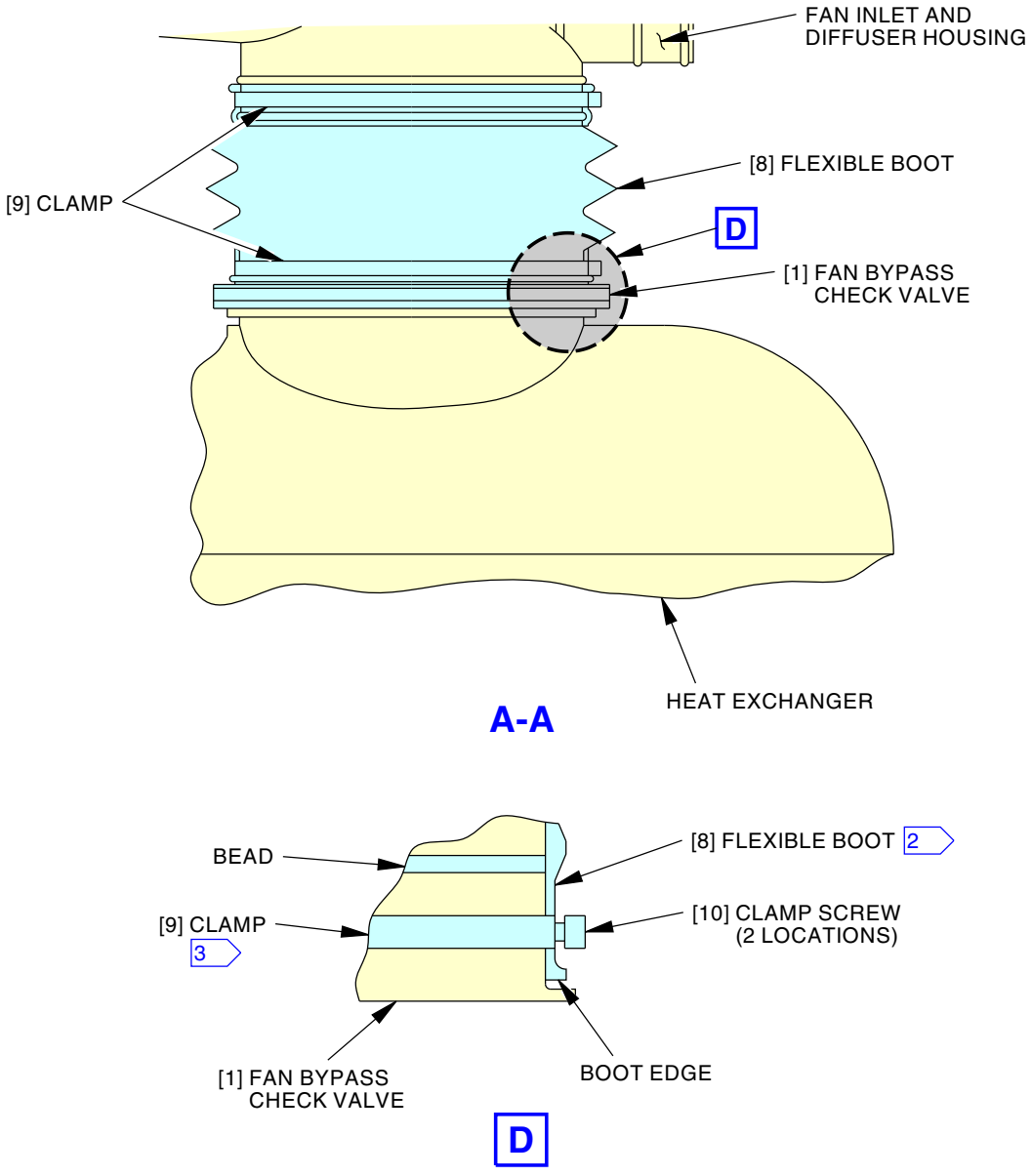

NOTE:

2 LOCATE FLEXIBLE BOOT APPROXIMATELY AS SHOWN TO MINIMIZE GAP BETWEEN BOOT AND FLANGE OF CHECK VALVE.

3 LOCATE CLAMP APPROXIMATELY AS SHOWN TO MAXIMIZE GAP BETWEEN CLAMP AND FIRST CONVOLUTION OF FLEXIBLE BOOT. CLAMPS BOLTS ARE TO BE FACING DOWN FOR EASE OF ACCESS TO BOLT SOCKET HEAD.

2820699 S0000652274_V1

Fan Bypass Check Valve Installation
Figure 401/21-52-10-990-801 (Sheet 6 of 6)

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TASK 21-52-10-400-801

3. Fan Bypass Check Valve Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)

B. Tools/Equipment

Reference	Description
STD-12595	Torque Wrench - 1/4" Square Drive (35-50 in-lb)

C. Consumable Materials

Reference	Description	Specification
A00188	Adhesive - Urethane, Two Component	BMS5-105 Type V
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan bypass check valve	21-52-00-01-544	ARO ALL
6	Gasket	21-52-10-01-120	ARO ALL

E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

G. Fan Bypass Check Valve Installation

NOTE: You can not use oli-based or synthetic products to lubricate boot surfaces, FBCV surfaces or the clamp surfaces / locking mechanism during installation. You can use water or soap solutions to aid installation.

SUBTASK 21-52-10-420-001

(1) Remove the covers from the duct openings.

(a) Make sure there is no unwanted material in the ducts.

SUBTASK 21-52-10-280-002

(2) Examine the gasket [6] for damage or deterioration. If the gasket is damaged, do the steps that follow to replace the gasket:

(a) Remove the gasket [6] from the fan bypass check valve [1].

(b) Use solvent, B00083 to remove all remaining adhesive from the fan bypass check valve [1].

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(c) Apply a layer of adhesive, A00188 to the gasket [6] and the fan bypass check valve [1] where the gasket [6] and the fan bypass check valve [1] touch.

(d) Align the holes in the gasket [6] and the fan bypass check valve [1] while you put the gasket [6] in its position.

NOTE: Make sure there are no bubbles below the gasket.

(e) Remove excess adhesive from the gasket [6] and the fan bypass check valve [1].

SUBTASK 21-52-10-280-001

(3) Make sure all six flappers in the fan bypass check valve [1] move easily.

SUBTASK 21-52-10-960-001

(4) Put the fan bypass check valve [1] in its position on the dual heat exchanger flange.

SUBTASK 21-52-10-030-002

(5) Install the screws [4] and washers [5] that attach the fan bypass check valve [1] to the dual heat exchanger flange.

(a) Tighten the screws [4] to 60 in-lb (7 N·m)-70 in-lb (8 N·m).

ARO 001-016 PRE SB 777-21-0188

SUBTASK 21-52-10-030-003

(6) Install the flexible boot [3] between the fan bypass check valve [1] and the Fan Inlet and Diffuser Housing (FIDH).

SUBTASK 21-52-10-420-003

(7) For the composite FIDH, install the flexible boot [3] between the fan bypass check valve [1] and the FIDH as shown in View A-A (Composite Dual Bead FIDH).

SUBTASK 21-52-10-420-004

(8) For the metal FIDH, install the flexible boot [3] as follows:

(a) Make a line mark 1.5 in. (38.1 mm) from the end of the metal FIDH (View D).

(b) Install the flexible boot [3] between the fan bypass check valve [1] and the FIDH as shown in View A-A (Metal Single Bead FIDH).

(c) Make sure the flexible boot [3] is positioned as shown in View A-A (Metal Single Bead FIDH).

SUBTASK 21-52-10-030-004

(9) Install the clamps [2] on the flexible boot [3]:

(a) Determine the run-on torque of the clamps as follows:

NOTE: Each clamp [2] consists of two MS35842-16 clamps connected together.

1) Use a 1/4" Torque Wrench, STD-12595 to determine the run-on torque needed to tighten the clamps without actually tightening the clamp [2] on the flexible boot [3].

2) Make a record of this value.

3) Do this for each clamp screw [7] on the two clamps that make up each clamp [2].

(b) Position the two clamps [2] as shown in View A-A (refer to Composite Dual Bead FIDH or Metal Single Bead FIDH, as applicable).

(c) Make sure that the clamps [2] are aligned and are flat against the flexible boot [3].

(d) Tighten the clamp [2] to 20 in-lb (2.3 N·m)-25 in-lb (2.8 N·m) plus the run-on torque value as follows:

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ARO 001-016 PRE SB 777-21-0188 (Continued)

1) If the run-on torque was determined to be 5 in-lb (0.6 N·m), tighten each of the clamp screws [7] on the two clamps that make up clamp [2] to 25 in-lb (2.8 N·m)-30 in-lb (3.4 N·m):
   a) Use a 1/4" Torque Wrench, STD-12595 to tighten the hex heads on the clamp screws [7].
   b) Do not over tighten the clamps [2] as overtightening can cause damage to the flexible boot [3].

ARO 017-999; ARO 001-016 POST SB 777-21-0188

SUBTASK 21-52-10-420-005

(10) Install the flexible boot [8] as follows:
   (a) Compress the flexible boot [8] and put it between the fan bypass check valve [1] and the FIDH.
   (b) Position the end of the flexible boot [8] over the duct and bead of the fan bypass check valve [1] as close to the fan bypass check valve [1] flange as possible.
   (c) Position the other end of the flexible boot [8] over the duct and bead of the FIDH.
   (d) Make sure that the flexible boot [8] is positioned as shown in Figure 401 (Sheet 6).

SUBTASK 21-52-10-420-006

(11) Install the clamps [9] on the flexible boot [8] as follows:
   (a) Install one clamp [9] at each beaded end of the flexible boot [8], as close to the beads as possible.
      NOTE: Each clamp is a single BC1575–31–1113 clamp.
      NOTE: Clamp bolts are to be facing down with respect to gravity for ease of access to bolt socket head.
   (b) Determine the run-on-torque of the clamps [9] as follows:
      NOTE: There is very little running torque with this type of fastener.
      1) Use a 1/4" Torque Wrench, STD-12595 to determine the run-on torque needed to tighten the clamps without actually tightening the clamps [9] on the flexible boot [8].
      2) Make a record of this value.
      3) Do this for each clamp screw [10].
   (c) Position the clamps [9] as shown in Figure 401 (Sheet 6).
      NOTE: If the FIDH has two beads, the clamp should be positioned between the boot edge and the bead located closest to the fan bypass check valve [1].
   (d) Make sure that the clamps [9] are aligned and are flat against the flexible boot [8].
   (e) Tighten the clamps [9] to 20 in-lb (2.3 N·m)-25 in-lb (2.8 N·m) plus the run-on torque value as follows:
      1) If the run-on torque was determined to be 5 in-lb (0.6 N·m), tighten each of the clamp screws [10] to 25 in-lb (2.8 N·m)-30 in-lb (3.4 N·m):
         a) Use a 1/4" Torque Wrench, STD-12595 to tighten the hex heads on the clamp screws [10].

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ARO 017-999; ARO 001-016 POST SB 777-21-0188 (Continued)

b) Do not over tighten the clamp screws [10] as overtightening can cause damage to the flexible boot [8].

ARO ALL

H. Fan Bypass Check Valve Installation Test

SUBTASK 21-52-10-860-007

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-10-860-004

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-10-860-005

(3) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the AUTO position.

SUBTASK 21-52-10-790-001

(4) Make sure there is no air leakage at the fan bypass check valve [1] connections.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-10-860-001

(1) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-52-10-860-006

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-10-410-001

(3) If the fan bypass check valve [1] for the left cooling pack was removed, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-10-410-002

(4) If the fan bypass check valve [1] for the right cooling pack was removed, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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ECONOMY COOLING BYPASS CHECK VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the economy cooling bypass check valve

(2) An installation of the economy cooling bypass check valve.

B. There is one economy cooling bypass check valve for each cooling pack. The economy cooling bypass check valve is installed between the secondary heat exchanger inlet duct and the primary heat exchanger outlet duct. You can get access to the economy cooling bypass check valve through the Environmental Control Systems (ECS) access doors. The economy cooling bypass check valve will be called the bypass check valve throughout the procedure.

TASK 21-52-11-000-801

2. Economy Cooling Bypass Check Valve Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-11-860-002

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-11-010-001

(2) To get access to the bypass check valve for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-11-010-002

(3) To get access to the bypass check valve for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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E. Economy Cooling Bypass Check Valve Removal

SUBTASK 21-52-11-030-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. IF THE COOLING PACK WAS ON, THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Do the steps that follow to remove the coupling [8] that attaches the secondary heat exchanger inlet duct to the compressor bypass duct:

(a) Remove the coupling [8].

NOTE: The clamshell coupling latches are designed such that they can not be disengaged when the system is pressurized. In order to disengage the latch, it is recommended that you pull the two ducts which are connected together towards each other. This will permit the latch to be easily lifted over the coupling in the unpressurized condition.

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(b) Move the sleeve [2] onto the secondary heat exchanger inlet duct.

(c) Remove the bonding spring [9].

SUBTASK 21-52-11-020-001

(2) Hold the compressor bypass duct [7] and the economy cooling bypass check valve [4] and remove the coupling [5].

SUBTASK 21-52-11-020-002

(3) Remove the economy cooling bypass check valve [4] from the compressor bypass duct [7].

SUBTASK 21-52-11-020-005

(4) Remove the sleeve [2] from the secondary heat exchanger inlet duct.

SUBTASK 21-52-11-020-006

(5) Remove and discard the packings [1] from the compressor bypass duct [7] and secondary heat exchanger inlet duct.

SUBTASK 21-52-11-020-003

(6) Remove and discard the packing [3] from the economy cooling bypass check valve [4] and the packing [6] from the primary heat exchanger outlet duct.

SUBTASK 21-52-11-020-004

(7) Put a cover on the duct openings.

END OF TASK

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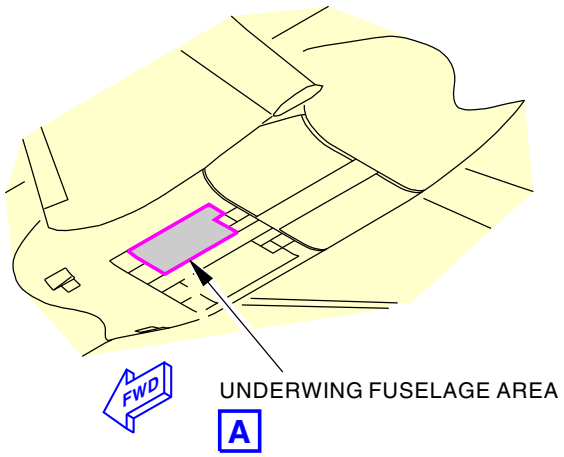

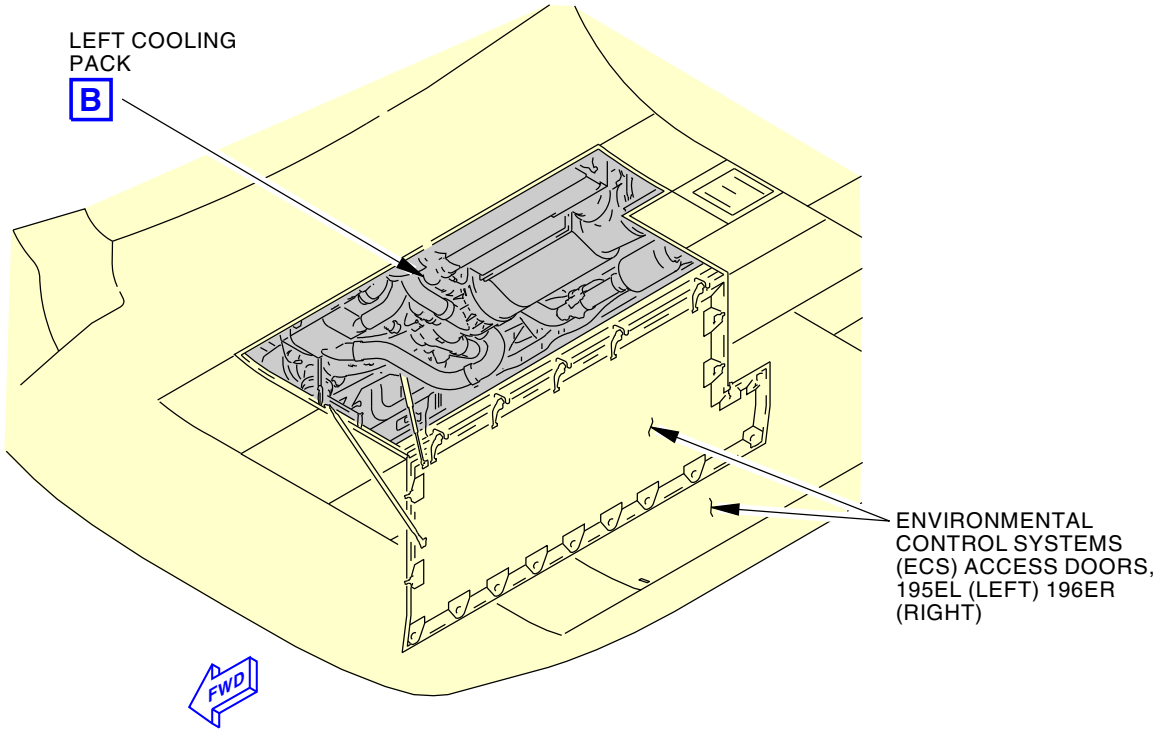

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Economy Cooling Bypass Check Valve Installation
Figure 401/21-52-11-990-801 (Sheet 1 of 2)

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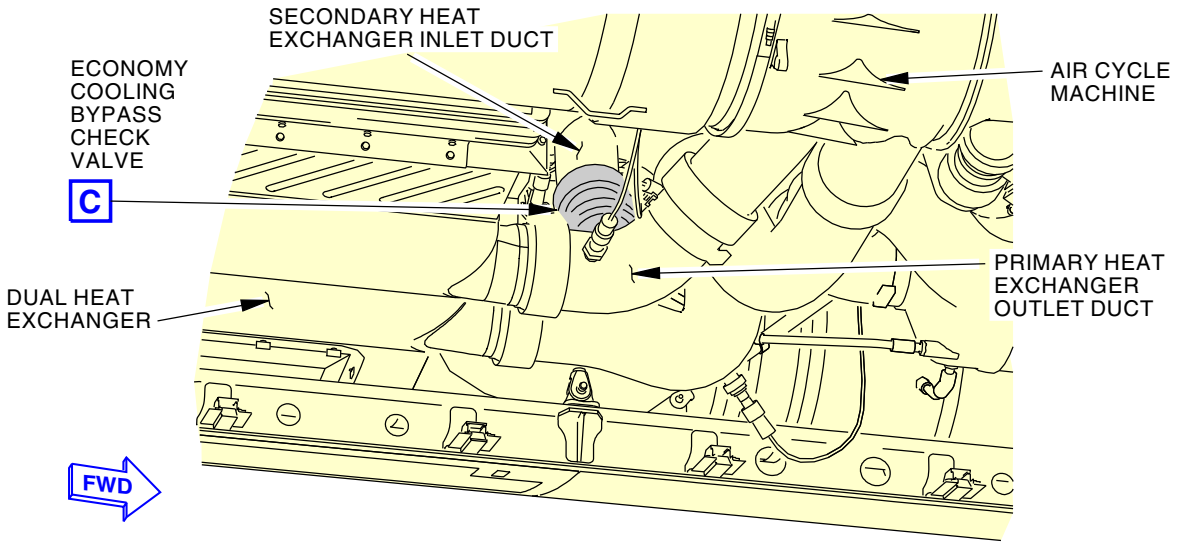
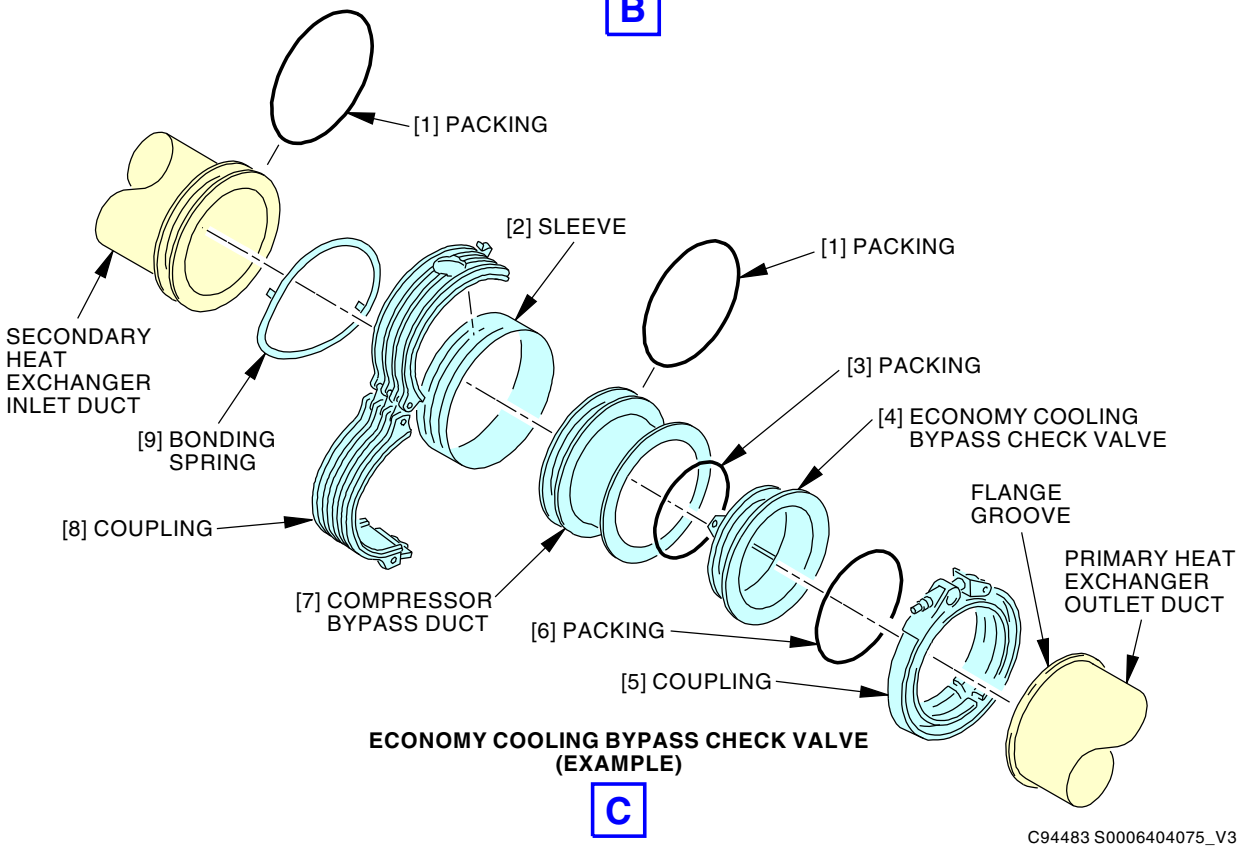


LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B



ECONOMY COOLING BYPASS CHECK VALVE
(EXAMPLE)

C

C94483 S0006404075_V3

Economy Cooling Bypass Check Valve Installation
Figure 401/21-52-11-990-801 (Sheet 2 of 2)

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TASK 21-52-11-400-801

3. Economy Cooling Bypass Check Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00189	Compound - Molykote 111 (Formerly Dow Corning 111, Valve Sealant and Lubricant)	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Packing	21-52-00-01-583	ARO ALL
3	Packing	21-52-00-01-529	ARO ALL
4	Check valve	21-52-00-01-526	ARO ALL
6	Packing	21-52-00-01-559	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Economy Cooling Bypass Check Valve Installation

SUBTASK 21-52-11-420-001

(1) Remove the covers from the duct openings.

(a) Make sure there is no unwanted material in the ducts.

SUBTASK 21-52-11-420-002

(2) Install a new packing [6] in the flange groove on the primary heat exchanger outlet duct.

SUBTASK 21-52-11-420-003

(3) Install a new packing [3] on the smaller diameter flange of the economy cooling bypass check valve [4].

SUBTASK 21-52-11-280-001

(4) Make sure the bypass check valve flappers move easily.

SUBTASK 21-52-11-420-004

(5) Put the economy cooling bypass check valve [4] in the compressor bypass duct [7].

NOTE: Make sure the flow arrow on the economy cooling bypass check valve [4] points to the compressor bypass duct [7].

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SUBTASK 21-52-11-420-005

(6) Do these steps to install the new packings [1] and the sleeve [2]:

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(a) Apply the Molykote 111 Compound, D00189 to the new packings [1] and to the inside diameter of the sleeve [2].

(b) Install the new packings [1] on the compressor bypass duct [7] and the secondary heat exchanger inlet duct.

(c) Install the sleeve [2] over the secondary heat exchanger inlet duct.

SUBTASK 21-52-11-420-006

(7) Put the economy cooling bypass check valve [4] and the compressor bypass duct [7] assembly in position between the primary heat exchanger outlet duct and the secondary heat exchanger inlet duct.

SUBTASK 21-52-11-420-007

(8) Install the coupling [5] over the flanges of the primary heat exchanger outlet duct, the economy cooling bypass check valve [4] and the compressor bypass duct [7].

(a) Tighten the coupling [5] to 50 in-lb (5.6 N·m) - 55 in-lb (6.2 N·m).

SUBTASK 21-52-11-420-008

(9) Do the steps that follow to install the coupling [8] that connects the compressor bypass duct [7] to the secondary heat exchanger inlet duct:

CAUTION MAKE SURE THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL DAMAGE THE DOWNSTREAM COMPONENTS.

(a) Install the bonding spring [9].

NOTE: The tabs on the bonding spring go towards the inlet duct flange. You can use the sleeve to help hold the bonding spring in position while you align the ducts.

(b) Put the sleeve [2] in position over the compressor bypass duct [7] and secondary heat exchanger inlet duct.

1) Make sure you cannot see the flange grooves when you install the sleeve [2].

(c) Install the coupling [8].

1) Make sure that latch pawls of the coupling [8] are completely coupled.

NOTE: The coupling [8] is automatically coupled.

G. Economy Cooling Bypass Check Valve Installation Test

SUBTASK 21-52-11-860-007

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

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SUBTASK 21-52-11-860-004

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-11-860-005

(3) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5 to the AUTO position.

SUBTASK 21-52-11-790-001

(4) Make sure there is no air leakage at the bypass check valve connections.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-11-860-001

(1) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-52-11-860-006

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-11-410-001

(3) If the bypass check valve for the left cooling pack was removed, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-11-410-002

(4) If the bypass check valve for the right cooling pack was removed, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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CONDITIONED AIR CHECK VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Conditioned air check valve removal.

(2) Conditioned air check valve installation.

C. There is one conditioned air check valve found downstream of each air cooling pack, near the forward bulkhead of the ECS bay. The conditioned air check valve will be called the check valve throughout the procedure. You can get access to the check valve through the Low Pressure Connection access doors or through the Environmental Control Systems (ECS) access doors.

TASK 21-52-12-000-802-002

2. Conditioned Air Check Valve Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195BL	ECS High Pressure Connection Door
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-12-860-004-002

WARNING REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-12-010-006-002

(2) To get access to the conditioned air check valve [1] for the right cooling pack, do this step:

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Open the applicable access panels:

Number	Name/Location
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-12-010-007-002

(3) To get access to the conditioned air check valve [1] for the left cooling pack, do this step:

open these access panels:

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-12-010-008-002

(4) To remove the conditioned air check valve [1] for the left cooling pack, do this step:

open this access panel:

Number	Name/Location
195BL	ECS High Pressure Connection Door

NOTE: The conditioned air check valve can be removed through the high pressure connection access door.

E. Conditioned Air Check Valve Removal

SUBTASK 21-52-12-020-007-002

WARNING

DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the conditioned air check valve [1] from the outlet duct/muffler assembly:

(a) Make a note of the location where the bonding jumper [20] attaches to the conditioned air check valve [1] (View E, Figure 401).

(b) Remove the bolt [18], washer [16], and washer [19] that attach the bonding jumper [20] to the conditioned air check valve [1].

(c) Remove the bolts [15] and the washers [16] from the backing plates [14] (View A-A, Figure 401).

SUBTASK 21-52-12-020-008-002

(2) Disconnect two ends of the tie rod [4] from the outlet duct and the cargo compartment pressure bulkhead as follows:

(a) Remove the nuts [6] and the washers [5] from each end of the tie rod [4].

(b) Remove the bolts [2], washers [5] and the bushings [3] from each end of the tie rod [4].

(c) Move the tie rod [4] away from the conditioned air check valve [1].

SUBTASK 21-52-12-020-009-002

(3) Remove the screw [9], washers [10], bonding jumper [17], and the nut [11] at the 6 o'clock position on the conditioned air check valve [1].

SUBTASK 21-52-12-020-010-002

(4) Remove the remaining bolts [7] and washers [8] from the conditioned air check valve [1].

SUBTASK 21-52-12-020-021-002

(5) Remove the conditioned air check valve [1], gasket [12], and gasket [21].

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SUBTASK 21-52-12-210-006-002

(6) Examine the gasket [12] for damage and deterioration.

(a) Discard the gasket [12] if there is damage or deterioration.

SUBTASK 21-52-12-210-015-002

(7) Examine the gasket [21] for damage and deterioration.

(a) Discard the gasket [21] if there is damage or deterioration.

SUBTASK 21-52-12-420-011-002

(8) Install covers on the duct openings to prevent the entry of unwanted materials.

SUBTASK 21-52-12-210-007-002

(9) Examine the conditioned air check valve [1] for these conditions:

(a) The conditioned air check valve [1] has missing parts.

(b) Some parts of the conditioned air check valve [1] are not attached correctly.

(c) The check valve housing has cracks.

(d) The check valve housing has corrosion.

(e) The check valve housing is damaged.

(f) The check valve flange is damaged.

(g) The flapper does not move freely.

(h) The flapper is damaged.

(i) If the conditioned air check valve [1] has one or more of the above conditions, replace the conditioned air check valve [1] with a new conditioned air check valve [1].

——— END OF TASK ———

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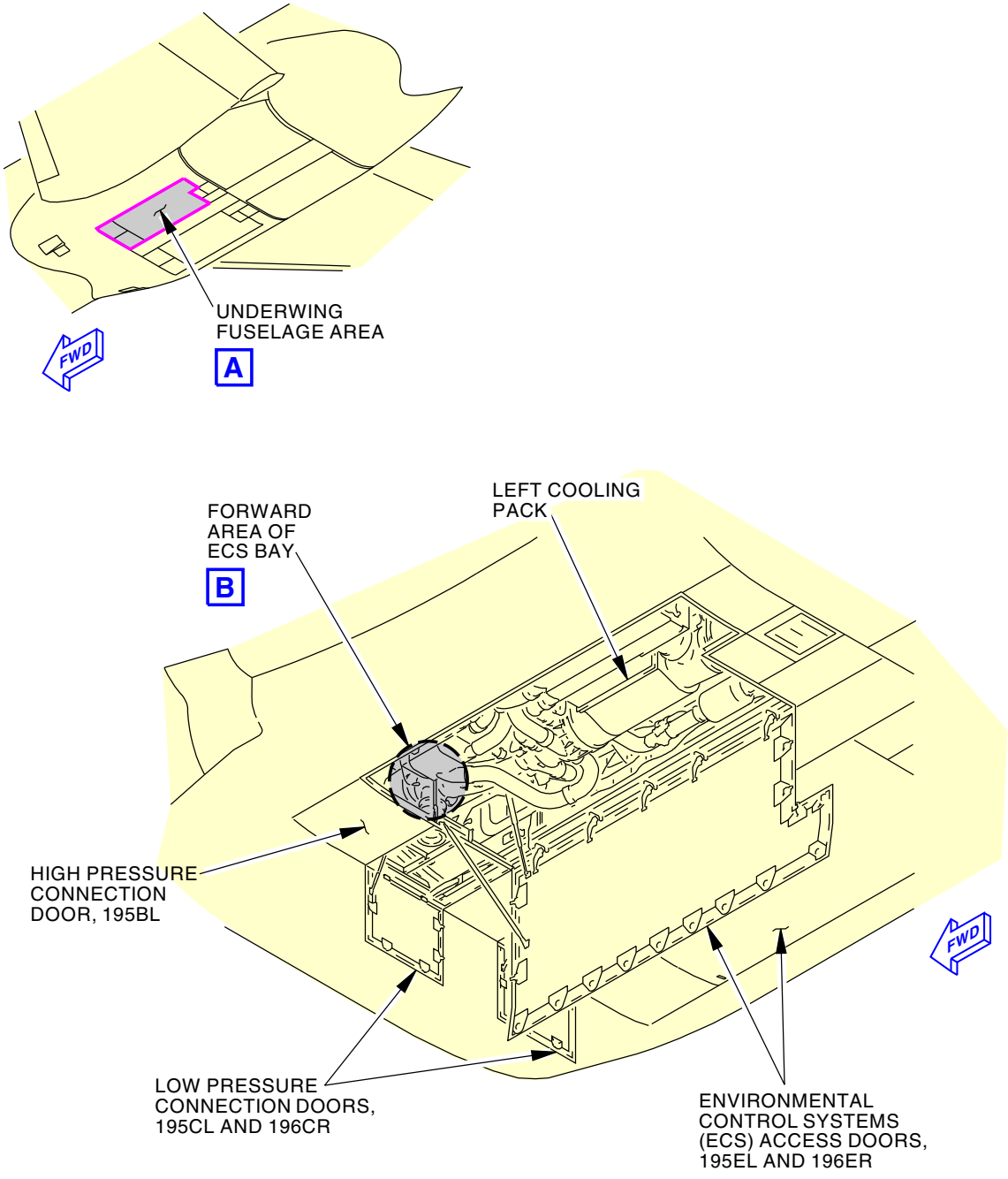

Conditioned Air Check Valve Installation
Figure 401/21-52-12-990-802-002 (Sheet 1 of 4)

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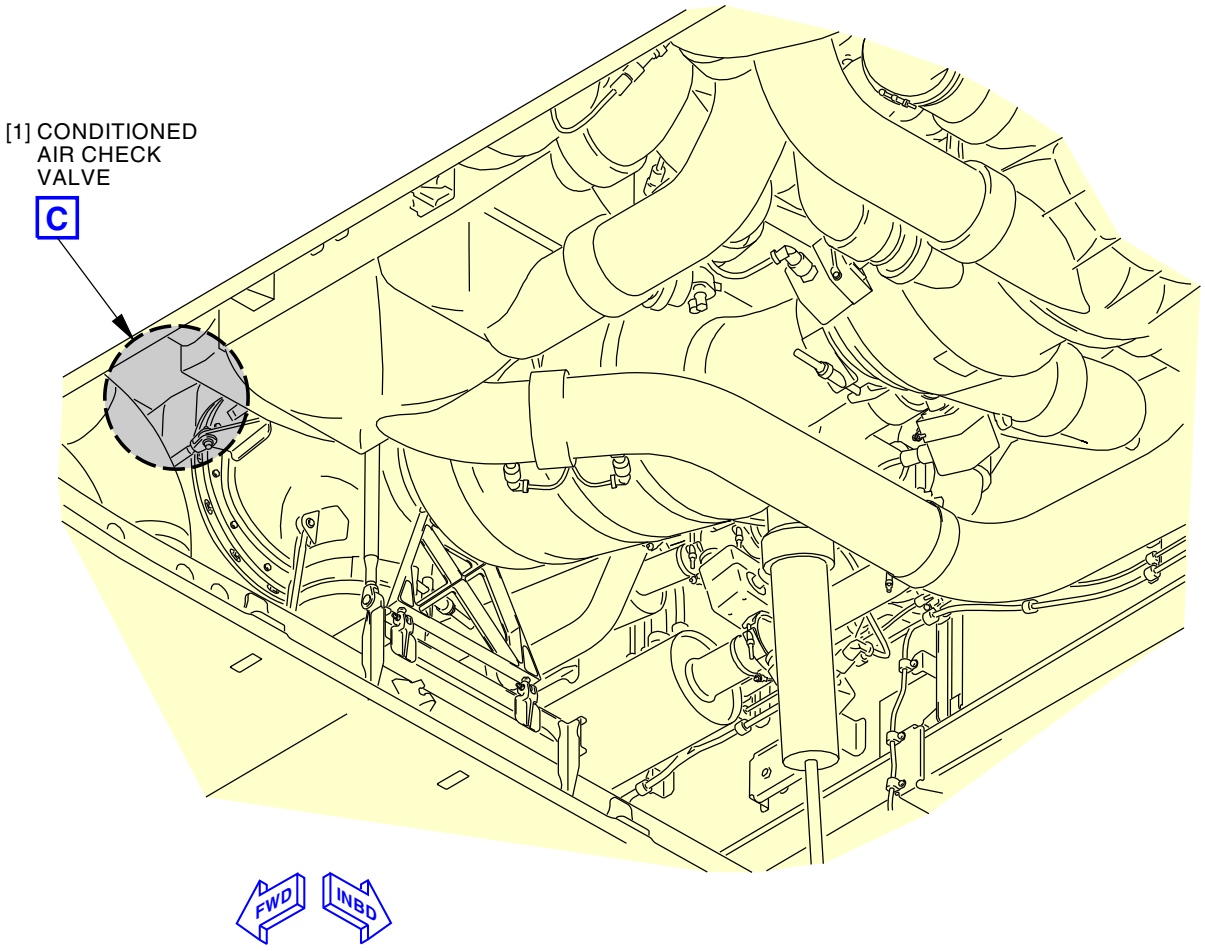

FORWARD AREA OF ECS BAY

B

H63046 S0006404102_V2

Conditioned Air Check Valve Installation
Figure 401/21-52-12-990-802-002 (Sheet 2 of 4)

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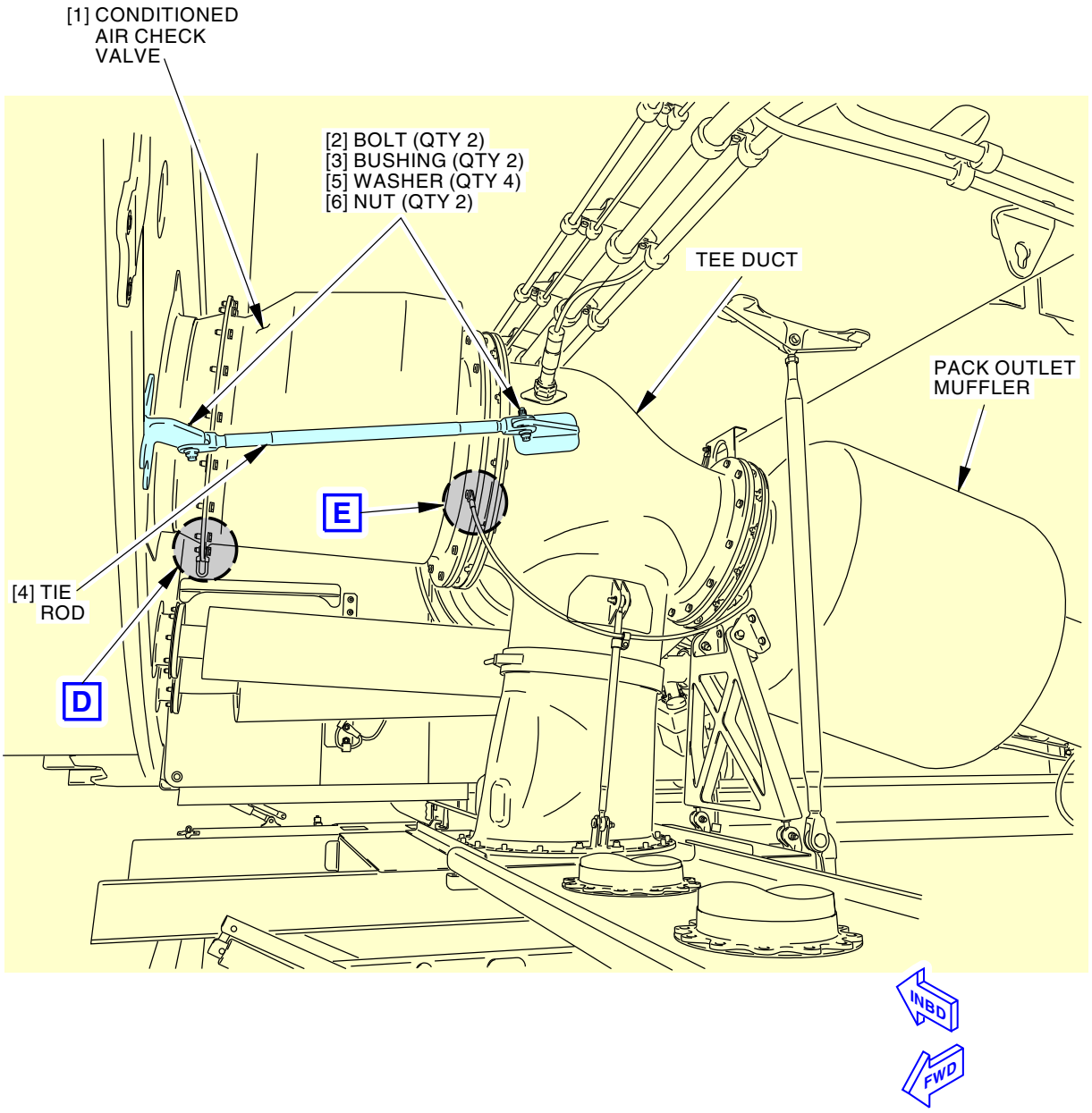

CONDITIONED AIR CHECK VALVE

C

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Conditioned Air Check Valve Installation
Figure 401/21-52-12-990-802-002 (Sheet 3 of 4)

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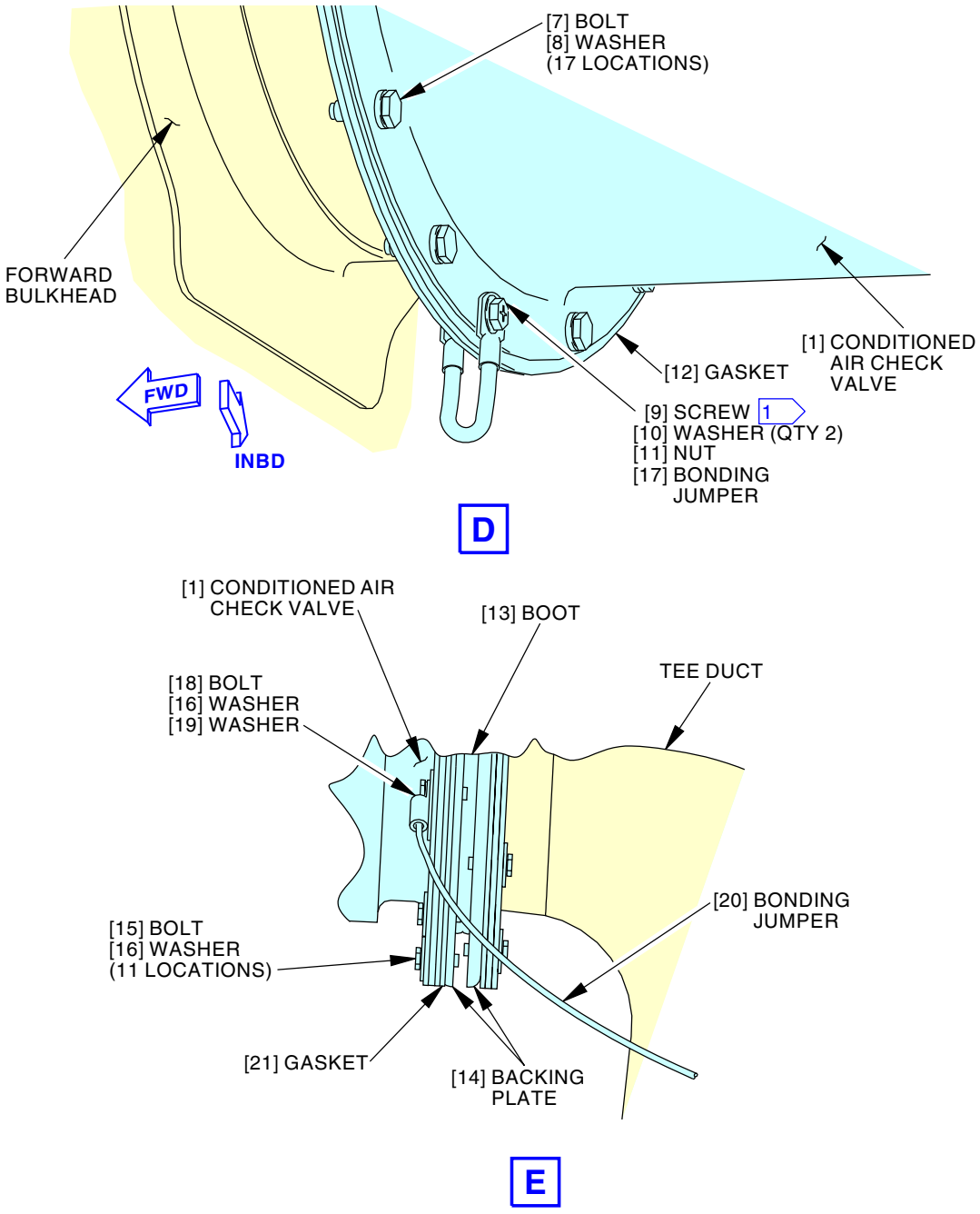

1 THIS SCREW IS INSTALLED IN THE OFFSET HOLE WHICH IS AT THE 6 O'CLOCK POSITION ON THE CONDITIONED AIR CHECK VALVE.

492277 S0000146839_V3

Conditioned Air Check Valve Installation
Figure 401/21-52-12-990-802-002 (Sheet 4 of 4)

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TASK 21-52-12-400-802-002

3. Conditioned Air Check Valve Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Conditioned air check valve	21-52-12-02-060	ARO ALL
12	Gasket	21-52-12-02-065	ARO ALL
21	Gasket	21-52-07-03-510	ARO ALL
		21-52-12-02-088	ARO ALL

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195BL	ECS High Pressure Connection Door
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

E. Conditioned Air Check Valve Installation

SUBTASK 21-52-12-020-012-002

(1) Remove the covers from the duct openings.

SUBTASK 21-52-12-210-008-002

(2) Make sure there are no unwanted materials in the ducts.

SUBTASK 21-52-12-210-009-002

(3) Inspect the gasket [12] for damage or deterioration.

(a) If you find damage or deterioration, then install a new gasket [12].

SUBTASK 21-52-12-420-012-002

(4) Put together the gasket [12] and the conditioned air check valve [1].

(a) Make sure that all the holes in the gasket [12] and the conditioned air check valve [1] are in alignment with each other.

NOTE: There is an offset hole at the 6 o'clock position on the gasket [12] and the conditioned air check valve [1]. These two offset holes must be in alignment with each other.

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SUBTASK 21-52-12-820-002-002

(5) Put the gasket [12] and the conditioned air check valve [1] into position against the forward bulkhead.

(a) Align the offset holes in the gasket [12] and the conditioned air check valve [1] with the offset hole in the forward bulkhead.

SUBTASK 21-52-12-420-013-002

(6) Install the screw [9], washers [10], bonding jumper [17] and the nut [11] in the offset hole at the 6 o'clock position on the conditioned air check valve [1].

SUBTASK 21-52-12-420-014-002

(7) Install the remaining bolts [7] and washers [8] on the conditioned air check valve [1].

SUBTASK 21-52-12-210-016-002

(8) Inspect the gasket [21] for damage or deterioration.

(a) If you find damage or deterioration, then install a new gasket [21].

SUBTASK 21-52-12-420-025-002

(9) Connect the conditioned air check valve [1] to the outlet duct/muffler assembly (View E, Figure 401):

(a) Install the gasket [21] between the conditioned air check valve [1] and the backing plate [14].

(b) Align the holes on the backing plate [14] with the holes on the boot [13], gasket [21], and conditioned air check valve [1].

(c) Install the bolt [18], washer [16], and washer [19] that attach the bonding jumper [20] to the conditioned air check valve [1].

(d) Install the bolts [15], washers [16] which attach the backing plate [14] to the conditioned air check valve [1].

SUBTASK 21-52-12-020-013-002

(10) Connect the tie rod [4] to the outlet duct and the cargo compartment pressure bulkhead as follows:

(a) Move the tie rod [4] into the fittings on the outlet duct and the cargo compartment pressure bulkhead.

(b) Put the washers [5] and then the bushings [3] on the bolts [2] shank on each end of the tie rod [4].

(c) Put the bolts [2], washers [5] and the bushings [3] in the fitting on each end of the tie rod [4].

(d) Install the nuts [6] and the washers [5] on each end of the tie rod [4].

F. Conditioned Air Check Valve Installation Test

SUBTASK 21-52-12-860-005-002

(1) Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-52-12-790-002-002

(2) Make sure there is no air leakage at the check valve connections.

(a) If there is air leakage, make adjustments to the check valve connections until there is no air leakage.

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-12-860-006-002

(1) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-52-12-010-010-002

(2) If the conditioned air check valve [1] for the right cooling pack was removed, close these access panels:

Number	Name/Location
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-12-010-009-002

(3) If the conditioned air check valve [1] for the left cooling pack was removed, close these access panels:

Number	Name/Location
195BL	ECS High Pressure Connection Door
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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RAM AIR INLET DOOR AND ACTUATOR - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) A removal of the ram air inlet door.

(2) An installation of the ram air inlet door.

(3) A removal of the actuator for the ram air inlet door.

(4) An installation of the actuator for the ram air inlet door.

(5) A removal of the bellcrank from the ram air inlet door.

(6) An installation of the bellcrank to the ram air inlet door.

(7) A removal of the torque tube from the ram air inlet door.

(8) An installation of the torque tube to the ram air inlet door.

(9) An adjustment of the ram air inlet door and actuator.

TASK 21-52-20-000-803

2. Ram Air Inlet Door Removal

(Figure 201 or Figure 202)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191GL	Forward Wing To Body Fairing Panel
191LL	Ram Air Inlet Actuator Door
191NL	Forward Wing To Body Fairing Panel
191PL	Forward Wing To Body Fairing Panel
192LR	Ram Air Inlet Actuator Door
192PR	Forward Wing To Body Fairing Panel

D. Prepare for the Removal

SUBTASK 21-52-20-860-016

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

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SUBTASK 21-52-20-010-003

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-20-860-017

(3) For the left pack ram air inlet door, do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-20-860-018

(4) For the right pack ram air inlet door, do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

E. Ram Air Inlet Door Removal

NOTE: The ram air inlet door has two sections. You must remove each section of the door independently.

SUBTASK 21-52-20-020-005

(1) Do the steps that follow to remove the forward door section (Figure 201 or Figure 202, Figure 203):

(a) Remove the bolt [38], countersunk washer [39], and washer [40] from the Ram Air Inlet Actuator.

(b) Hold the forward door section while you remove the bolt [3], at 14 locations, which attach the forward door section [4] to the aft door section [2].

NOTE: Let the forward door section come down. This will permit access to the forward hinge assembly.

(c) Remove the bolt [1], at 12 locations, which attaches the hinge of the forwarddoor section [4] to the airplane structure.

(d) Remove the forward door section [4] out of the ram air inlet.

SUBTASK 21-52-20-020-017

(2) Look into the ram air inlet to determine if the aft door section has rollers/blocks or the swing link assembly (Figure 201 or Figure 202).

SUBTASK 21-52-20-020-018

(3) Do the steps that follow to remove the aft door section (Figure 201 or Figure 202):

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(a) Remove the applicable (L or R) access panels:

Number	Name/Location
191GL	Forward Wing To Body Fairing Panel
191LL	Ram Air Inlet Actuator Door
191NL	Forward Wing To Body Fairing Panel
191PL	Forward Wing To Body Fairing Panel
192LR	Ram Air Inlet Actuator Door
192PR	Forward Wing To Body Fairing Panel

NOTE: It is not necessary to remove all access panels listed.

(b) Remove the bolt [5], countersunk washer [6], washer [8], nut [9] and bushing [7], at two locations, which connect each actuator link to the aft door section [2].

(c) Remove the bolt [15], countersunk washer [16], and washer [17], at four locations, which connect the swing link assembly to the ram air inlet structure.

(d) Pull the aft door section [2] out of the ram air inlet.

END OF TASK

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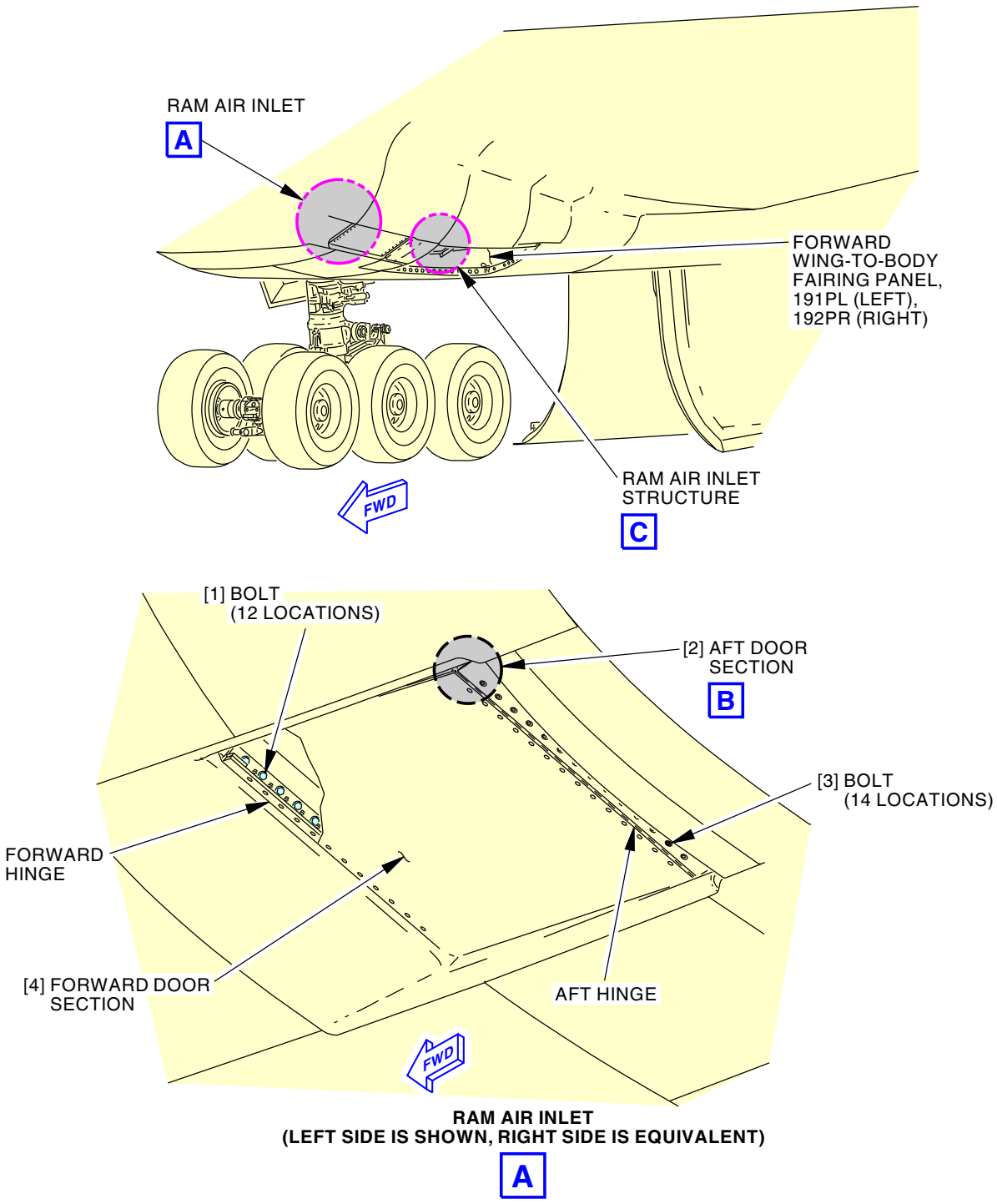

Ram Air Inlet Door Installation
Figure 201/21-52-20-990-803 (Sheet 1 of 4)

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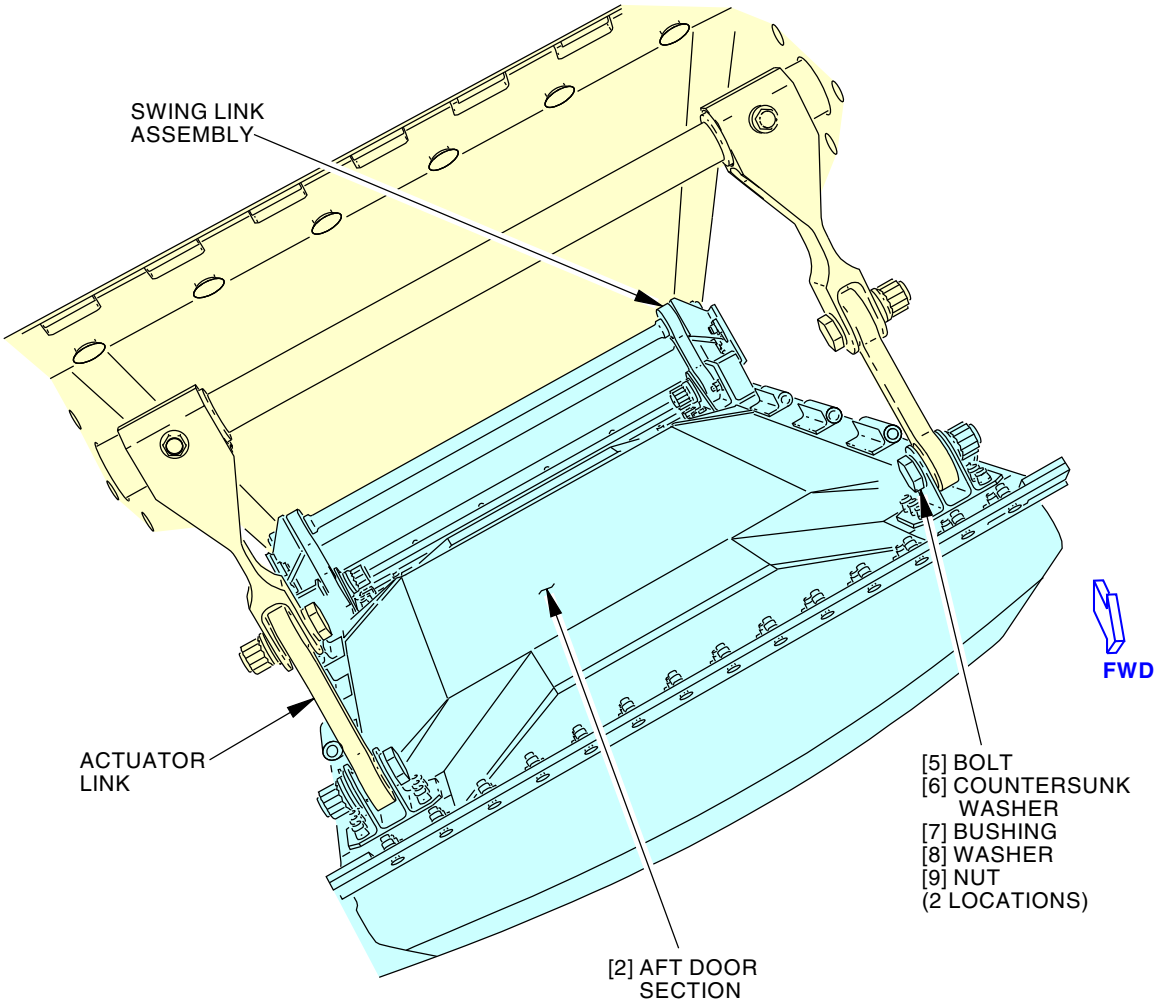

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Ram Air Inlet Door Installation
Figure 201/21-52-20-990-803 (Sheet 2 of 4)

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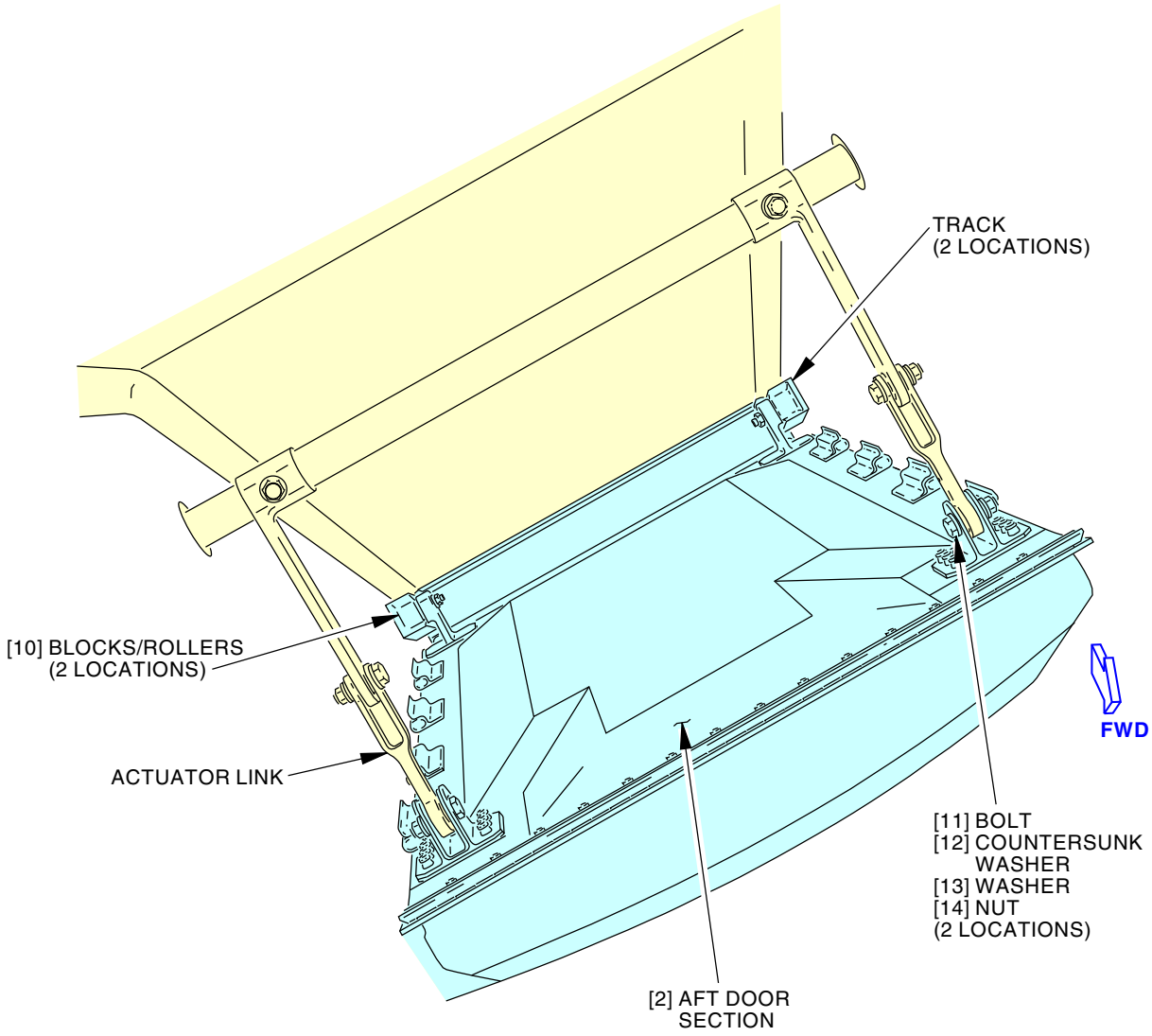

**AFT DOOR SECTION
(WITH ROLLERS/BLOCKS)**

B

M24364 S0006404111_V2

**Ram Air Inlet Door Installation
Figure 201/21-52-20-990-803 (Sheet 3 of 4)**

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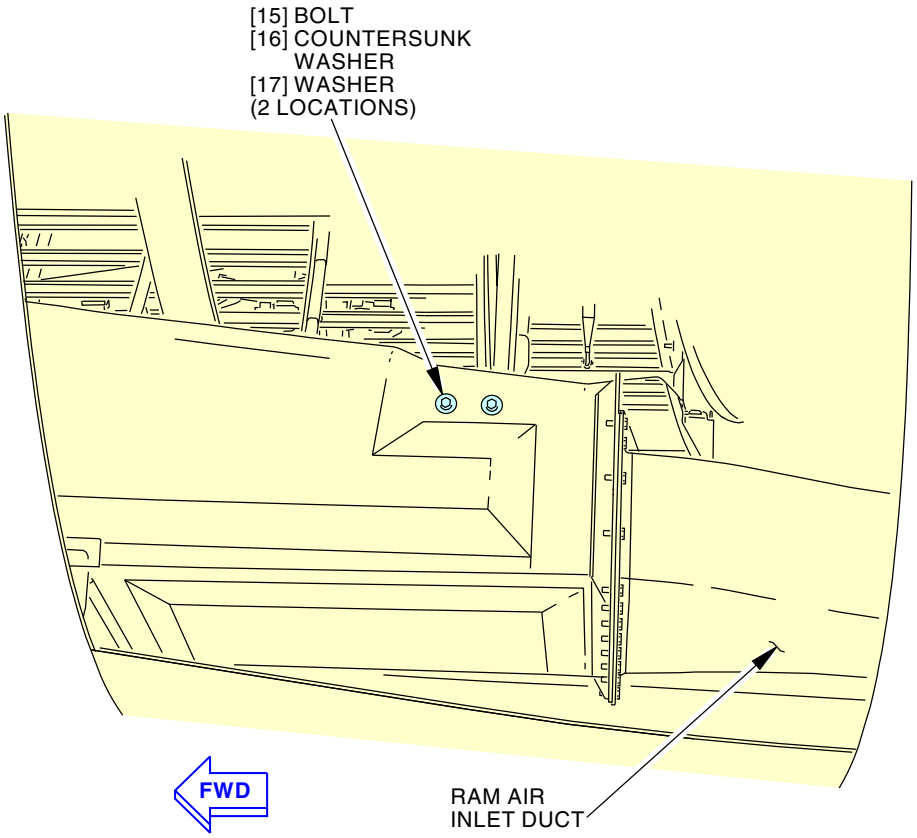

RAM AIR INLET STRUCTURE
(INBOARD SIDE IS SHOWN, OUTBOARD SIDE IS EQUIVALENT)

C

M24577 S0006404112_V2

Ram Air Inlet Door Installation
Figure 201/21-52-20-990-803 (Sheet 4 of 4)

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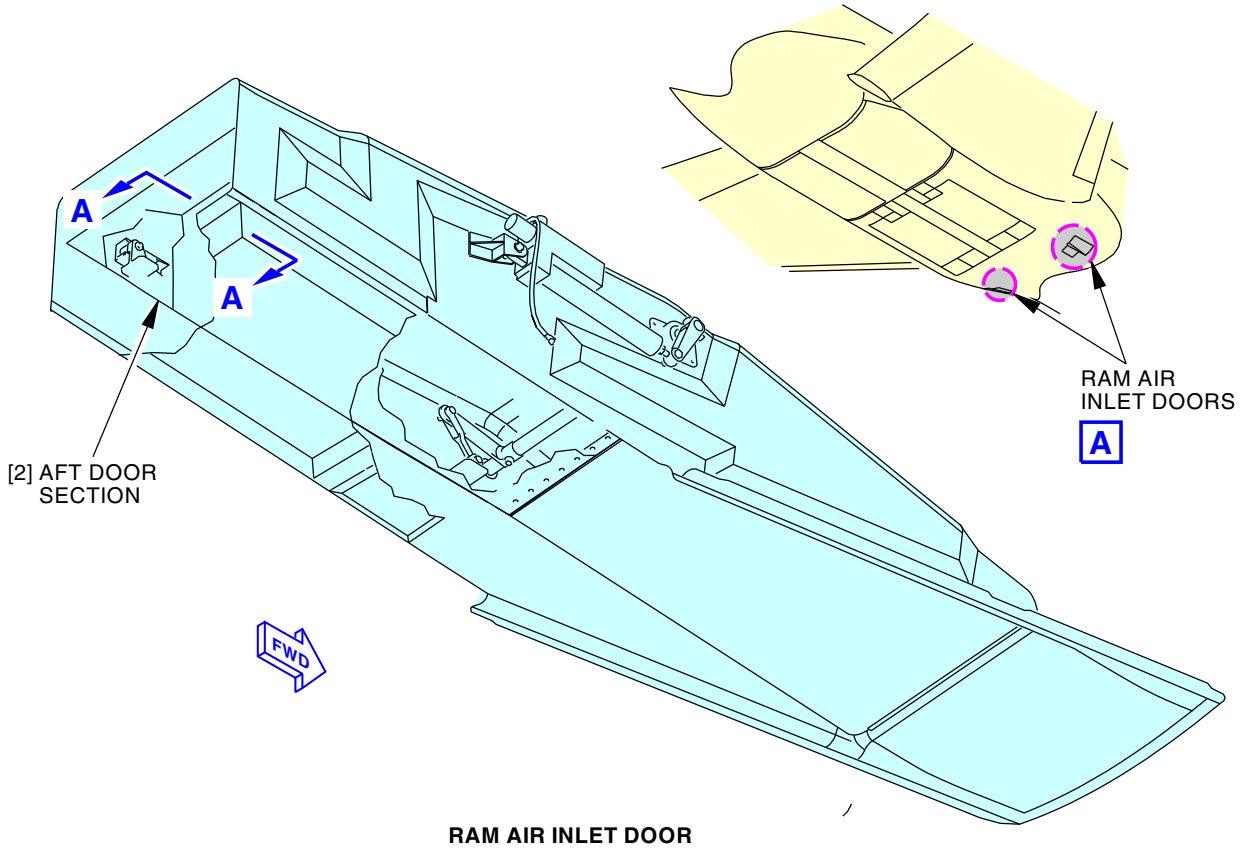
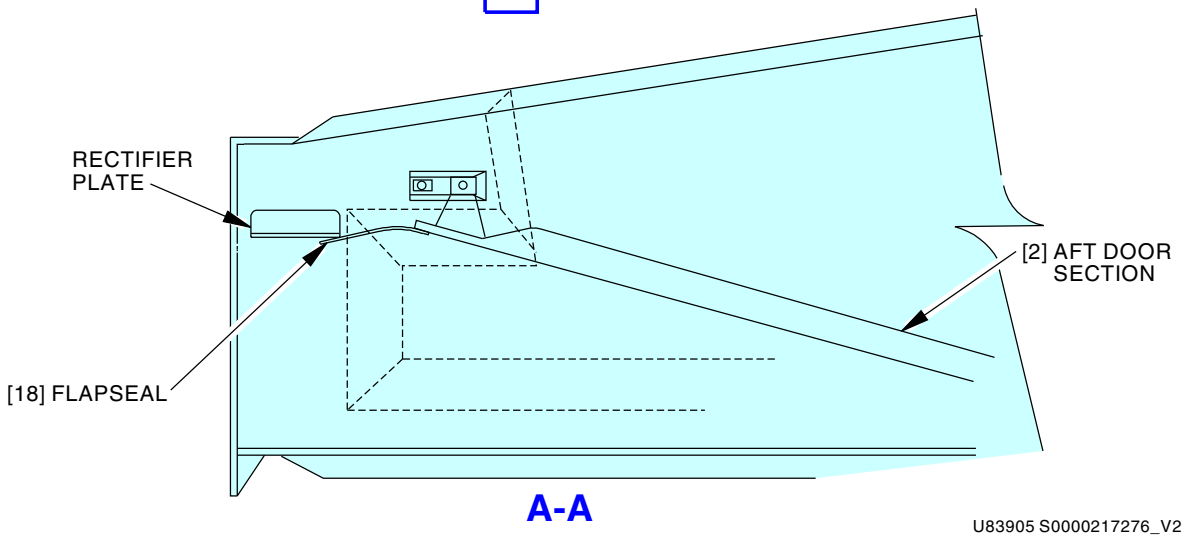


RAM AIR INLET DOOR
(LEFT SIDE SHOWN, RIGHT SIDE EQUIVALENT)

A



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Ram Air Inlet Door Installation
Figure 202/21-52-20-990-810

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TASK 21-52-20-400-803

3. Ram Air Inlet Door Installation

(Figure 201 or Figure 202)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-52-22-000-801	Ram Air Inlet Duct Removal (P/B 401)
21-52-22-400-801	Ram Air Inlet Duct Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Door section	Not Specified	
4	Door section	Not Specified	

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191GL	Forward Wing To Body Fairing Panel
191LL	Ram Air Inlet Actuator Door
191NL	Forward Wing To Body Fairing Panel
191PL	Forward Wing To Body Fairing Panel
192LR	Ram Air Inlet Actuator Door
192PR	Forward Wing To Body Fairing Panel

E. Ram Air Inlet Door Installation

NOTE: The inlet door has two sections. You must install each section of the door independently.

SUBTASK 21-52-20-820-013

(1) If necessary, remove the ram air inlet duct. To remove the ram air inlet duct, do this task: Ram Air Inlet Duct Removal, TASK 21-52-22-000-801.

SUBTASK 21-52-20-820-014

(2) Do the steps that follow to install the aft door section:

(a) Put the aft door section [2] in its position in the ram air inlet.

(b) Install the bolt [15], countersunk washer [16], and washer [17], at four locations, which connect the swing link assembly to the ram air inlet.

NOTE: Make sure the countersunk washer [16] is against the head of the bolt [15].

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(c) Install the bolt [5], countersunk washer [6], washer [8], nut [9] and bushing [7], at two locations, which connect each actuator link to the aft door section [2].

NOTE: Make sure the countersunk washer [6] is against the head of the bolt [5].

SUBTASK 21-52-20-420-007

(3) Install the forward door section (Figure 201 or Figure 202, Figure 203).

(a) Put the forward door section [4] in its position in the ram air inlet.

(b) Install the bolt [1], at 12 locations, which connect the forward door section [4] to the forward hinge assembly.

(c) Install the bolt [3], at 14 locations, which connect the forward door section [4] to the aft door section [2].

(d) Install the bolt [38], countersunk washer [39], washer [40], and nut [41] onto the ram air inlet actuator.

NOTE: Make sure the countersunk washer [39] is under the head of the bolt [38].

SUBTASK 21-52-20-820-015

(4) If the ram air inlet duct is removed, install the ram air inlet duct. To install the ram air inlet duct, do this task: Ram Air Inlet Duct Installation, TASK 21-52-22-400-801.

SUBTASK 21-52-20-860-019

WARNING

MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

(5) If you replaced the inlet door for the left pack;

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-20-860-020

WARNING

MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

(6) If you replaced the inlet door for the right pack;

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

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F. Ram Air Inlet Door Installation Test

SUBTASK 21-52-20-820-005

(1) Do this task: Ram Air Inlet Door and Actuator Adjustment, TASK 21-52-20-800-801.

NOTE: If you remove or install any component for the ram air inlet system it is necessary to check the distance between the ram air inlet door and the fairing lip, and if necessary adjust the door. If you used this procedure when you connected the ram air inlet actuator rod end to the bellcrank, it is not necessary to do it again.

SUBTASK 21-52-20-860-021

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-20-740-003

(3) Use a MAT to do an LRU replacement test of the ram air inlet door and actuator:

NOTE: While the MAT test is in operation, do a visual check to make sure the ram air inlet doors and actuator move freely and smoothly.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Pack Actuators Test, L (or R as appropriate)
7) CONTINUE

(b) Do the instructions that show on the MAT.

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 applicable left or right ram air inlet door actuator.

1) If there is a maintenance message for the ram air inlet door actuator, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(e) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE
2) EXIT MAINTENANCE

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-20-410-005

(1) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-20-410-006

(2) Close the applicable (L or R) access panels:

Number	Name/Location
191GL	Forward Wing To Body Fairing Panel
191LL	Ram Air Inlet Actuator Door
191NL	Forward Wing To Body Fairing Panel
191PL	Forward Wing To Body Fairing Panel
192LR	Ram Air Inlet Actuator Door
192PR	Forward Wing To Body Fairing Panel

SUBTASK 21-52-20-860-022

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

——— END OF TASK ———

TASK 21-52-20-000-804

4. Ram Air Inlet Actuator Removal

(Figure 203)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191LL	Ram Air Inlet Actuator Door
192LR	Ram Air Inlet Actuator Door

D. Prepare for the Removal

SUBTASK 21-52-20-860-023

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-20-010-004

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

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SUBTASK 21-52-20-860-024

(3) For the left pack ram air inlet actuator, do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(b) Open this access panel:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door

SUBTASK 21-52-20-860-025

(4) For the right pack ram air inlet actuator, do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Open this access panel:

Number	Name/Location
192LR	Ram Air Inlet Actuator Door

E. Ram Air Inlet Actuator Removal

SUBTASK 21-52-20-020-007

(1) Disconnect the electrical connector [36], from the actuator [31].

SUBTASK 21-52-20-030-004

(2) Disconnect the bonding jumper [42] as follows:

(a) Remove the screw [32], washer [33], washers [34] and nut [35] to disconnect the bonding jumper [42] from the actuator [31].

SUBTASK 21-52-20-030-005

(3) Remove the bolt [38], countersunk washer [39], washer [40] and nut [41] to disconnect the actuator pushrod from the bellcrank [37].

SUBTASK 21-52-20-030-006

(4) Remove the bolt [44], countersunk washer [45], bushing [46], washer [47], washer [48] and nut [49] to disconnect the actuator [31] from the support bracket [43].

SUBTASK 21-52-20-020-008

(5) Remove the actuator [31].

END OF TASK

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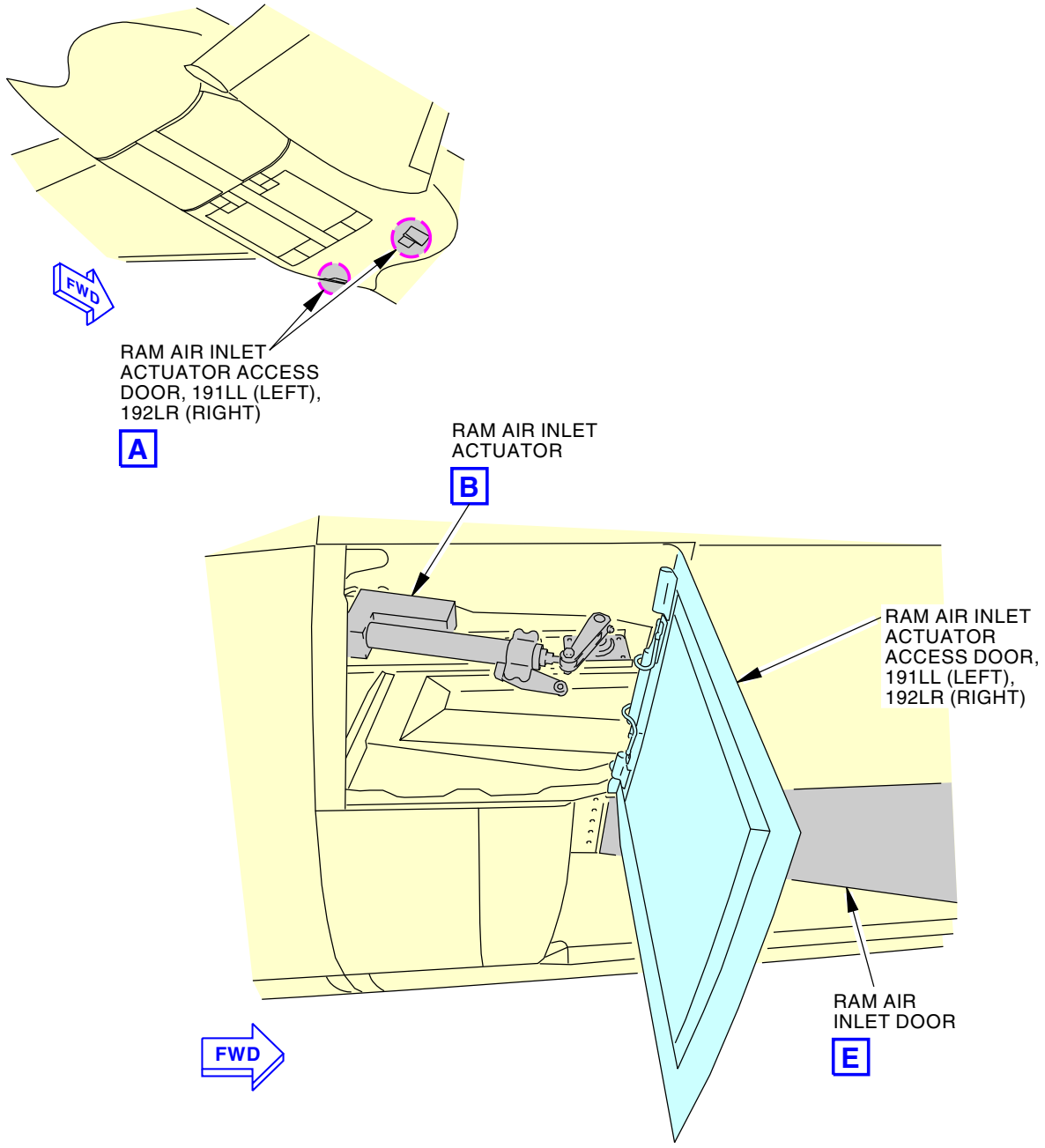

LEFT RAM AIR INLET ACTUATOR
(RIGHT RAM AIR INLET ACTUATOR IS EQUIVALENT)

A

F14450 S0006404115_V2

Ram Air Inlet Actuator Installation
Figure 203/21-52-20-990-804 (Sheet 1 of 3)

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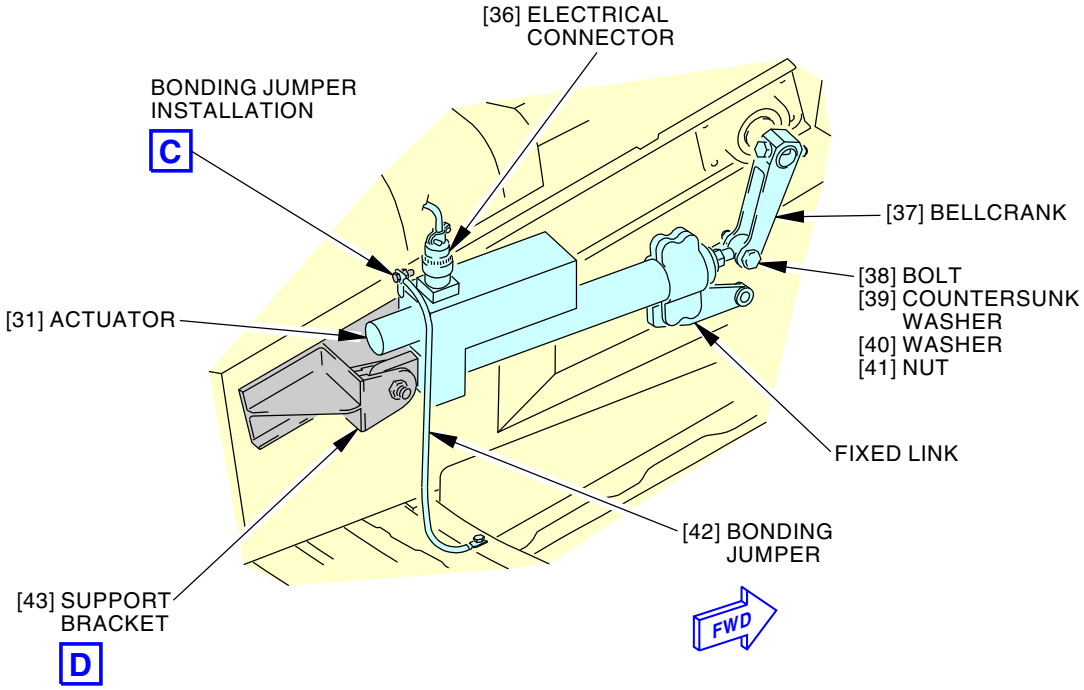
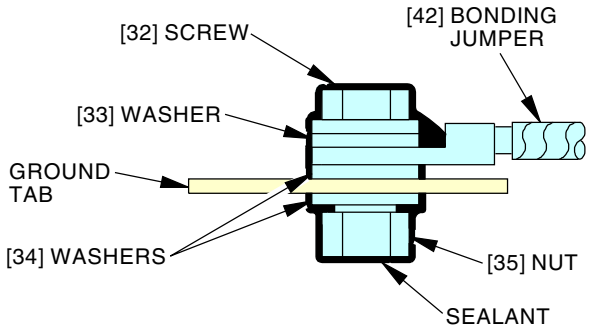


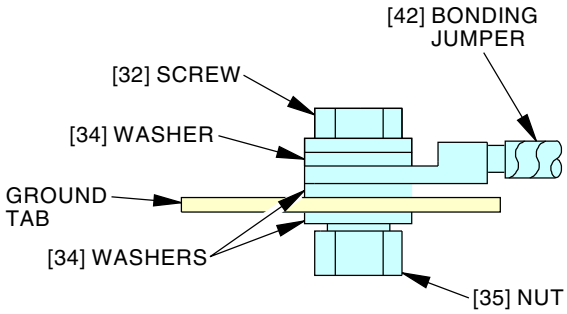
RAM AIR INLET ACTUATOR

B



BONDING JUMPER INSTALLATION

C 1



BONDING JUMPER INSTALLATION

C 2

1 BONDING JUMPER WITHOUT A BLUE TERMINAL MARKER (PRE-SB 21-47)

2 BONDING JUMPER WITH A BLUE TERMINAL MARKER (POST-SB 21-47, OR PRR 61881)

F14451 S0006404116_V2

Ram Air Inlet Actuator Installation
Figure 203/21-52-20-990-804 (Sheet 2 of 3)

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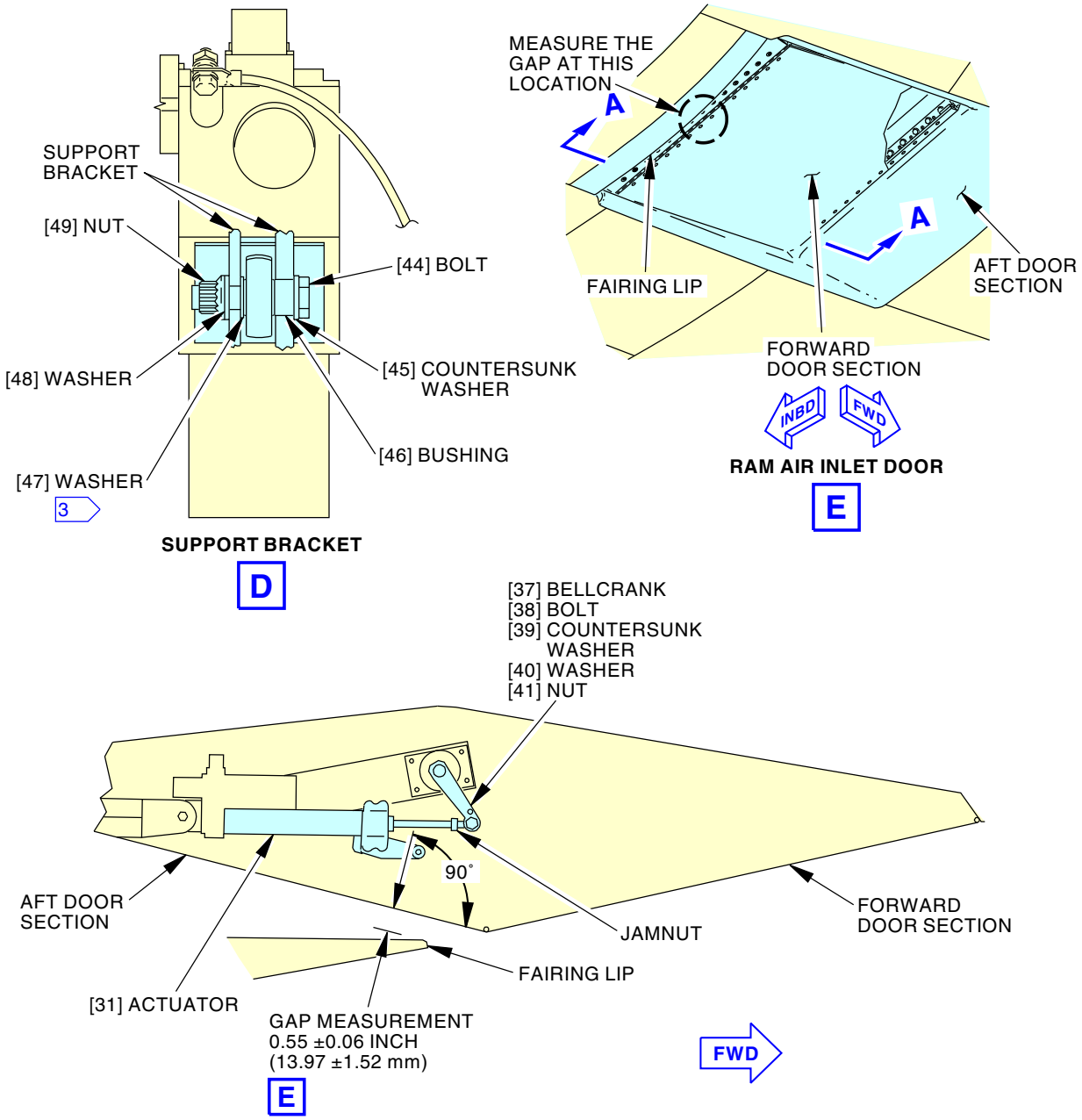

3 AIRPLANES POST-SB 21-25, OR PRR 61777-76

L21266 S0006404117_V3

Ram Air Inlet Actuator Installation
Figure 203/21-52-20-990-804 (Sheet 3 of 3)

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TASK 21-52-20-400-804

5. Ram Air Inlet Actuator Installation

(Figure 203)

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)
24-22-00-860-806	Remove Electrical Power (P/B 201)
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
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
31	Actuator	Not Specified	

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191LL	Ram Air Inlet Actuator Door
192LR	Ram Air Inlet Actuator Door

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G. Ram Air Inlet Actuator Installation

SUBTASK 21-52-20-860-026

CAUTION	MAKE SURE THE FIXED LINK ON THE RAM AIR INLET ACTUATOR IS IN THE DOWN POSITION WHEN YOU INSTALL THE RAM AIR INLET ACTUATOR. DAMAGE TO THE RAM AIR INLET ACTUATOR CAN OCCUR IF THE FIXED LINK IS NOT IN THE CORRECT POSITION.

(1) Make sure the fixed link on the ram air inlet actuator is in the down position as shown in (Figure 203).

(a) If the fixed link is not in the correct position, follow the instructions on the placard which is on the ram air inlet actuator.

SUBTASK 21-52-20-820-006

(2) Put the actuator [31] in its position between the bellcrank [37] and the support bracket [43].

SUBTASK 21-52-20-420-008

(3) Install the bolt [44], countersunk washer [45], bushing [46], washer [47], washer [48] and nut [49] which connect the actuator [31] to the support bracket [43].

NOTE: Make sure the countersunk washer [45] is against the head of the bolt [44].

SUBTASK 21-52-20-100-001

(4) To clean the bond surfaces of the ground tab, do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

SUBTASK 21-52-20-100-002

(5) To clean the bond surfaces of the bonding jumper [42] and the washers [34], do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

SUBTASK 21-52-20-420-013

(6) To install the bonding jumper [42], do the steps that follow:

(a) Put a washers [34] on the ground tab of the actuator.

(b) Put the bonding jumper [42] on the washers [34].

(c) Install the screw [32] and washer [33] on the bonding jumper terminal.

(d) Install the washers [34] and nut [35] on the screw [32].

1) Tighten the nut [35] to 25 in-lb (2.8 N·m) - 35 in-lb (4.0 N·m).

(e) With the intrinsically safe approved bonding meter, COM-1550, make sure the resistance between the ground tab of the actuator and the airplane structure is less than 0.005 ohm (SWPM 20-20-00).

NOTE: Do not put the probe on the bracket to which the bonding jumper attaches.

(f) Apply a thin, continuous layer of sealant, A00247 on the bonding jumper terminal connections as shown on Figure 202, Detail C.

SUBTASK 21-52-20-420-010

(7) Re-connect the electrical connector [36], to the actuator [31].

SUBTASK 21-52-20-820-007

(8) If the ram air inlet actuator [31] is new, do the steps that follow to measure the gap between the ram air inlet door and the fairing lip (Figure 203):

NOTE: A ram air inlet actuator that is new will already be set to the extended position per the Hamilton Standard acceptance test procedure, HS13269 (Paragraph 4.1, Appendix A).

(a) Loosely install the bolt [38] to connect the actuator rod end to the bellcrank [37].

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(b) Measure the gap between the ram air inlet door and the fairing lip.

(c) Make sure the gap measures 0.49 in. (12.45 mm) - 0.61 in. (15.49 mm).

(d) Do the steps that follow if the gap is not 0.49 in. (12.45 mm) - 0.61 in. (15.49 mm):

1) Remove the lockwire from the jamnut on the actuator rod end.

CAUTION USE TWO WRENCHES TO LOOSEN THE JAMNUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE ACTUATOR COULD OCCUR WHEN YOU LOOSEN THE JAMNUT.

2) Use a wrench to hold the actuator rod end while you use a second wrench to loosen the jamnut.

3) Turn the actuator rod end a maximum of ±0.200 inch (±5.08 mm) until the distance measures 0.49 in. (12.45 mm) - 0.61 in. (15.49 mm).

a) Loosely install the bolt [38] to connect the actuator rod end to the bellcrank during measurement.

CAUTION USE TWO WRENCHES TO TIGHTEN THE JAMNUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE ACTUATOR COULD OCCUR WHEN YOU TIGHTEN THE JAMNUT.

4) Use a wrench to hold the actuator rod end while you use a second wrench to tighten the jamnut 180 in-lb (20.3 N·m) - 220 in-lb (24.9 N·m).

5) Install the lockwire.

(e) Install the bolt [38], countersunk washer [39], washer [40] and the nut [41] to connect the actuator rod end to the bellcrank [37].

SUBTASK 21-52-20-820-008

(9) If the ram air inlet actuator [31] is not new, do this task: Ram Air Inlet Door and Actuator Adjustment, TASK 21-52-20-800-801.

NOTE: If you re-install the ram air inlet actuator [31] you must close the ram air inlet door and check the distance between the ram air inlet door and the fairing lip.

(a) Install the bolt [38], countersunk washer [39], washer [40] and the nut [41] to connect the actuator rod end to the bellcrank [37].

SUBTASK 21-52-20-860-027

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

(10) If you replaced the actuator for the left pack;

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

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SUBTASK 21-52-20-860-028

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

(11) If you replaced the actuator for the right pack;

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

H. Ram Air Inlet Door and Actuator Installation Test

SUBTASK 21-52-20-860-029

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-20-740-004

(2) Use a MAT to do an LRU replacement test of the ram air inlet door and actuator:

NOTE: While the MAT test is in operation, do a visual check to make sure the ram air inlet doors and actuator move freely and smoothly.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Pack Actuators Test, L (or R as appropriate)
7) CONTINUE

(b) Do the instructions that show on the MAT.

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 applicable left or right ram air inlet door actuator.

1) If there is a maintenance message for the ram air inlet door actuator that you replaced, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

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(e) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE

2) EXIT MAINTENANCE

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-20-410-007

(1) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-20-410-008

(2) Close the applicable (L or R) access panel:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door

or close this access panel:

Number	Name/Location
192LR	Ram Air Inlet Actuator Door

SUBTASK 21-52-20-860-030

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

——— END OF TASK ———

TASK 21-52-20-000-806

6. Ram Air Inlet Bellcrank Removal

(Figure 204)

A. General

(1) If the bellcrank/torque tube connection has an epoxy application, then do not use this procedure.

(2) If epoxy is applied to the bellcrank/torque tube connection, then the connection is permanent and the bellcrank/torque tube must be removed as a single unit.

(3) See Ram Air Inlet Torque Tube Removal, TASK 21-52-20-000-807 for instructions to remove the bellcrank and torque tube as a single unit.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

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(Continued)

Number	Name/Location
191LL	Ram Air Inlet Actuator Door
192LR	Ram Air Inlet Actuator Door

E. Prepare for the Removal

SUBTASK 21-52-20-860-050

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-20-010-006

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-20-860-051

(3) For the left pack ram air inlet bellcrank, do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(b) Open this access panel:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door

SUBTASK 21-52-20-860-052

(4) For the right pack ram air inlet bellcrank, do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Open this access panel:

Number	Name/Location
192LR	Ram Air Inlet Actuator Door

F. Ram Air Inlet Bellcrank Removal

SUBTASK 21-52-20-210-010

(1) Do a visual inspection of the bellcrank/torque tube connection for epoxy adhesive.

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(a) If the bellcrank is installed with epoxy, then do not complete this task. See Ram Air Inlet Torque Tube Removal, TASK 21-52-20-000-807 for instructions to remove the bellcrank and torque tube as a single unit.

NOTE: The bellcrank cannot be removed from the torque tube if it has been installed with epoxy adhesive.

SUBTASK 21-52-20-020-021

(2) To remove the left/right ram air inlet door bellcrank, do these steps:

(a) Remove the bolt [38], countersunk washer [39], washer [40], and nut [41] to disconnect the actuator pushrod from the bellcrank [37].

(b) Remove the bellcrank retaining bolt [50], countersunk washer [51], washer [52], and nut [53] from the bellcrank [37].

NOTE: Identify bellcrank retaining bolt [50] to perform the inspection that follows.

(c) Remove the bellcrank [37] from the torque tube.

G. Ram Air Inlet Bellcrank Inspection

SUBTASK 21-52-20-210-009

(1) Inspect the left/right ram air inlet door bellcrank retaining bolt [50]. Observe condition of the bolt shank. Use (Figure 204) View C as a guide to determine the serviceability of the retaining bolt.

(a) If the condition of the bellcrank retaining bolt is similar to the bolt shank depicted in View C (Condition 1), then the bellcrank/torque tube connection is functioning correctly, and bellcrank separation is not probable.

1) If there is no indication of bolt damage, then install the bellcrank [37] with the same bellcrank retaining bolt [50], or new bellcrank retaining bolt [50] at operator discretion. Do this task: (Ram Air Inlet Bellcrank Installation, TASK 21-52-20-400-805).

NOTE: An undamaged bolt and bellcrank can be re-installed without epoxy adhesive, with epoxy adhesive per SB 777-21-0128, or without epoxy adhesive using a bellcrank with a clamping slot at the discretion of the operator. The preferred configuration is to install the bolt without epoxy adhesive into a bellcrank with a clamping slot. Service Bulletins 777-21-0131 and 777-21-146 provide instructions to modify the bellcrank with a clamping slot.

(b) If the condition of bellcrank retaining bolt is similar to bolt shank depicted in View C (Condition 2 or 3), then the bolt must be replaced and an inspection of the torque tube splines must be performed.

(2) Inspect the left/right ram air inlet door bellcrank torque tube splines. Observe condition of the torque tube splines. Use (Figure 204) View D as a guide, to determine the serviceability of the torque tube splines.

(a) Before inspection, clean the torque tube splines, as necessary, to remove any foreign material or residue from the splines.

(b) Use an undamaged bellcrank retaining bolt [50], or other convenient means, to determine if damage to the spline corners (at bolt seat) has occurred. See (Figure 204) View D. If the spline corners do not show wear, then the torque tube is acceptable for return to service. If spline inspection indicates wear, replacement of torque tube is recommended, do these tasks: (Ram Air Inlet Torque Tube Removal, TASK 21-52-20-000-807, Ram Air Inlet Torque Tube Installation, TASK 21-52-20-400-806).

(3) If the bellcrank retaining bolt [50] shows damage, then do one of the following steps:

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(a) Install a bellcrank [37] with a clamping slot and a new bellcrank retaining bolt [50], do this task: (Ram Air Inlet Bellcrank Installation, TASK 21-52-20-400-805).

NOTE: Replacement of the bellcrank or modification of the bellcrank to incorporate the clamping slot is recommended for airplanes equipped with ram air exhaust louvers. Service Bulletins 777-21-0131 and 777-21-146 provide instructions to modify the bellcrank. In-service records indicate that the cause of the retaining bolt damage is a chronic condition. The addition of the clamping slot on the bellcrank uses bolt clamp force to eliminate the relative motion between the bellcrank and the torque shaft.

(b) Wet install an unmodified bellcrank [37] and a new bellcrank retaining bolt [50] with epoxy adhesive, do this task: (Ram Air Inlet Bellcrank Installation, TASK 21-52-20-400-805).

NOTE: Completion of the wet install using an unmodified bellcrank is acceptable per SB 777-21-0128. In-service records indicate that the cause of the retaining bolt damage is a chronic condition. The addition of epoxy provides protection to the bellcrank/torque tube connection from a high-vibration environment. Installation using an unmodified bellcrank without epoxy adhesive is not recommended for airplanes equipped with ram air exhaust louvers.

——— END OF TASK ———

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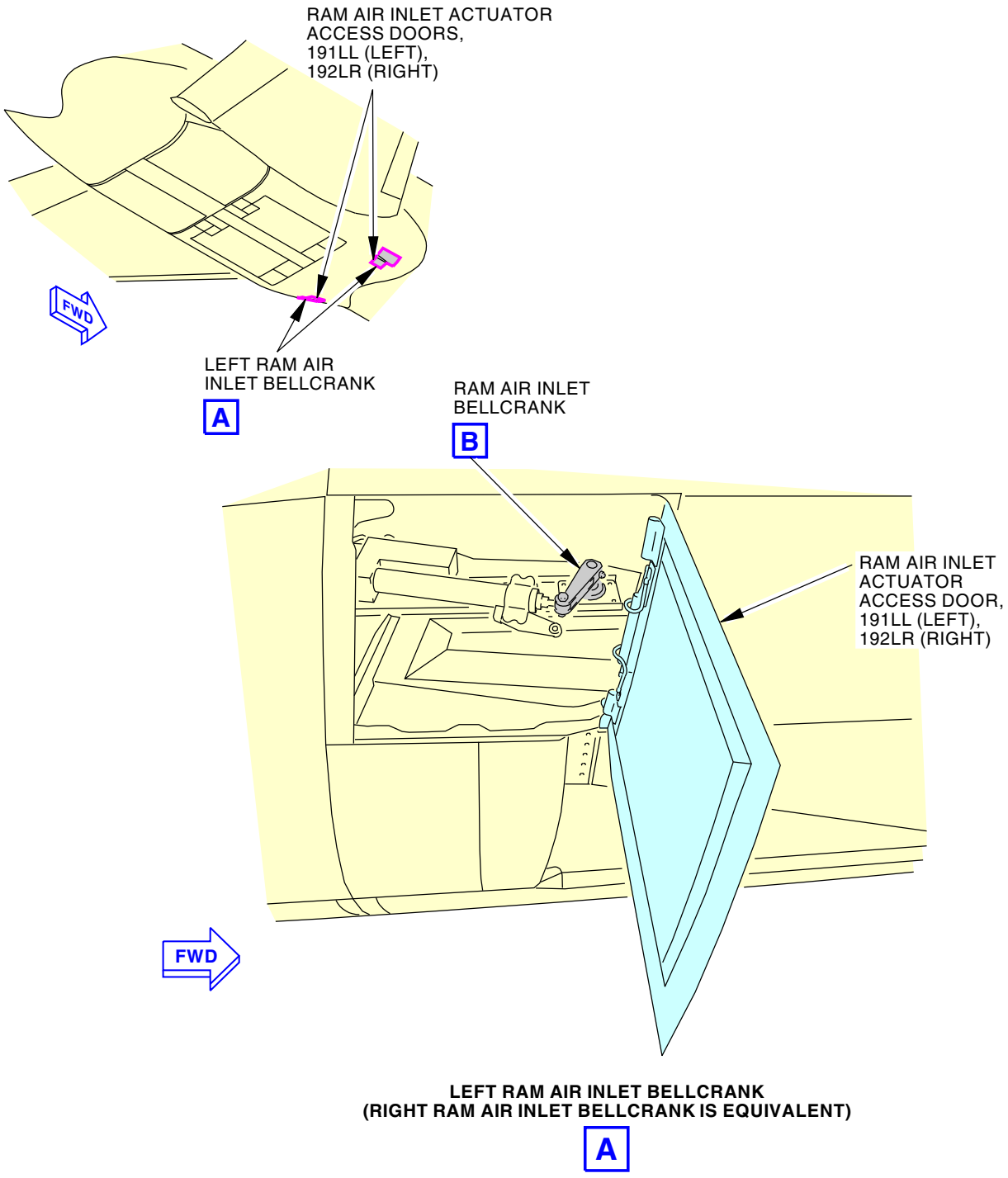

1568344 S0000291734_V2

Ram Air Inlet Bellcrank Installation
Figure 204/21-52-20-990-808 (Sheet 1 of 4)

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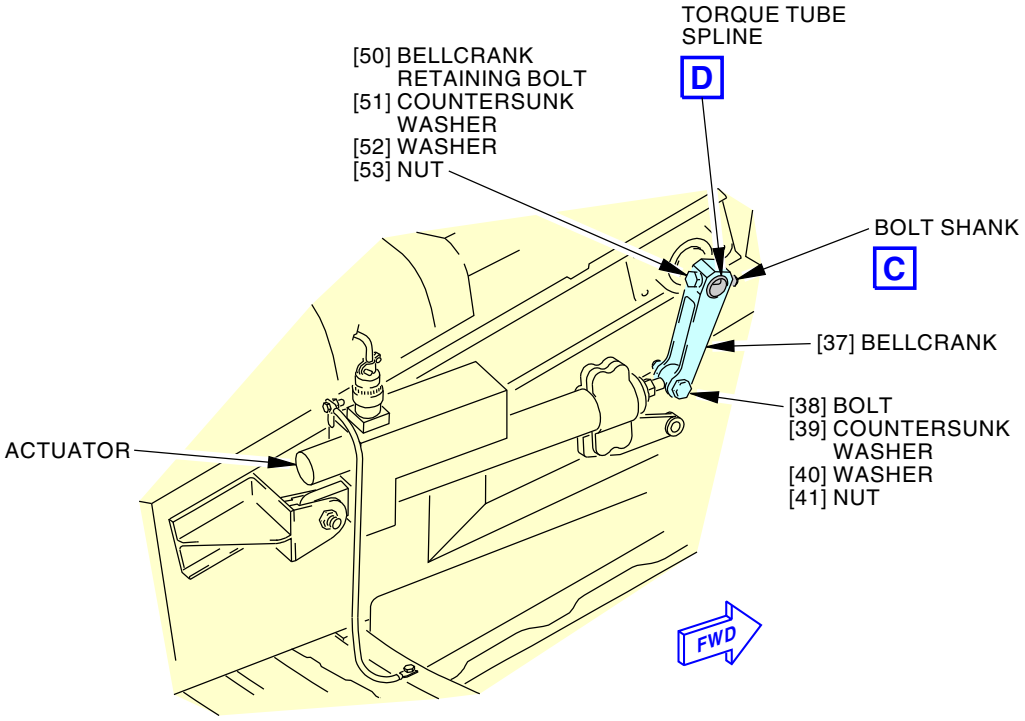

RAM AIR INLET BELLCRANK

B

1568378 S0000291736_V2

Ram Air Inlet Bellcrank Installation
Figure 204/21-52-20-990-808 (Sheet 2 of 4)

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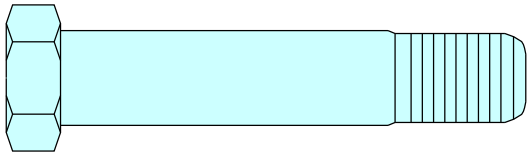
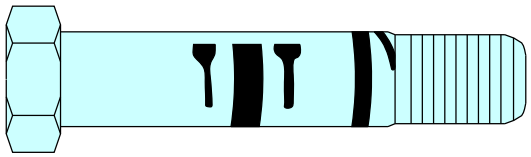


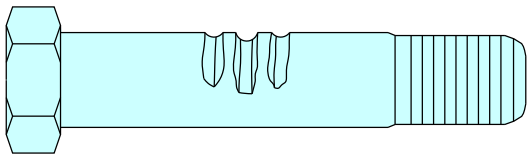
**BOLT SHANK: CONDITION 1
(ACCEPTABLE FOR SERVICE)**

C



**BOLT SHANK: CONDITION 2
(UNACCEPTABLE FOR SERVICE, SCORING)
(TORQUE TUBE SPLINE DAMAGE POSSIBLE)**

C



**BOLT SHANK: CONDITION 3
(UNACCEPTABLE FOR SERVICE, GOUGING)
(TORQUE TUBE SPLINE DAMAGE PROBABLE)**

C

1568564 S0000291738_V2

**Ram Air Inlet Bellcrank Installation
Figure 204/21-52-20-990-808 (Sheet 3 of 4)**

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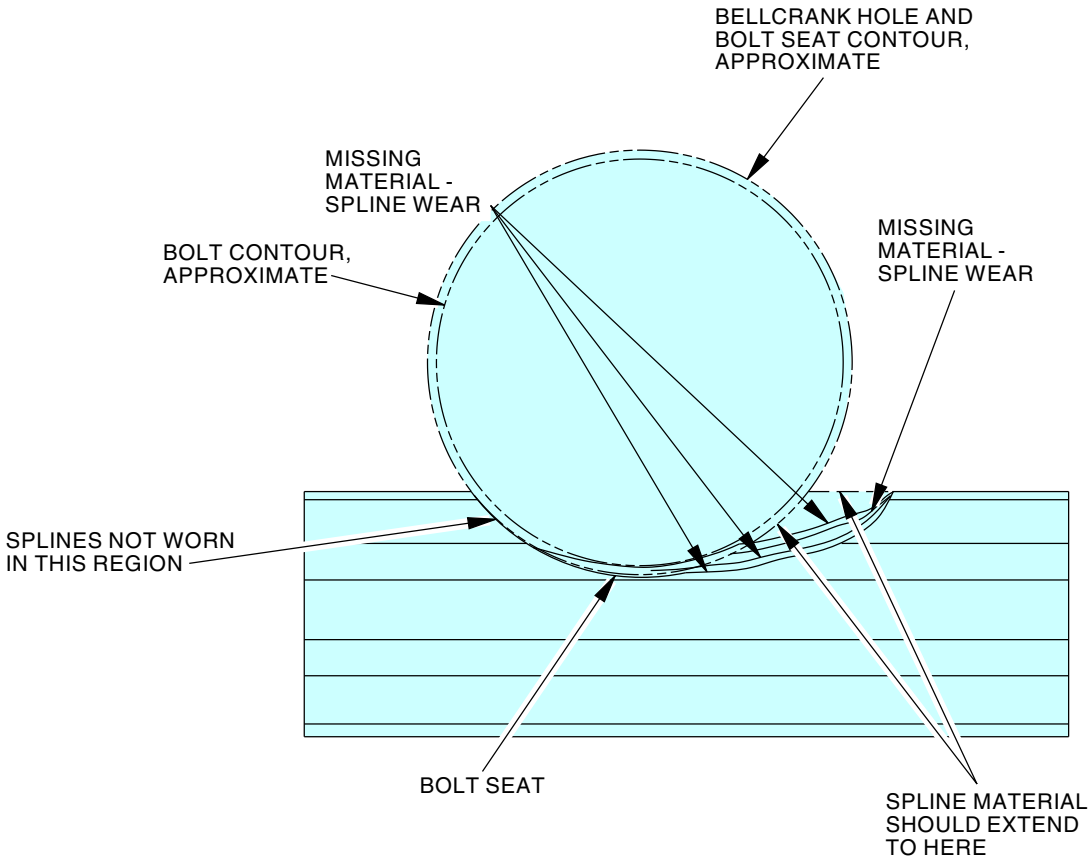

TORQUE TUBE SPLINE
(UNACCEPTABLE CONDITION CRITERIA)

D

1568987 S0000291740_V2

Ram Air Inlet Bellcrank Installation
Figure 204/21-52-20-990-808 (Sheet 4 of 4)

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TASK 21-52-20-400-805

7. Ram Air Inlet Bellcrank Installation

(Figure 204)

A. Consumable Materials

Reference	Description	Specification
A01054	Adhesive - Modified Epoxy	BMS5-92 Type V
G02439	Brush - Nylon Bristle	

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191LL	Ram Air Inlet Actuator Door
192LR	Ram Air Inlet Actuator Door

D. Ram Air Inlet Bellcrank Installation

SUBTASK 21-52-20-420-021

(1) To install a bellcrank [37] with a clamping slot, do these steps:

NOTE: Replacement of the bellcrank or modification of the bellcrank to incorporate the clamping slot is the preferred configuration. SB 777-21-0131 provides instructions to modify the bellcrank. In-service records indicate that the cause of the retaining bolt damage is a chronic condition. The addition of the clamping slot on the bellcrank uses bolt clamp force to eliminate the relative motion between the bellcrank and the torque shaft.

(a) Slide the bellcrank [37] onto the torque tube splines.

(b) Install the bellcrank retaining bolt [50], countersunk washer [51], washer [52], and nut [53] to the bellcrank [37].

NOTE: Position countersunk side of countersunk washer [51] under bolt head.

(c) Tighten the nut [53] and torque to150 in-lb (17 N·m) to 160 in-lb (18 N·m).

(d) Install the bolt [38], countersunk washer [39], washer [40], and the nut [41], to connect the actuator rod end to the bellcrank [37].

NOTE: Position countersunk side of countersunk washer [39] under bolt head.

(e) Tighten the nut [41] and torque to 220 in-lb (25 N·m) to 410 in-lb (46 N·m).

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SUBTASK 21-52-20-420-027

(2) To install an unmodified bellcrank [37] with epoxy adhesive, do these steps:

NOTE: Completion of the wet install using an unmodified bellcrank is acceptable per SB 777-21-0128. In-service records indicate that the cause of the retaining bolt damage is a chronic condition. The addition of epoxy provides protection to the bellcrank/torque tube connection from a high-vibration environment. The preferred configuration is to install the bolt without epoxy adhesive into a bellcrank with a clamping slot.

NOTE: When epoxy is applied to the bellcrank/torque tube connection, the connection will be permanent.

(a) Apply adhesive, A01054 with a brush, G02439, or other convenient means, to the torque tube splines.

(b) Slide the bellcrank [37] onto the torque tube splines. Use a brush, G02439 to add and/or distribute adhesive, A01054 on the seam of the bellcrank/torque tube connection.

(c) Brush adhesive, A01054 on the shank of the bellcrank retaining bolt [50], and install the bellcrank retaining bolt [50], countersunk washer [51], washer [52], and nut [53] to the bellcrank [37].

NOTE: Position the countersunk side of countersunk washer [51] under the bolt head.

(d) Tighten the nut [53] and torque to 130 in-lb (15 N·m) to 200 in-lb (23 N·m).

(e) Allow sufficient time for the adhesive, A01054 to cure, according to supplier's instructions.

(f) Install the bolt [38], countersunk washer [39], washer [40], and the nut [41] to connect the actuator rod end to the bellcrank [37].

NOTE: Position the countersunk side of countersunk washer [39] under the bolt head.

(g) Tighten the nut [41] and torque to 220 in-lb (25 N·m) to 410 in-lb (46 N·m).

SUBTASK 21-52-20-420-028

(3) To install an unmodified bellcrank [37] without the epoxy adhesive, do these steps:

NOTE: Installation of an unmodified bellcrank without epoxy adhesive is not recommended. In-service records indicate that the cause of the retaining bolt damage is a chronic condition. The addition of epoxy, or the installation of a bellcrank with a clamping slot, provides protection to the bellcrank/torque tube connection from a high-vibration environment.

(a) Slide the bellcrank [37] onto the torque tube splines.

(b) Install the bellcrank retaining bolt [50], countersunk washer [51], washer [52], and nut [53] to the bellcrank [37].

NOTE: Position countersunk side of countersunk washer [51] under bolt head.

(c) Tighten the nut [53] and torque to 130 in-lb (15 N·m) to 200 in-lb (23 N·m).

(d) Install the bolt [38], countersunk washer [39], washer [40], and the nut [41], to connect the actuator rod end to the bellcrank [37].

NOTE: Position countersunk side of countersunk washer [39] under bolt head.

(e) Tighten the nut [41] and torque to 220 in-lb (25 N·m) to 410 in-lb (46 N·m).

SUBTASK 21-52-20-710-001

(4) Do this task: Ram Air Inlet Door and Actuator Adjustment, TASK 21-52-20-800-801.

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E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-20-860-053

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

(1) If you replaced the ram air inlet bellcrank for the left pack;

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-20-860-054

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

(2) If you replaced the ram air inlet bellcrank for the right pack;

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-52-20-410-010

(3) Close the applicable access panels:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door
192LR	Ram Air Inlet Actuator Door

SUBTASK 21-52-20-410-011

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

END OF TASK

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TASK 21-52-20-000-807

8. Ram Air Inlet Torque Tube Removal

(Figure 205)

A. General

(1) If epoxy is applied to the bellcrank/torque tube connection, then the connection is permanent and the bellcrank/torque tube must be removed as a single unit.

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic 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
SPL-1551	Wrench - Spanner, Adapter for BACN10RF Nuts. (See ST2580-267 Drawing for correct dash number) Part #: ST2580-267 Supplier: 81205

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191GL	Forward Wing To Body Fairing Panel
191HL	Forward Wing To Body Fairing Panel
191LL	Ram Air Inlet Actuator Door
192GR	Forward Wing To Body Fairing Panel
192HR	Forward Wing To Body Fairing Panel
192LR	Ram Air Inlet Actuator Door

F. Prepare for the Removal

SUBTASK 21-52-20-860-055

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-20-010-007

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-20-860-056

(3) For the left pack ram air inlet torque tube, do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(b) Open these access panels:

Number	Name/Location
191GL	Forward Wing To Body Fairing Panel
191HL	Forward Wing To Body Fairing Panel
191LL	Ram Air Inlet Actuator Door

SUBTASK 21-52-20-860-057

(4) For the right pack ram air inlet torque tube, do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Open these access panels:

Number	Name/Location
192GR	Forward Wing To Body Fairing Panel
192HR	Forward Wing To Body Fairing Panel
192LR	Ram Air Inlet Actuator Door

SUBTASK 21-52-20-010-008

(5) Remove the applicable ram air inlet door. To remove the ram air inlet door, do this task: Ram Air Inlet Door Removal, TASK 21-52-20-000-803.

NOTE: At customer discretion, remove the ram air inlet door completely or partially. To get access to the aft door section.

NOTE: The ram air inlet door has two sections. You must remove each section of the door independently.

G. Ram Air Inlet Torque Tube Removal

SUBTASK 21-52-20-210-011

(1) Do a visual inspection of the bellcrank/torque tube connection for epoxy adhesive.

NOTE: The bellcrank cannot be removed from the torque tube if it has been installed with epoxy adhesive.

SUBTASK 21-52-20-020-022

(2) To remove the left/right ram air inlet door torque tube without epoxy, do these steps:

(a) Remove the bolt [38], countersunk washer [39], washer [40], and nut [41] to disconnect the actuator pushrod from the bellcrank [37].

(b) Turn the bellcrank [37] to make sure that the torque tube turns smoothly without binding.

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(c) Remove the bellcrank retaining bolt [50], countersunk washer [51], washer [52], and nut [53] from the bellcrank [37].

NOTE: Identify bellcrank retaining bolt [50] to perform the inspection in Ram Air Inlet Bellcrank Removal, TASK 21-52-20-000-806.

(d) Remove the bellcrank [37] from the torque tube [54].

(e) Remove the bolt [55], washer [56], and nut [57] at two locations, which hold the arm assembly to the torque tube [54].

(f) Remove the bearing retaining nut [58] using spanner wrench, SPL-1551 and washer [59] at two locations, which hold the torque tube [54] to the end cap bearing assembly [60].

(g) Remove the bolt [61], washer [62] and nut [63] at four locations, which hold the end cap bearing assembly [60] to the ram air inlet structure at two locations.

(h) Remove the end cap bearing assembly [60] on the actuator side of the ram air inlet structure.

1) Inspect the end cap bearing assembly [60] for signs of obvious damage.

2) Make sure the end cap bearing assembly [60] turns freely.

(i) Remove the end cap bearing assembly [60] and shim [64] at location opposite of the actuator side of ram air inlet structure.

1) Inspect the end cap bearing assembly [60] for signs of obvious damage.

2) Make sure the end cap bearing assembly [60] turns freely.

(j) On the actuator side of the ram air inlet structure pull the torque tube [54] out of the structure. Carefully slide the arm assemblies off of the torque tube [54] as you remove it.

SUBTASK 21-52-20-020-023

(3) To remove the left/right ram air inlet door torque tube with epoxy, do these steps:

NOTE: If epoxy is applied to the bellcrank/torque tube connection, then the connection is permanent and the bellcrank/torque tube must be removed as a single unit.

(a) Remove the bolt [38], countersunk washer [39], washer [40], and nut [41] to disconnect the actuator pushrod from the bellcrank [37].

(b) Remove the bolt [55], washer [56], and nut [57] at two locations, which hold the arm assembly to the torque tube [54].

(c) Turn the bellcrank [37] to make sure that the torque tube turns smoothly without binding.

(d) Remove the bearing retaining nut [58] using spanner wrench, SPL-1551 and washer [59] at location opposite of the actuator side of ram air inlet structure, which hold the torque tube [54] to the end cap bearing assembly [60].

NOTE: Removing the actuator side bearing retaining nut [58] is not necessary. The bearing retaining nut [58] and washer [59] cannot be pulled from the torque tube [54] because of the bellcrank [37].

(e) Remove the bolt [61], washer [62] and nut [63] at four locations, which hold the end cap bearing assembly [60] to the ram air inlet structure at two locations.

(f) Remove the end cap bearing assembly [60] and shim [64] at location opposite of the actuator side of ram air inlet structure.

(g) On the actuator side of the ram air inlet structure pull the torque tube [54]/bellcrank [37] connection, and end cap bearing assembly [60] out of the structure. Carefully slide the arm assemblies off of the torque tube [54] as you remove it.

——— END OF TASK ———

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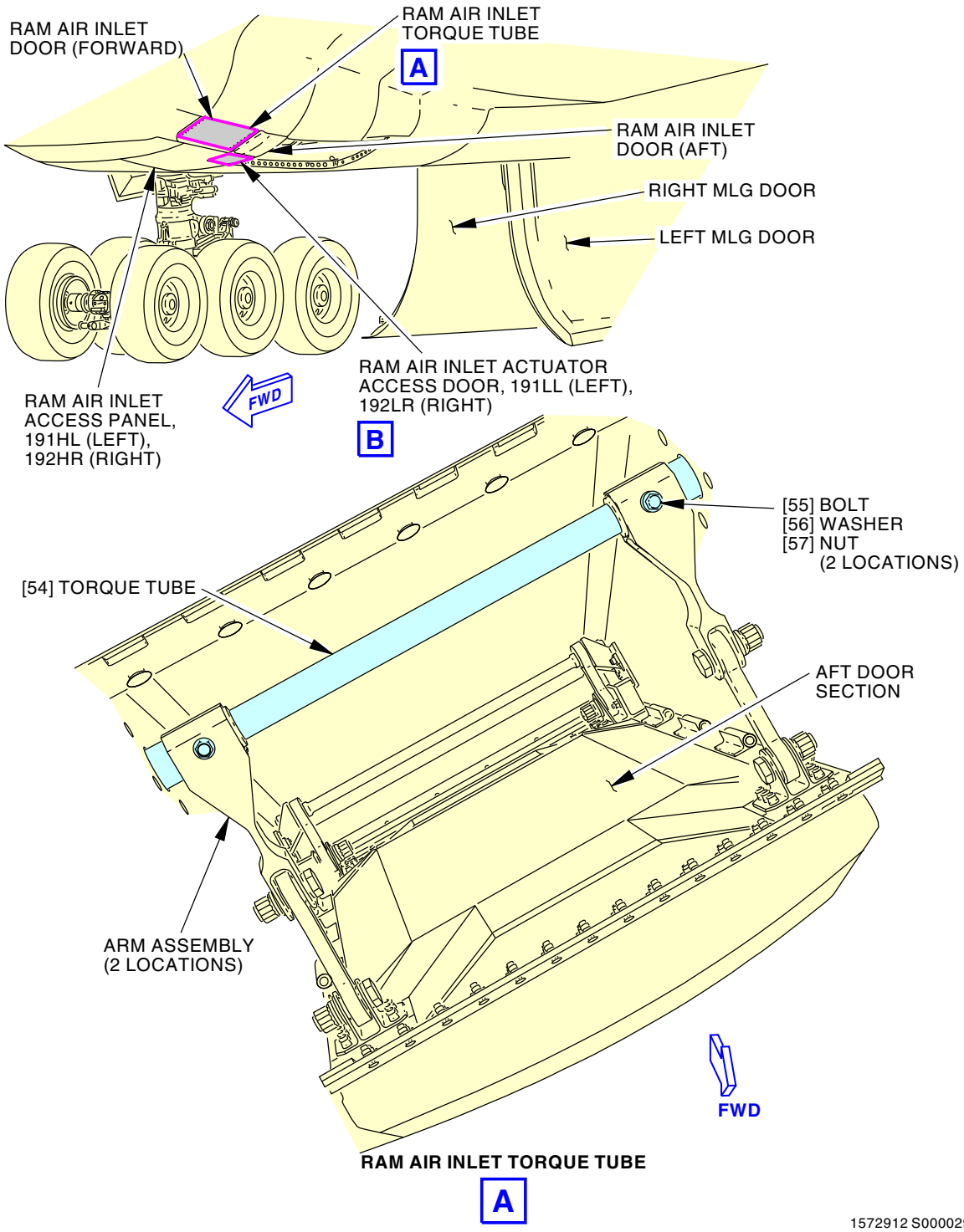

Ram Air Inlet Torque Tube Installation
Figure 205/21-52-20-990-809 (Sheet 1 of 4)

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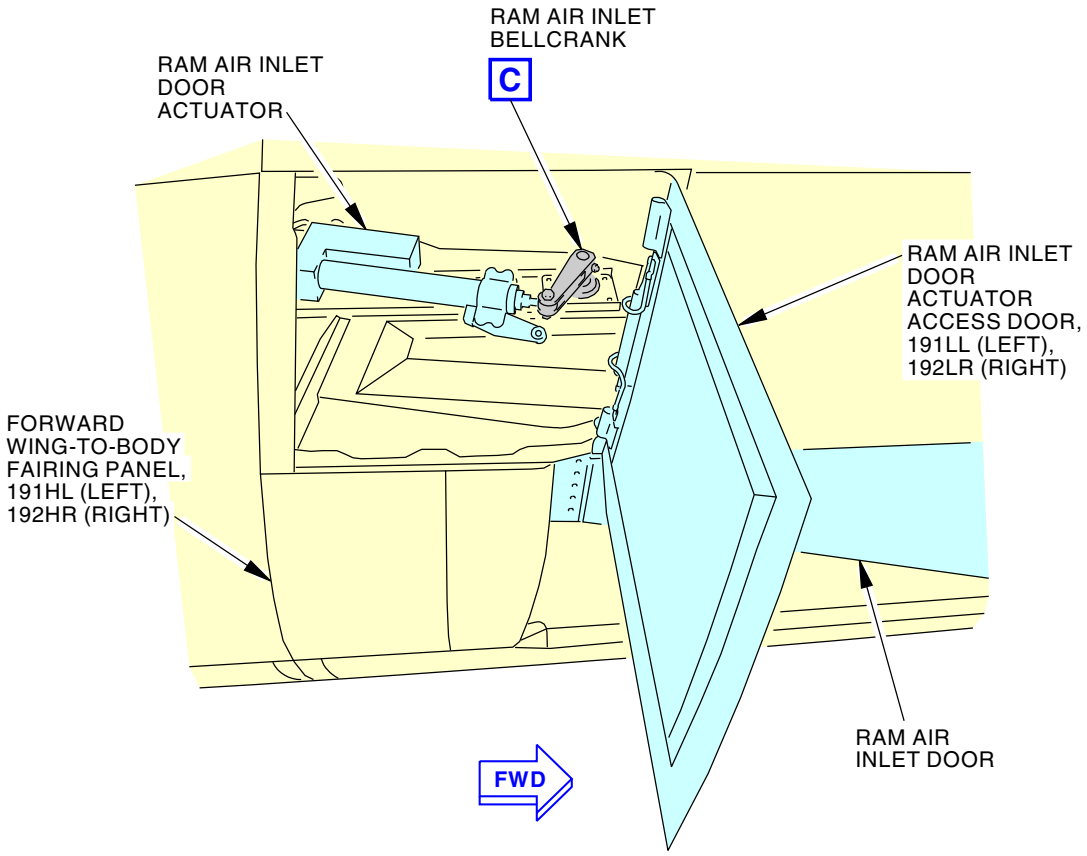

LEFT RAM AIR INLET DOOR AND ACTUATOR
(RIGHT RAM AIR INLET DOOR AND ACTUATOR ARE EQUIVALENT)

B

1572908 S0000293460_V3

Ram Air Inlet Torque Tube Installation
Figure 205/21-52-20-990-809 (Sheet 2 of 4)

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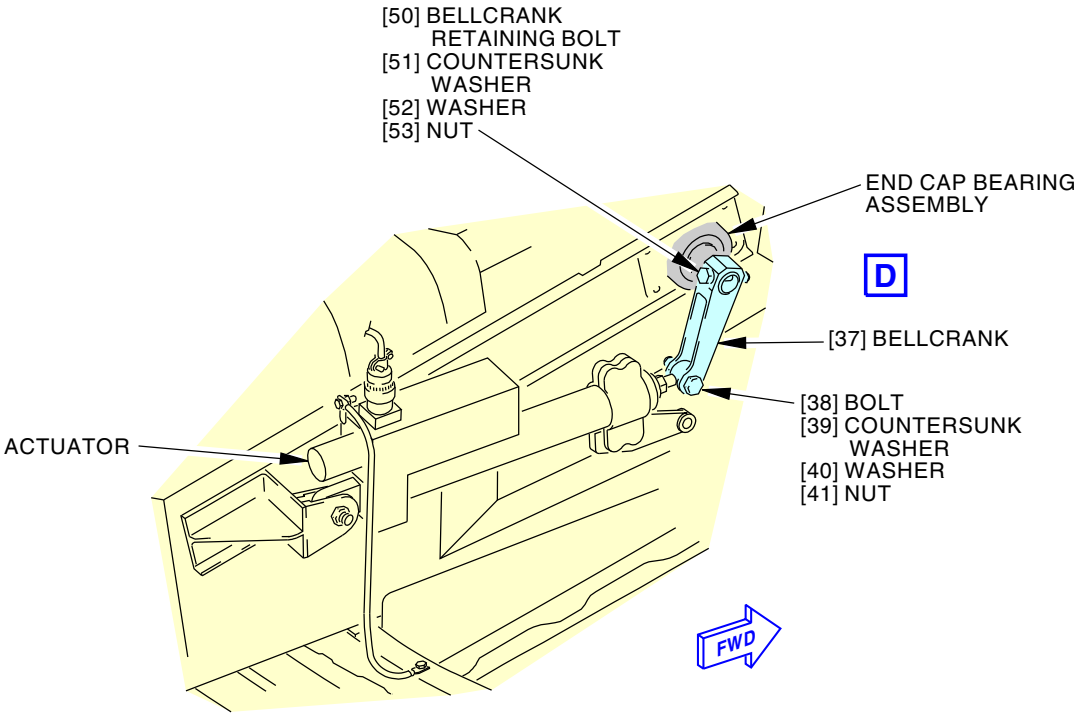

RAM AIR INLET BELLCRANK

C

1572806 S0000293509_V3

Ram Air Inlet Torque Tube Installation
Figure 205/21-52-20-990-809 (Sheet 3 of 4)

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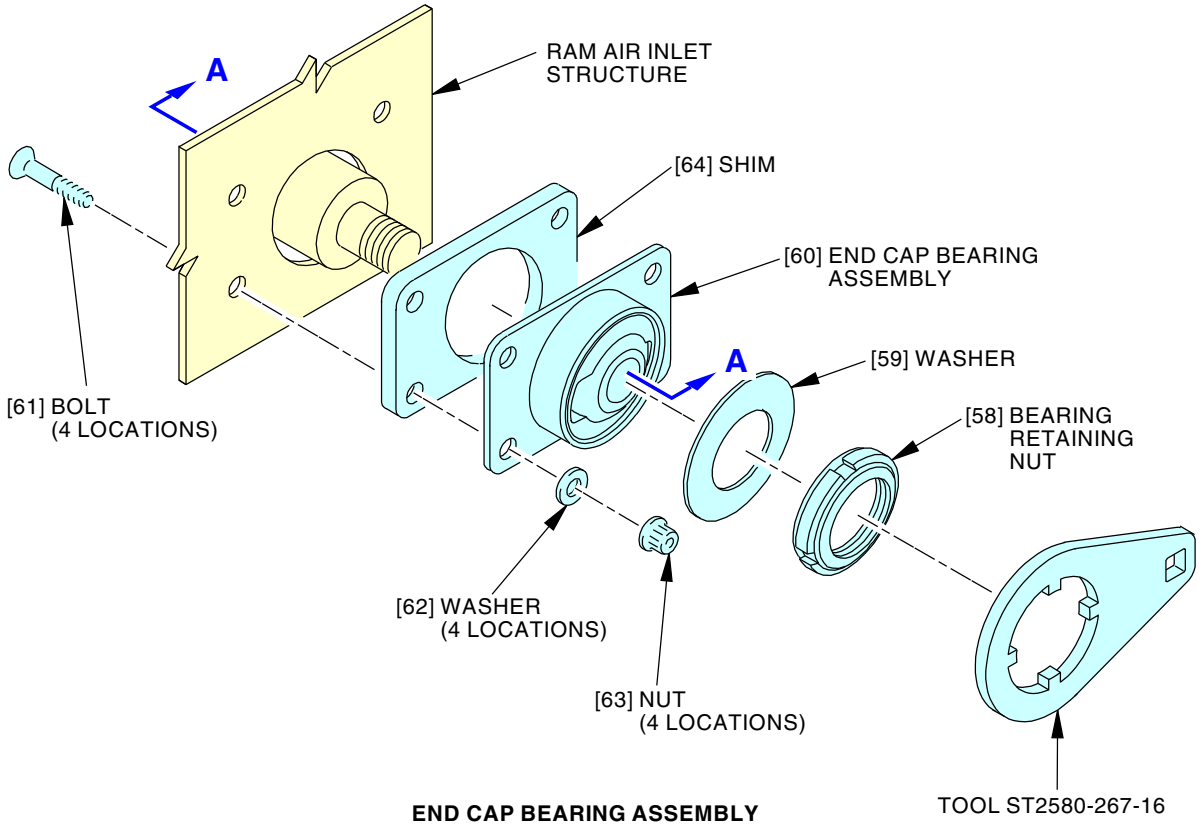

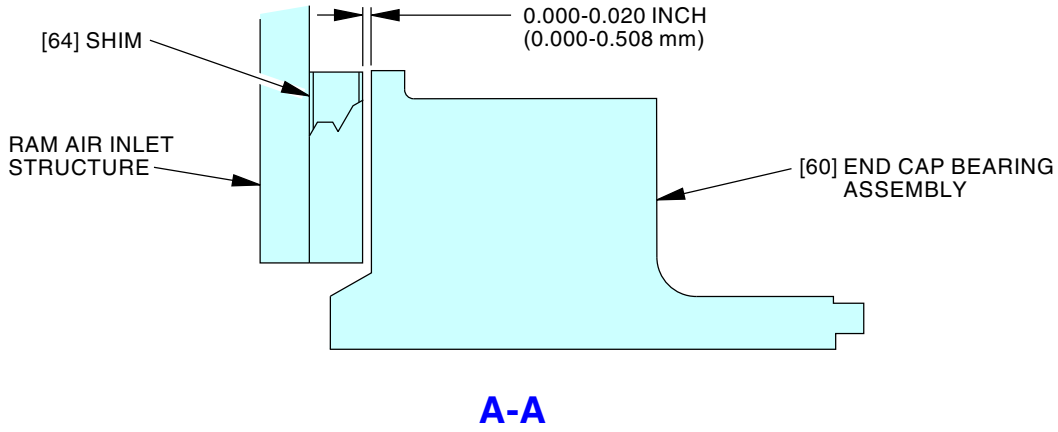

1572812 S0000293510_V3

Ram Air Inlet Torque Tube Installation
Figure 205/21-52-20-990-809 (Sheet 4 of 4)

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TASK 21-52-20-400-806

9. Ram Air Inlet Torque Tube Installation

Figure 205

A. Tools/Equipment

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

Reference	Description
SPL-1551	Wrench - Spanner, Adapter for BACN10RF Nuts. (See ST2580-267 Drawing for correct dash number) Part #: ST2580-267 Supplier: 81205

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191GL	Forward Wing To Body Fairing Panel
191HL	Forward Wing To Body Fairing Panel
191LL	Ram Air Inlet Actuator Door
192GR	Forward Wing To Body Fairing Panel
192HR	Forward Wing To Body Fairing Panel
192LR	Ram Air Inlet Actuator Door

E. Ram Air Inlet Torque Tube Installation

SUBTASK 21-52-20-420-022

(1) On the actuator side of the ram air inlet structure, slide the torque tube [54] into the structure. Carefully slide the arm assemblies onto the torque tube [54] as you install it.

(a) Make sure the spline end of the torque tube [54] is toward the actuator side.

(b) Rotate the torque tube [54] so the notch in the spline shaft is at the 1 o'clock position for the left ram air inlet, and at the 11 o’clock position for the right ram air inlet.

SUBTASK 21-52-20-420-023

(2) On the actuator side of the ram air inlet structure, install the end cap bearing assembly [60].

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(a) Apply sealant, A00247 on the surface between the end cap bearing assembly [60] and the ram air inlet structure actuator stiffener channel and slide end cap bearing assembly [60] onto torque tube [54]

NOTE: Avoid applying sealant to the bearing.

(b) Install the bolt [61], washer [62] and nut [63] at four locations, which hold the end cap bearing assembly [60] to the ram air inlet structure.

1) Tighten and torque the nut [63] to 50 in-lb (6 N·m) to 75 in-lb (8 N·m) at four locations.

(c) Install the bearing retaining nut [58] and washer [59] using spanner wrench, SPL-1551 to the torque tube [54].

1) Tighten the bearing retaining nut [58] enough to firmly seat the bearing retaining nut [58] andwasher [59] against the end cap bearing assembly [60].

NOTE: The nut will be torqued at a later time when the opposite side nut is installed.

SUBTASK 21-52-20-420-024

(3) On the opposite side of the actuator side of the ram air inlet structure, install the end cap bearing assembly [60].

(a) Slide the end cap bearing assembly [60] onto the torque tube [54] and install the bearing retaining nut [58] and washer [59] using spanner wrench, SPL-1551 to the torque tube [54].

1) Tighten the bearing retaining nut [58] enough to firmly seat the bearing retaining nut [58] andwasher [59] against the end cap bearing assembly [60].

2) Measure the distance between the ram air inlet structure and the end cap bearing assembly [60] flange to determine shim thickness, as shown in (Figure 205 (Sheet 4)View A-A).

3) Remove the bearing retaining nut [58] using spanner wrench, SPL-1551 and washer [59] from the end cap bearing assembly [60].

4) Remove the end cap bearing assembly [60] from the torque tube [54].

5) De-laminate the shim [64] to the required thickness and apply primer, C00259 to the de-laminated side of the shim [64]

6) Slide the shim [64] and end cap bearing assembly [60] onto the torque tube [54].

7) Install the bolt [61], washer [62] and nut [63] at four locations, which hold the end cap bearing assembly [60] to the ram air inlet structure.

a) Tighten and torque the nut [63] to 50 in-lb (6 N·m) to 75 in-lb (8 N·m) at four locations.

8) Install the bearing retaining nut [58] and washer [59] using spanner wrench, SPL-1551 to the torque tube [54].

9) Use two spanner wrenches, SPL-1551, to torque both of the bearing retaining nut [58] to 1500 in-lb (169 N·m) to 1700 in-lb (192 N·m). Torque one side at a time while holding the opposite side with a standard non-torque type of wrench.

SUBTASK 21-52-20-420-025

(4) Make sure the torque tube spline notch is at the 1 o'clock position for the left ram air inlet, and at the 11 o’clock position for the right ram air inlet.

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(a) Install the bolt [55], washer [56], and nut [57] at two locations, that hold the arm assembly to the torque tube [54].

NOTE: Position countersunk side of washer under the head of the bolt.

1) Tighten and torque the nut [57] to 150 in-lb (17 N·m) to250 in-lb (28 N·m) at two locations.

SUBTASK 21-52-20-420-026

(5) Slide the bellcrank [37] onto torque tube splines.

(a) Install the bellcrank retaining bolt [50], countersunk washer [51], washer [52], and nut [53] to the bellcrank [37].

NOTE: Position countersunk side of countersunk washer [51] under bolt head.

(b) Tighten the nut [53] and torque to150 in-lb (17 N·m) to 160 in-lb (18 N·m).

(c) Install the bolt [38], countersunk washer [39], washer [40], and the nut [41], to connect the actuator rod end to the bellcrank [37].

NOTE: Position countersunk side of countersunk washer [39] under bolt head.

(d) Tighten the nut [41] and torque to 220 in-lb (25 N·m) to 410 in-lb (46 N·m).

SUBTASK 21-52-20-410-012

(6) Install the applicable ram air inlet door. To install the ram air inlet door, do this task: Ram Air Inlet Door Installation, TASK 21-52-20-400-803.

SUBTASK 21-52-20-710-002

(7) Do this task: Ram Air Inlet Door and Actuator Adjustment, TASK 21-52-20-800-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-20-860-058

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

(1) If you installed the ram air inlet torque tube for the left pack;

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-20-860-059

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

(2) If you installed the ram air inlet torque tube for the right pack;

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Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-52-20-410-013

(3) Close the applicable access panels:

Number	Name/Location
191GL	Forward Wing To Body Fairing Panel
191HL	Forward Wing To Body Fairing Panel
191LL	Ram Air Inlet Actuator Door
192GR	Forward Wing To Body Fairing Panel
192HR	Forward Wing To Body Fairing Panel
192LR	Ram Air Inlet Actuator Door

SUBTASK 21-52-20-410-014

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

TASK 21-52-20-800-801

10. Ram Air Inlet Door and Actuator Adjustment

(Figure 203)

A. General

(1) This procedure has instructions to do a check of the doors for the ram air inlet system. This check will determine the distance between the ram air inlet door and the fairing lip when the ram air inlet door is in the closed position and, if necessary, adjust the ram air inlet door and actuator. It is necessary to do this check/adjustment any time you remove or install a component of the ram air inlet system.

(2) The ram air inlet doors are usually open when the airplane is on the ground. It is necessary to use a maintenance access terminal (MAT) to close the doors for the ram air inlet system to do the adjustment procedure.

(3) The special function on the MAT positions the (left/right) ram air inlet doors and the ram air exhaust louvers to the full closed position. The ram air inlet doors and the ram air exhaust louvers will move to the full closed position after 5 to 10 seconds.

(4) The same sequence of steps is used for the ram air inlet door for the left or the right cooling pack.

(5) 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)

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(Continued)

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (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
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
191LL	Ram Air Inlet Actuator Door
192LR	Ram Air Inlet Actuator Door

E. Prepare for the Ram Air Inlet Door and Actuator Adjustment

SUBTASK 21-52-20-860-031

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

SUBTASK 21-52-20-860-032

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-20-860-033

(3) Make sure the applicable L PACK switch or R PACK switch is set to the OFF position.

NOTE: The L PACK switch and the R PACK switch are on the pilot's overhead panel, P5. The L (R) PACK switch must be set to OFF and the cooling pack must not be turning or the special functions check on the MAT will not operate.

SUBTASK 21-52-20-010-005

(4) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-20-860-034

(5) For the ram air inlet actuator [31] on the left cooling pack, do the steps that follow:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

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(b) Open this access panel:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door

SUBTASK 21-52-20-860-035

(6) For the ram air inlet actuator [31] on the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Open this access panel:

Number	Name/Location
192LR	Ram Air Inlet Actuator Door

F. Ram Air Inlet Door and Actuator Adjustment

SUBTASK 21-52-20-860-036

WARNING

MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

(1) Use a maintenance access terminal (MAT) to do the Close Ram Doors Special Function for the left (right) ram air inlet door.

NOTE: This special function will close the ram air inlet doors and the ram air exhaust louvers to the rigged position.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) OTHER FUNCTIONS
3) SPECIAL FUNCTIONS
4) 21 Cabin Temperature Control System
5) Close left (right) Ram Doors
6) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE
2) START FUNCTION

(c) When the function is completed, make sure that COMPLETE shows adjacent to FUNCTION CONDITION on the MAT.

SUBTASK 21-52-20-860-037

(2) For the ram air inlet actuator [31] on the left cooling pack, do the steps that follow:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-20-860-038

(3) For the ram air inlet actuator [31] on the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-52-20-820-009

(4) Measure the distance between the ram air inlet door and the fairing lip.

(a) Make sure the actuator rod end is attached to the bellcrank [37].

(b) Make sure the distance measures 0.49 to 0.61 inch (12.45 to 15.5 mm).

SUBTASK 21-52-20-820-010

(5) If the distance between the ram air inlet door and the fairing lip is not 0.49 to 0.61 inch (12.45 to 15.5 mm), then do these steps to adjust the door:

(a) Remove the bolt [38], countersunk washer [39], washer [40] and nut [41] to disconnect the actuator pushrod from the bellcrank [37].

(b) Remove the lockwire from the jamnut on the actuator rod end.

CAUTION

USE TWO WRENCHES TO LOOSEN THE JAMNUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE ACTUATOR COULD OCCUR WHEN YOU LOOSEN THE JAMNUT.

(c) Use a wrench to hold the actuator rod end while you use a second wrench to loosen the jamnut.

(d) Turn the actuator rod end a maximum of ±0.200 inch (±5.08 mm) until the distance measures 0.49 to 0.61 inch (12.45 to 15.5 mm).

1) Loosely install the bolt [38] to connect the actuator rod end to the bellcrank during measurement.

CAUTION

USE TWO WRENCHES TO TIGHTEN THE JAMNUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE ACTUATOR COULD OCCUR WHEN YOU TIGHTEN THE JAMNUT.

(e) Use a wrench to hold the actuator rod end while you use a second wrench to tighten the jamnut 180 to 220 pound-inches (20.3 to 24.8 newton-meters).

1) Install the lockwire on the jamnut.

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(f) Install the bolt [38], countersunk washer [39], washer [40] and the nut [41] to connect the actuator rod end to the bellcrank [37].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-20-860-039

(1) If you adjusted the ram air inlet actuator [31] for the left cooling pack, do the step that follows:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(b) Close this access panel:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door

SUBTASK 21-52-20-860-040

(2) If you adjusted the ram air inlet actuator [31] for the right cooling pack, do the step that follows:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Close this access panel:

Number	Name/Location
192LR	Ram Air Inlet Actuator Door

SUBTASK 21-52-20-410-009

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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RAM AIR INLET SYSTEM - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) A ram air inlet door visual inspection.

(2) A ram air inlet door detailed inspection.

TASK 21-52-20-200-801

2. Ram Air Inlet Door Visual Inspection

Figure 601

A. References

Reference	Title
21-52-20-000-803	Ram Air Inlet Door Removal (P/B 201)
21-52-20-400-803	Ram Air Inlet Door Installation (P/B 201)

B. Location Zones

Zone	Area
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right

C. Access Panels

Number	Name/Location
191LL	Ram Air Inlet Actuator Door
192LR	Ram Air Inlet Actuator Door

D. Prepare for the Inspection

SUBTASK 21-52-20-020-019

(1) Remove the ram air inlet doors. To remove the ram air inlet doors, do this task: (Ram Air Inlet Door Removal, TASK 21-52-20-000-803).

E. Ram Air Inlet Door Visual Inspection

SUBTASK 21-52-20-210-007

(1) Do the steps that follow to do an inspection of the forward and aft ram air inlet doors:

(a) Make sure that the forward and aft ram air inlet doors are not bent, bowed, delaminated, cracked, or broken.

(b) Make sure that the link support brackets are not loose on the aft ram air inlet door.

ARO ALL; AIRPLANES WITH AN AFT DOOR SECTION WITH SWING LINKS

(c) Make sure that the swing link brackets are not loose on the aft ram air inlet door.

ARO ALL

(d) Make sure that the forward and aft hinges are not loose on the ram air inlet doors.

(e) Make sure that the flap seal on the aft end of the aft ram air inlet door is not loose, cracked, or broken.

SUBTASK 21-52-20-210-006

(2) Do the steps that follow to do an inspection of the forward and aft hinges on the ram air inlet door:

(a) Make sure that there is no corrosion, cracks, or wear on the forward or aft hinges.

(b) Make sure that the forward and aft hinges can move freely and smoothly.

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(c) Make sure that the hinge halves cannot make contact with each other in the radial direction.

(d) Make sure that the hinge pin retention blocks are not loose or damaged.

(e) Make sure that the lubrication is satisfactory.

(f) Do a detailed inspection of the hinges if any condition above is indicated (Ram Air Inlet Door Detailed Inspection, TASK 21-52-20-200-802).

SUBTASK 21-52-20-210-001

(3) Do the steps that follow to do an inspection of the actuator link assembly:

(a) Make sure that the actuator link bearings do not have uneven wear.

(b) Make sure that the actuator link bearings are not loose.

(c) Make sure that the actuator link bearings move freely.

(d) Make sure that there are no cracks in the clevis area of the link assembly.

(e) Make sure that there are no cracks in the link support brackets.

SUBTASK 21-52-20-210-002

(4) Do the steps that follow to do an inspection of the torque tube arms:

(a) Make sure that the torque tube arm bearings do not have uneven wear.

(b) Make sure that the torque tube arm bearings are not loose.

(c) Make sure that the torque tube arm bearings move freely.

(d) Make sure that there are no cracks in the collar near the crossbolt.

(e) Make sure that there are no cracks in the collar where it connects to the arm.

ARO ALL; AIRPLANES WITH AN AFT DOOR SECTION WITH SWING LINKS

SUBTASK 21-52-20-210-008

(5) Do the steps that follow to do an inspection of the swing link assembly:

(a) Make sure that there are no cracks in the swing link brackets.

(b) Make sure that the swing link bearings do not have uneven wear.

(c) Make sure that the swing link bearings are not loose.

(d) Make sure that the swing link shaft is not bent, cracked, or loose.

ARO ALL

SUBTASK 21-52-20-220-001

(6) Do the steps that follow to determine the lateral freeplay between the torque tube and the bellcrank:

(a) Refer to Figure 601 .

(b) Open these access panels:

Number	Name/Location
191LL	Ram Air Inlet Actuator Door
192LR	Ram Air Inlet Actuator Door

(c) Push on the bellcrank at the location 1 and in the direction shown.

(d) Measure the distance X between the end of the torque tube and the adjacent surface of the bellcrank.

1) Record the measurement.

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(e) Push on the bellcrank at the location 2 and in the direction shown.

(f) Measure the distance X between the end of the torque tube and the adjacent surface of the bellcrank.

1) Record the measurement.

(g) Subtract the second measurement X from the first measurement X to determine the freeplay.

(h) If the freeplay is none, the removal and inspection of the bellcrank is not necessary.

(i) If the freeplay is less than or equal to 0.038 inch, remove the bellcrank and do these inspections:

1) Do a visual inspection of the bellcrank retaining bolt and the torque tube splines.

a) If the torque tube splines are damaged or worn, replace the torque tube and install a new slotted bellcrank and a new retaining bolt.

b) If just the bellcrank retaining bolt is damaged or worn, install a new slotted bellcrank and a new retaining bolt.

c) If the bellcrank retaining bolt is not damaged or worn, install a new slotted bellcrank with the existing retaining bolt.

(j) If the freeplay is more than 0.038 inch, remove the bellcrank and do these inspections:

1) If the torque tube splines are damaged or worn, install a new torque tube, a new slotted bellcrank, and a new retaining bolt.

2) If the torque tube splines are not damaged or worn, install a new slotted bellcrank and a new retaining bolt.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-20-420-016

(1) Install the ram air inlet doors. To install the ram air inlet doors, do this task: (Ram Air Inlet Door Installation, TASK 21-52-20-400-803).

——— END OF TASK ———

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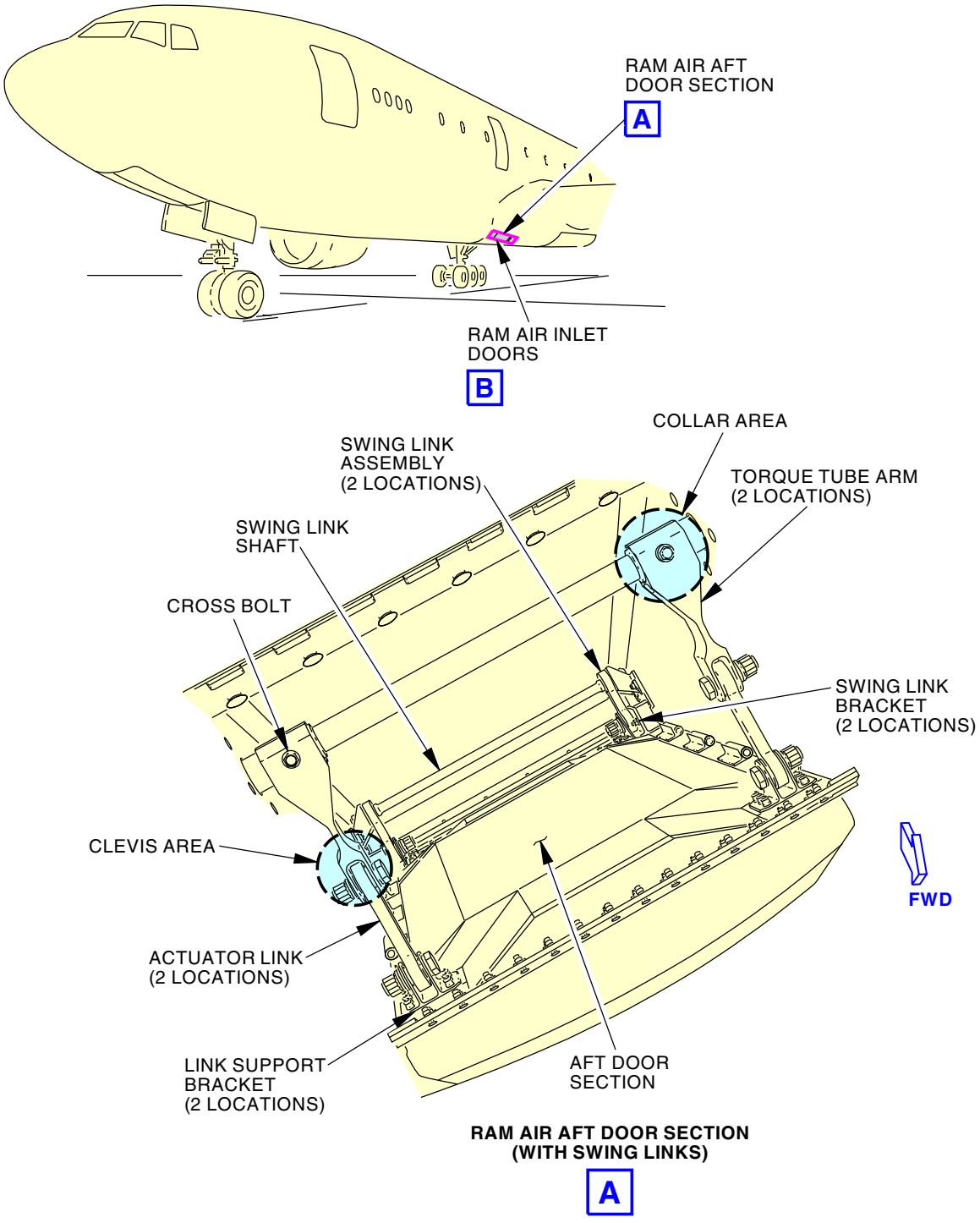

Ram Air Inlet Door Visual Inspection
Figure 601/21-52-20-990-807 (Sheet 1 of 6)

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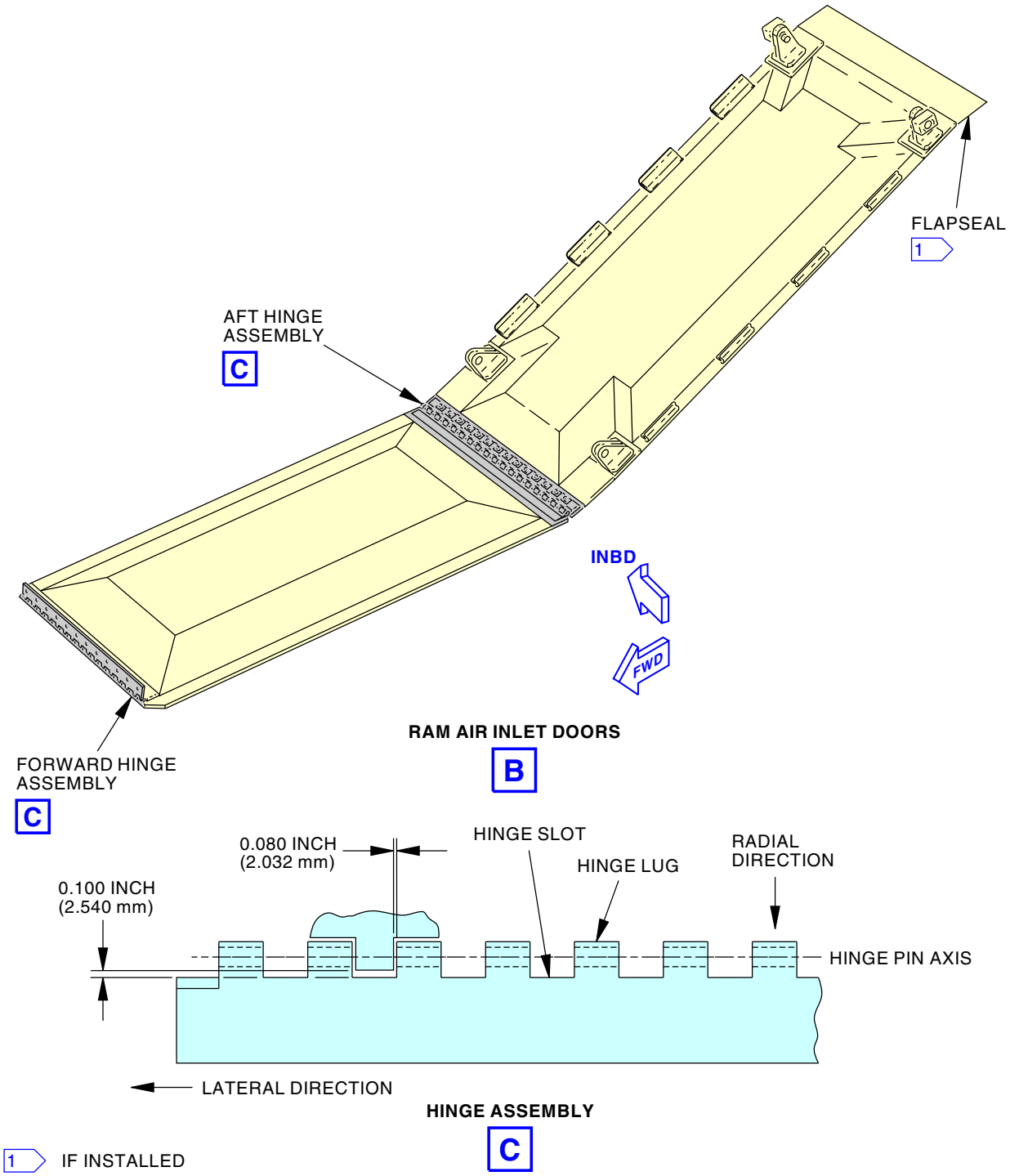

Ram Air Inlet Door Visual Inspection
Figure 601/21-52-20-990-807 (Sheet 2 of 6)

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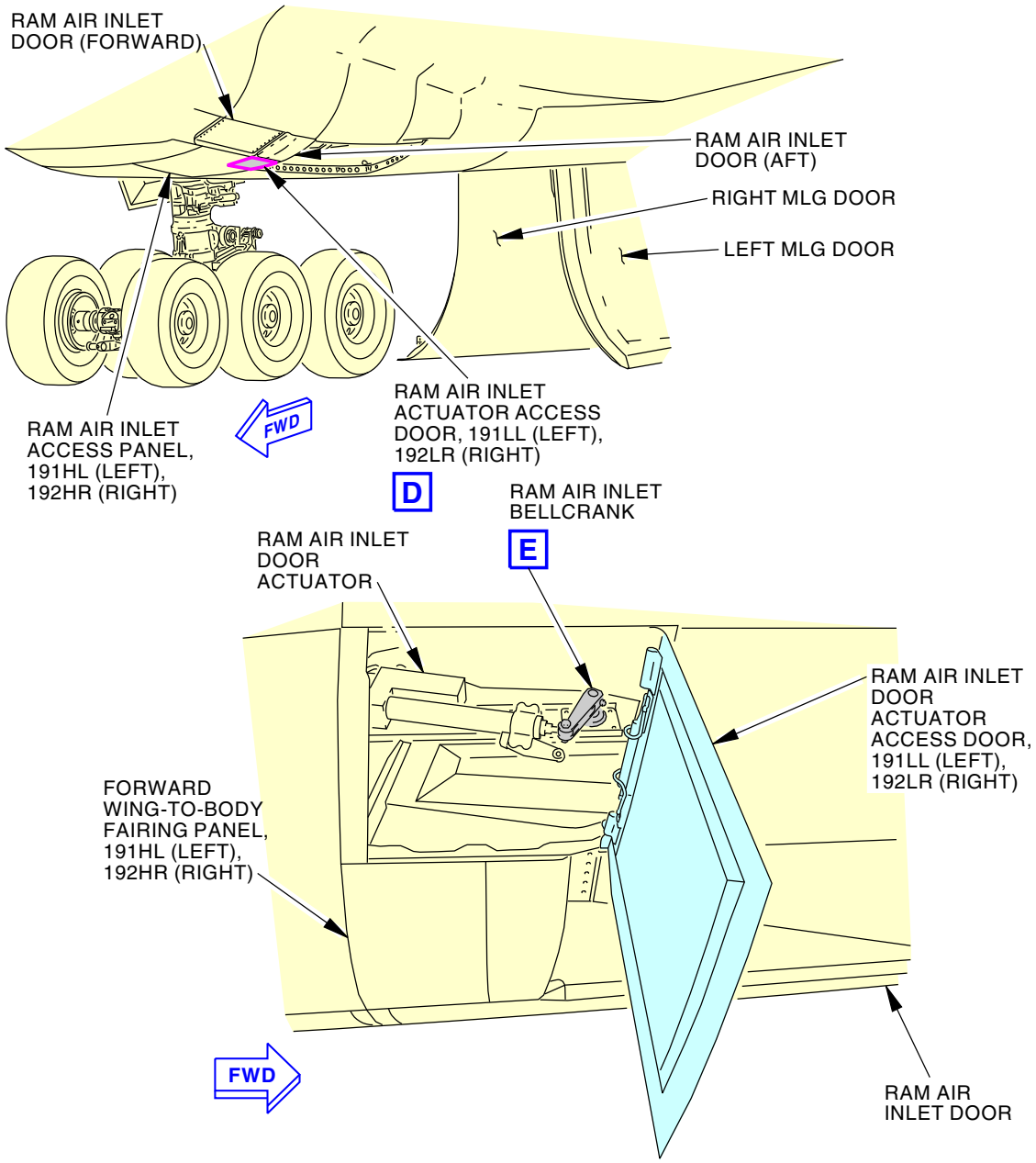

LEFT RAM AIR INLET ACTUATOR ACCESS DOOR
(RIGHT RAM AIR INLET ACTUATOR ACCESS DOOR IS EQUIVALENT)

D

2265768 S0000508547_V2

Ram Air Inlet Door Visual Inspection
Figure 601/21-52-20-990-807 (Sheet 3 of 6)

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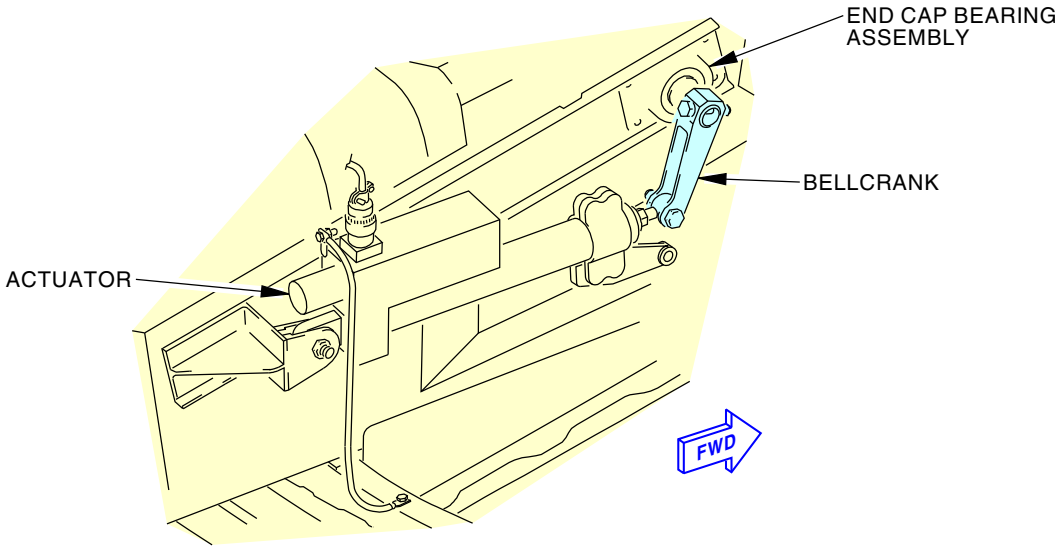

RAM AIR INLET BELLCRANK

E

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Ram Air Inlet Door Visual Inspection
Figure 601/21-52-20-990-807 (Sheet 4 of 6)

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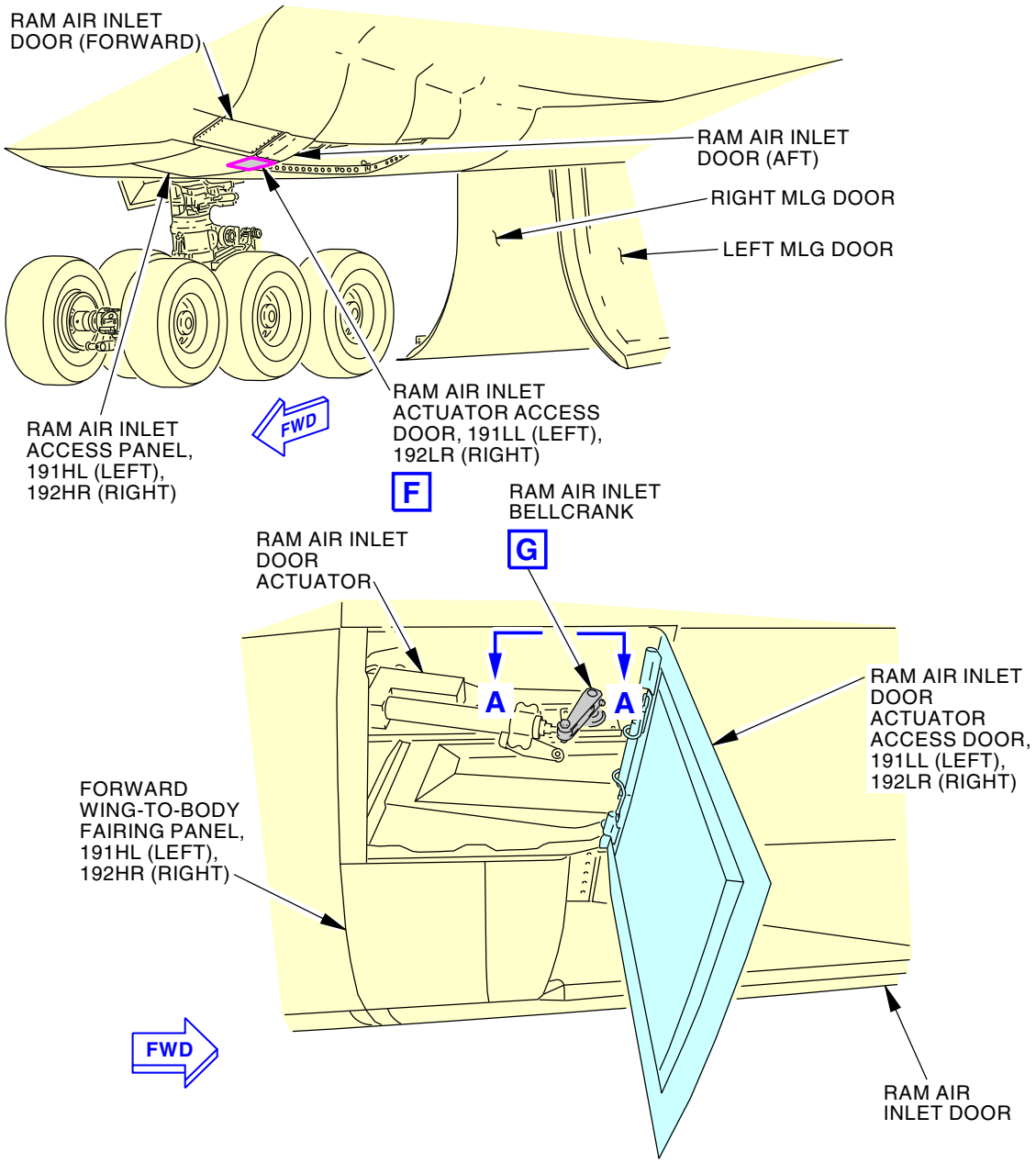

LEFT RAM AIR INLET ACTUATOR ACCESS DOOR
(RIGHT RAM AIR INLET ACTUATOR ACCESS DOOR IS EQUIVALENT)

F

2387659 S0000539901_V2

Ram Air Inlet Door Visual Inspection
Figure 601/21-52-20-990-807 (Sheet 5 of 6)

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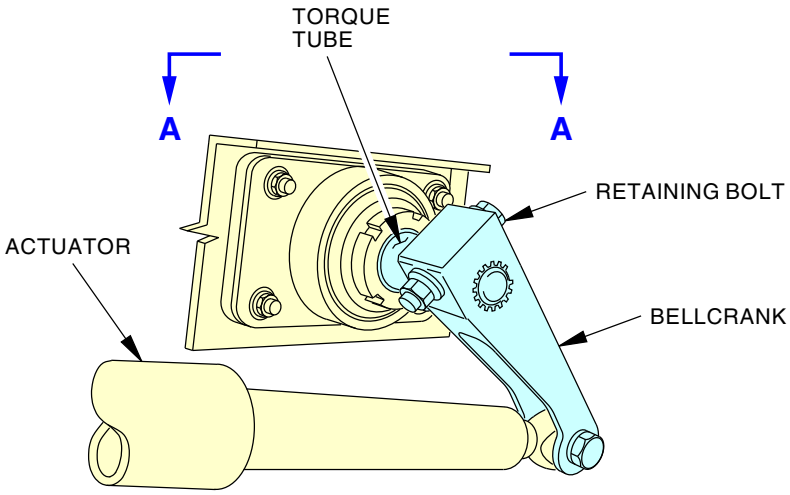
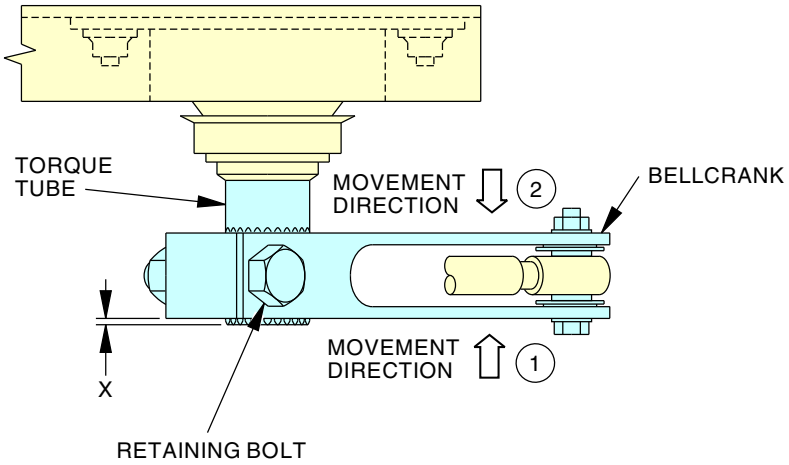


LEFT RAM AIR INLET BELLCRANK

G



A-A

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Ram Air Inlet Door Visual Inspection
Figure 601/21-52-20-990-807 (Sheet 6 of 6)

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TASK 21-52-20-200-802

3. Ram Air Inlet Door Detailed Inspection

Figure 601

A. References

Reference	Title
21-52-20-000-803	Ram Air Inlet Door Removal (P/B 201)
21-52-20-400-803	Ram Air Inlet Door Installation (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D50081	Lubricant - Solid Film, Liquid Dispersed	BMS3-8 Type II

C. Location Zones

Zone	Area
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right

D. Prepare for the Inspection

SUBTASK 21-52-20-020-020

(1) Remove the ram air inlet doors. To remove the ram air inlet doors, do this task: (Ram Air Inlet Door Removal, TASK 21-52-20-000-803).

SUBTASK 21-52-20-140-001

(2) If it is necessary, remove the dirt from the hinge pin and the hinges.

E. Ram Air Inlet Door Detailed Inspection

SUBTASK 21-52-20-211-001

(1) Determine the radial free play of hinges.

(a) Measure the radial (perpendicular to direction of hinge axis) movement of hinge halves.

(b) Customer discretion should be used to determine which hinge position will yield maximum wear data.

(c) The hinge assembly should not have radial movement of more than 0.100 in. (2.540 mm) between the hinge halves (from lug to base of opposite slot). See Figure 601. This measurement corresponds to a lug wall thickness of not less than 0.027 in. (0.686 mm).

SUBTASK 21-52-20-211-002

(2) Determine lateral free play of hinges.

(a) Measure the lateral (longitudinal direction of hinge) movement of hinge halves.

(b) The hinge assembly should not have lateral movement of more than 0.080 in. (2.032 mm) between the hinge halves (lug to lug). See Figure 601.

SUBTASK 21-52-20-211-003

(3) The hinge assembly should not have uneven pin wear or ovalization of the hinge lug holes.

SUBTASK 21-52-20-420-017

(4) If the hinge condition is not satisfactory, then replace the hinge.

(a) Remove the fasteners that hold hinge to the ram air inlet doors.

(b) Remove the hinge from the ram air inlet doors.

(c) Put the hinge in its position against the ram air inlet doors.

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(d) Install the fasteners that hold hinge to the ram air inlet doors.

SUBTASK 21-52-20-212-001

(5) If the hinge condition was not satisfactory, then an additional visual inspection is recommended. Do this task: (Ram Air Inlet Door Visual Inspection, TASK 21-52-20-200-801).

NOTE: Excessive hinge wear can be an indication of damage to other ram air inlet parts.

SUBTASK 21-52-20-840-001

(6) If the hinge condition is satisfactory, then it can be returned to service.

(a) Lubricate the hinge using solid film lubricant, D50081.

NOTE: Apply the lubricant to the inner areas of the hinge.

F. Install the Ram Air Inlet Doors

SUBTASK 21-52-20-420-019

(1) Install the ram air inlet doors. To install the ram air inlet doors, do this task: (Ram Air Inlet Door Installation, TASK 21-52-20-400-803).

SUBTASK 21-52-20-720-001

(2) Do a ram air door installation test. Do this task: (Ram Air Inlet Door Installation, TASK 21-52-20-400-803).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-20-860-049

(1) Do this task: (Remove Electrical Power, TASK 24-22-00-860-806).

——— END OF TASK ———

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RAM AIR EXHAUST HOUSING ASSEMBLY AND ACTUATOR - MAINTENANCE PRACTICES

1. General

A. This procedure contains these tasks:

(1) A removal of the ram air exhaust housing assembly.

(2) An installation of the ram air exhaust housing assembly.

(3) A removal of the actuator for the ram air exhaust louvers.

(4) An installation of the actuator for the ram air exhaust louvers.

(5) An adjustment of the ram air exhaust louvers and actuator.

TASK 21-52-21-000-805

2. Ram Air Exhaust Housing Assembly Removal

(Figure 201)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
195QL	Blowout Door
196ER	Environmental Control Systems (ECS) Access Door
196QR	Blowout Door

D. Prepare for the Removal

SUBTASK 21-52-21-860-049

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-21-010-006

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-21-865-001

(3) For the left cooling pack, do the steps that follow:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(b) To get access to the ram air exhaust housing assembly [1]:

Open these access panels:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
195QL	Blowout Door

SUBTASK 21-52-21-865-002

(4) For the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) To get access to the ram air exhaust housing assembly [1]:

Open these access panels:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door
196QR	Blowout Door

E. Ram Air Exhaust Housing Assembly Removal

SUBTASK 21-52-21-030-005

(1) Loosen the two clamps [3] that attach the hose [4] to the ram air exhaust housing assembly [1].

SUBTASK 21-52-21-010-007

(2) Move the hose [4] away from the ram air exhaust housing assembly [1].

SUBTASK 21-52-21-020-017

(3) Do the steps that follow to disconnect the bonding jumpers:

(a) Remove the nut [9], washer [7], washer [8] and the screw [10].

(b) Move the bonding jumper [5] and the bonding jumper [6] away from the airplane structure.

SUBTASK 21-52-21-020-018

(4) Remove the 34 screws [2] around the ram air exhaust louvers that attach the ram air exhaust housing assembly [1] to the airplane structure.

SUBTASK 21-52-21-020-021

(5) Do the steps that follow to remove the intercostal [12] and clips [11]:

(a) Remove the bolts [13] and collars [14] that attach the intercostal [12] and clips [11] to the airplane structure.

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(b) Remove the intercostal [12] and clips [11].

SUBTASK 21-52-21-020-019

(6) Carefully lower the ram air exhaust housing assembly [1] out through the opening in the airplane structure.

——— END OF TASK ———

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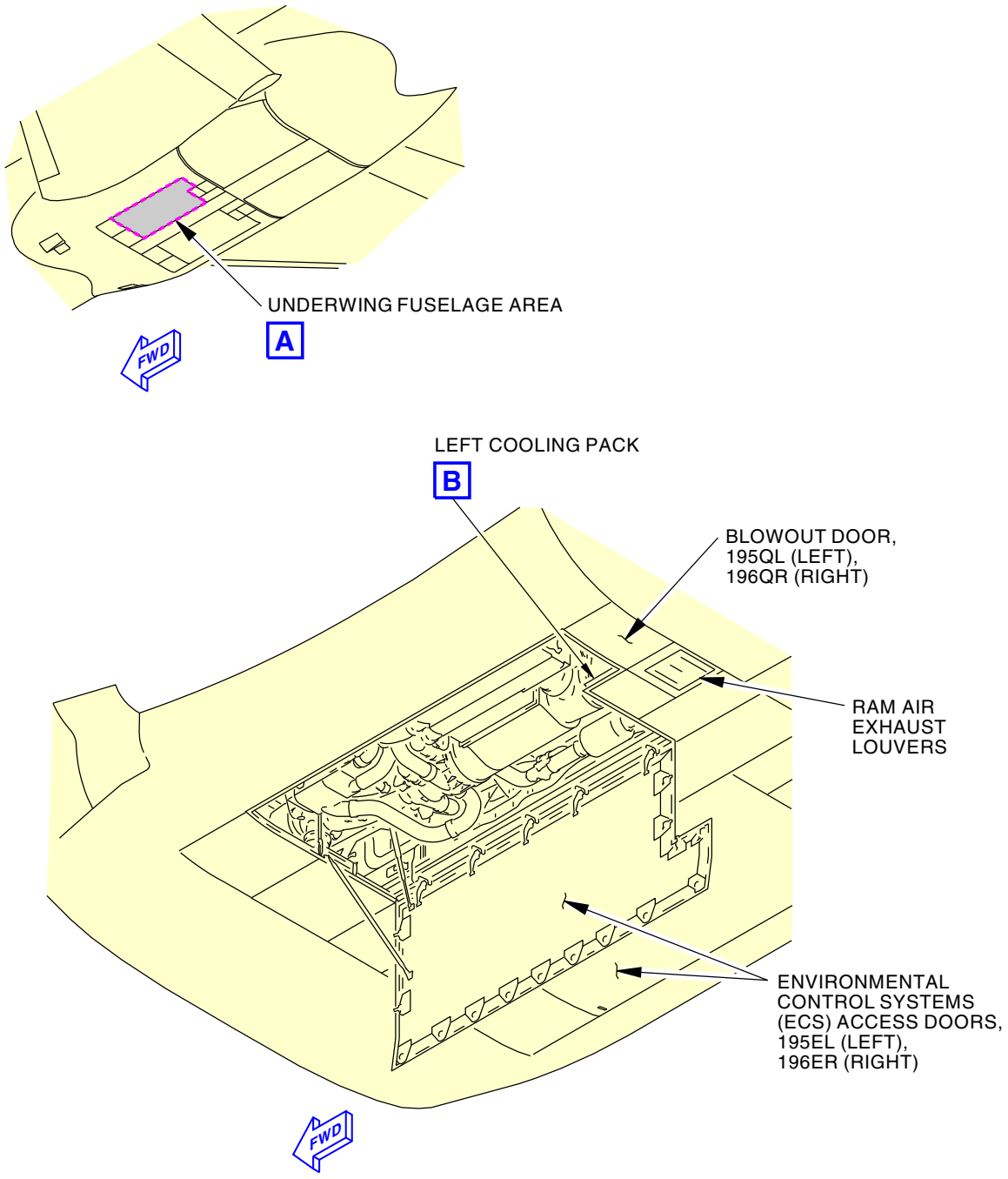

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Ram Air Exhaust Housing Assembly Installation
Figure 201/21-52-21-990-805 (Sheet 1 of 3)

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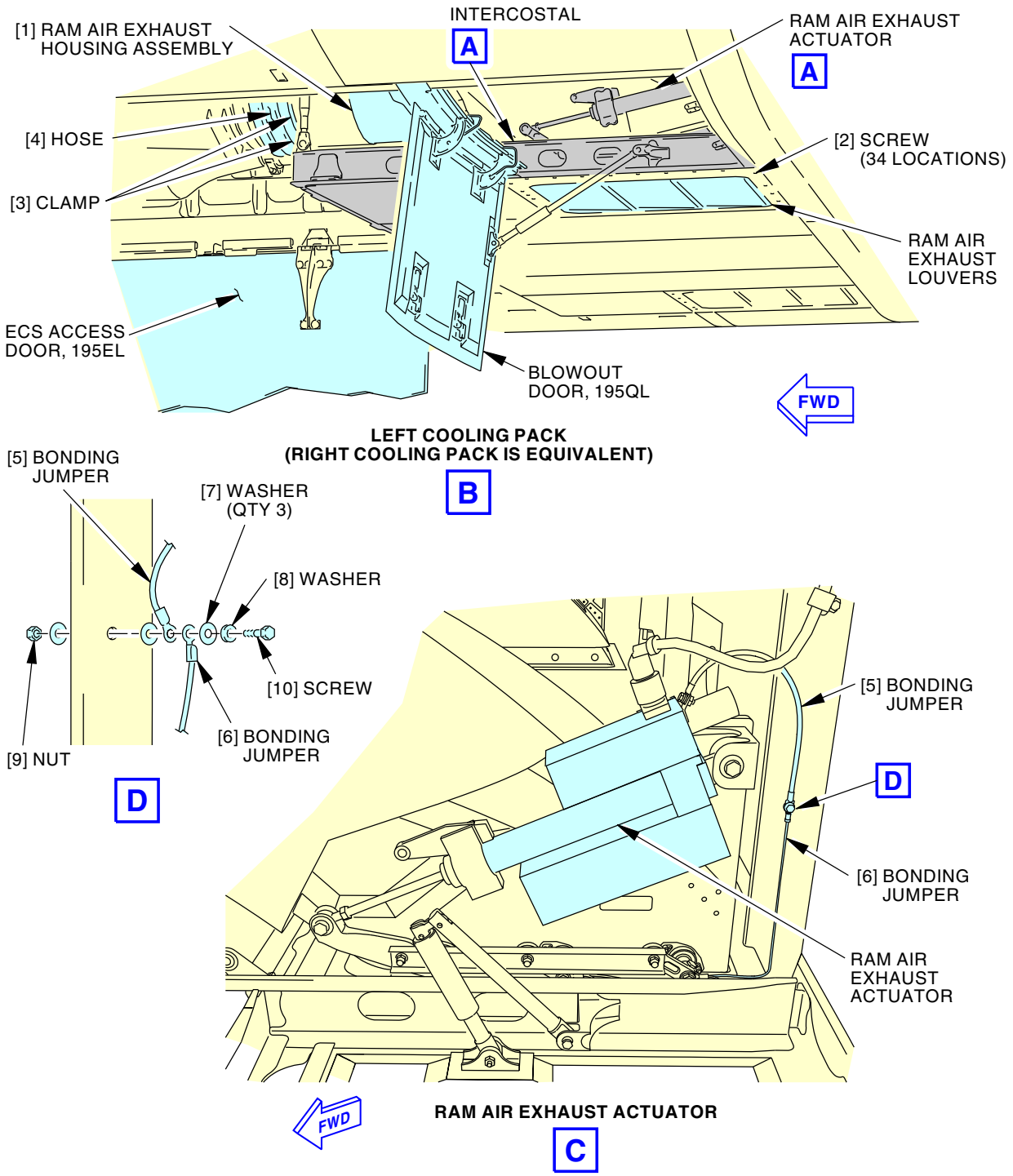

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Ram Air Exhaust Housing Assembly Installation
Figure 201/21-52-21-990-805 (Sheet 2 of 3)

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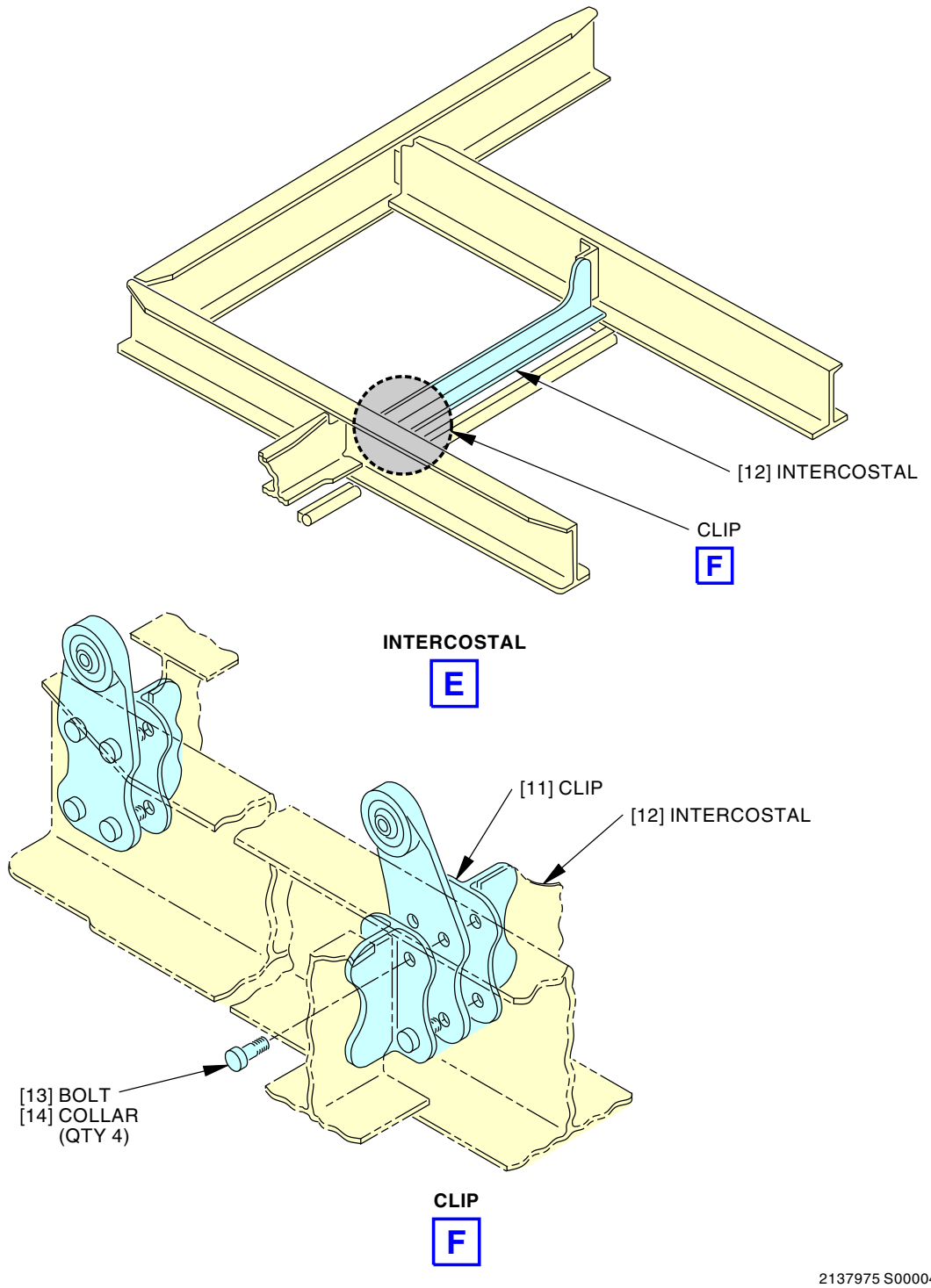

Ram Air Exhaust Housing Assembly Installation
Figure 201/21-52-21-990-805 (Sheet 3 of 3)

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TASK 21-52-21-400-805

3. Ram Air Exhaust Housing Assembly Installation

(Figure 201)

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)
24-22-00-860-806	Remove Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
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. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Housing assembly	21-52-21-05-485	ARO 001-015

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
195QL	Blowout Door
196ER	Environmental Control Systems (ECS) Access Door
196QR	Blowout Door

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F. Ram Air Exhaust Housing Assembly Installation

SUBTASK 21-52-21-420-022

(1) Carefully install the ram air exhaust housing assembly [1] through the opening in the airplane structure.

SUBTASK 21-52-21-420-025

(2) Do the steps that follow to install the intercostal [12] and clips [11]:

(a) Put the intercostal [12] and clips [11] into the correct position.

(b) Install the bolts [13] and collars [14] to attach the intercostal [12] and clips [11] to the airplane structure.

SUBTASK 21-52-21-420-023

(3) Install the 34 screws [2] around the ram air exhaust louvers to attach the ram air exhaust housing assembly [1] to the airplane structure.

SUBTASK 21-52-21-410-007

(4) Move the hose [4] onto the ram air exhaust housing assembly [1].

SUBTASK 21-52-21-410-008

(5) Tighten the two clamps [3] around the hose [4].

SUBTASK 21-52-21-765-001

(6) To install the bonding jumpers, do the steps that follow:

(a) Clean the bond surfaces of the bonding jumper [5], bonding jumper [6] and the washers [7]. To clean the bond surfaces, do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

(b) Put the screw [10], washer [8], washer [7], bonding jumper [5] and bonding jumper [6] in their position on the airplane structure.

(c) Install the washer [7] and the nut [9] which attach the bonding jumpers to the airplane structure.

(d) With the intrinsically safe approved bonding meter, COM-1550, make sure that the resistance between the ram air exhaust actuator and the airplane structure is no more than 0.008 ohm (SWPM 20-20-00).

(e) With the intrinsically safe approved bonding meter, COM-1550, make sure that the resistance between the forward louver of the ram air exhaust housing and the airplane structure is no more than 0.06 ohm (SWPM 20-20-00).

SUBTASK 21-52-21-410-009

(7) If you removed the ram air exhaust housing assembly [1] for the left cooling pack, do the step that follows:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-21-410-010

(8) If you removed the ram air exhaust housing assembly [1] for the right cooling pack, do the step that follows:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

G. Ram Air Exhaust Housing Assembly Installation Test

SUBTASK 21-52-21-861-001

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

SUBTASK 21-52-21-740-005

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET AND EXIT DOORS, LINKAGES, AND ACTUATORS BEFORE YOU DO THIS TEST. INJURIES TO PERSONNEL CAN OCCUR.

(2) Use a maintenance access terminal (MAT) to do an LRU replacement test of the ram air exhaust louvers and actuator (TASK 45-10-00-740-808):

NOTE: While the MAT test is in operation, do a visual check to make sure the ram air exhaust louvers and actuator move freely and smoothly.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Pack Actuators Test (L or R, as appropriate)
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) Make these selections on the MAT:

1) EXTENDED MAINTENANCE
2) EXISTING FAULTS
3) 21 Cabin Temperature Control System

(e) Make sure that there are no maintenance messages for the cabin temperature control system.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-21-410-011

(1) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-21-410-012

(2) If you removed the ram air exhaust housing assembly [1] for the left cooling pack, do the step that follows:

(a) Close these access panels:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
195QL	Blowout Door

SUBTASK 21-52-21-410-013

(3) If you removed the ram air exhaust housing assembly [1] for the right cooling pack, do the step that follows:

(a) Close these access panels:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door
196QR	Blowout Door

SUBTASK 21-52-21-862-001

(4) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

——— END OF TASK ———

TASK 21-52-21-000-806

4. Ram Air Exhaust Actuator Removal

(Figure 202)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195QL	Blowout Door
196QR	Blowout Door

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D. Prepare for the Removal

SUBTASK 21-52-21-864-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-21-010-008

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-21-865-007

(3) If you will re-install the ram air exhaust actuator do the steps that follow to position the actuator in the extended position:

(a) For the ram air exhaust actuator [22] on the left cooling pack, do the steps that follow:

1) Make sure that these circuit breakers are closed:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(b) For the ram air exhaust actuator [22] on the right cooling pack, do the steps that follow:

1) Make sure that these circuit breakers are closed:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET DOORS, RAM AIR EXHAUST LOUVERS, LINKAGES, AND ACTUATORS. THESE COMPONENTS CAN MOVE DURING THE PROCEDURE. POSSIBLE INJURY TO PERSONNEL CAN OCCUR.

(4) Use a maintenance access terminal (MAT) to do the Close Ram Doors Special Function for the left (right) ram air exhaust louvers.

NOTE: This special function will close the ram air inlet doors and the ram air exhaust louvers to the rigged position.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) OTHER FUNCTIONS
3) SPECIAL FUNCTIONS
4) 21 Cabin Temperature Control System
5) Close left (right) Ram Doors
6) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

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1) CONTINUE

2) START FUNCTION

(c) When the function is completed, make sure that COMPLETE shows adjacent to FUNCTION CONDITION on the MAT.

SUBTASK 21-52-21-865-003

(5) For the ram air exhaust actuator [22] on the left cooling pack, do the steps that follow:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(b) Open this access panel:

Number	Name/Location
195QL	Blowout Door

to get access to the ram air exhaust actuator [22].

SUBTASK 21-52-21-865-004

(6) For the ram air exhaust actuator [22] on the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Open this access panel:

Number	Name/Location
196QR	Blowout Door

to get access to the ram air exhaust actuator [22].

E. Ram Air Exhaust Actuator Removal

SUBTASK 21-52-21-010-009

(1) Disconnect the electrical connector [21] from the ram air exhaust actuator [22].

SUBTASK 21-52-21-010-010

(2) Do the steps that follow to disconnect the bonding jumper [24] from the ram air exhaust actuator [22]:

(a) Remove the nut [23], washer [25], washer [26] and the bolt [27].

(b) Move the bonding jumper [24] away from the ram air exhaust actuator [22].

SUBTASK 21-52-21-010-011

(3) Remove the nut [33], washer [34], washer [36], bolt [37], and the bushing [35] to disconnect the actuator rod end from the actuator arm assembly.

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SUBTASK 21-52-21-010-012

(4) Remove the nut [28], washer [29], washer [31], bolt [32], and the bushing [30] to disconnect the ram air exhaust actuator from the actuator mount assembly.

SUBTASK 21-52-21-020-020

(5) Remove the ram air exhaust actuator [22].

——— END OF TASK ———

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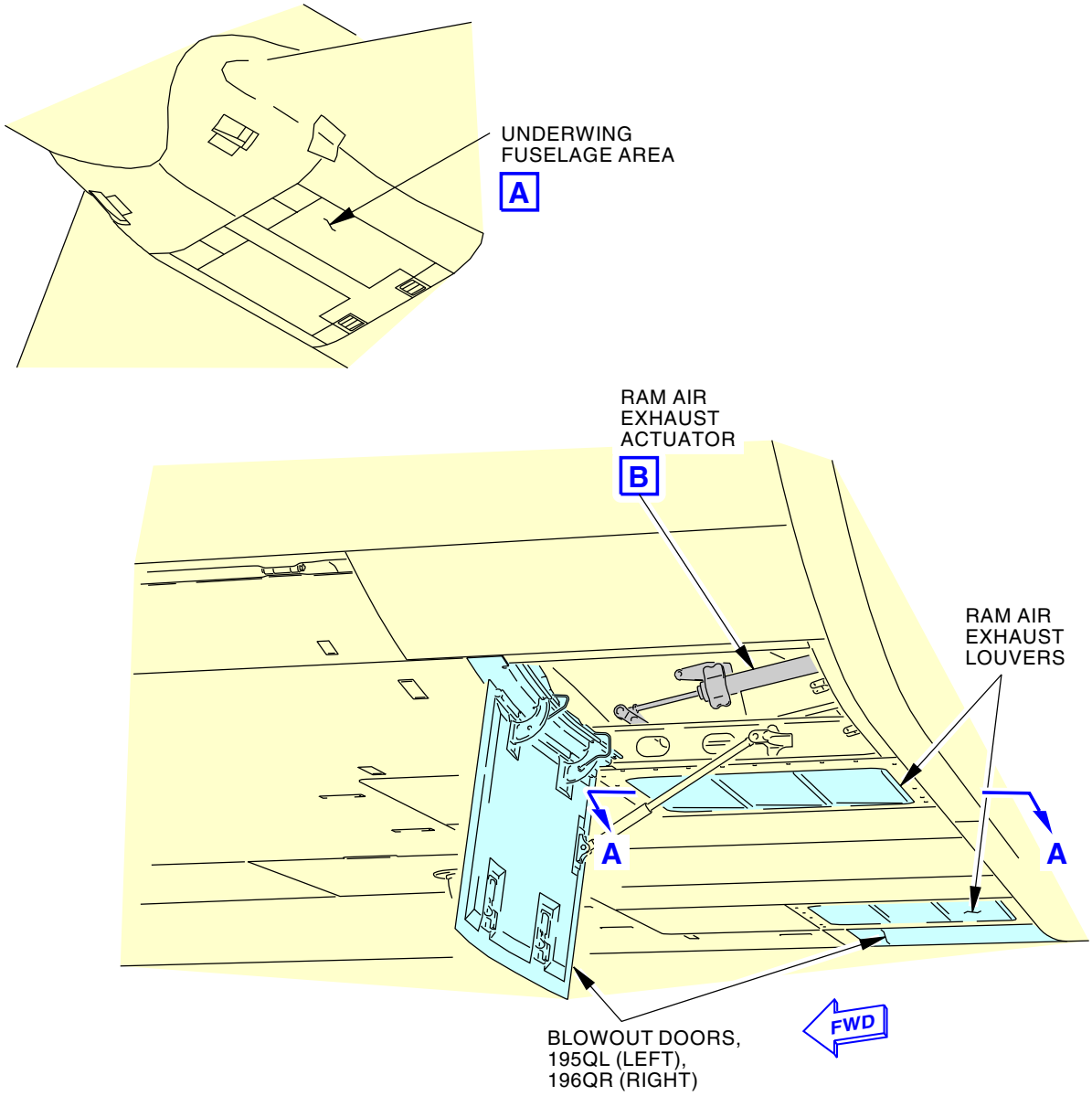

UNDERWING FUSELAGE AREA

A

NOTE: THE RAM AIR EXHAUST ACTUATOR FOR THE LEFT COOLING PACK IS SHOWN. THE RAM AIR EXHAUST ACTUATOR FOR THE RIGHT COOLING PACK IS EQUIVALENT.

F14444 S0006404141_V2

Ram Air Exhaust Actuator Installation
Figure 202/21-52-21-990-806 (Sheet 1 of 4)

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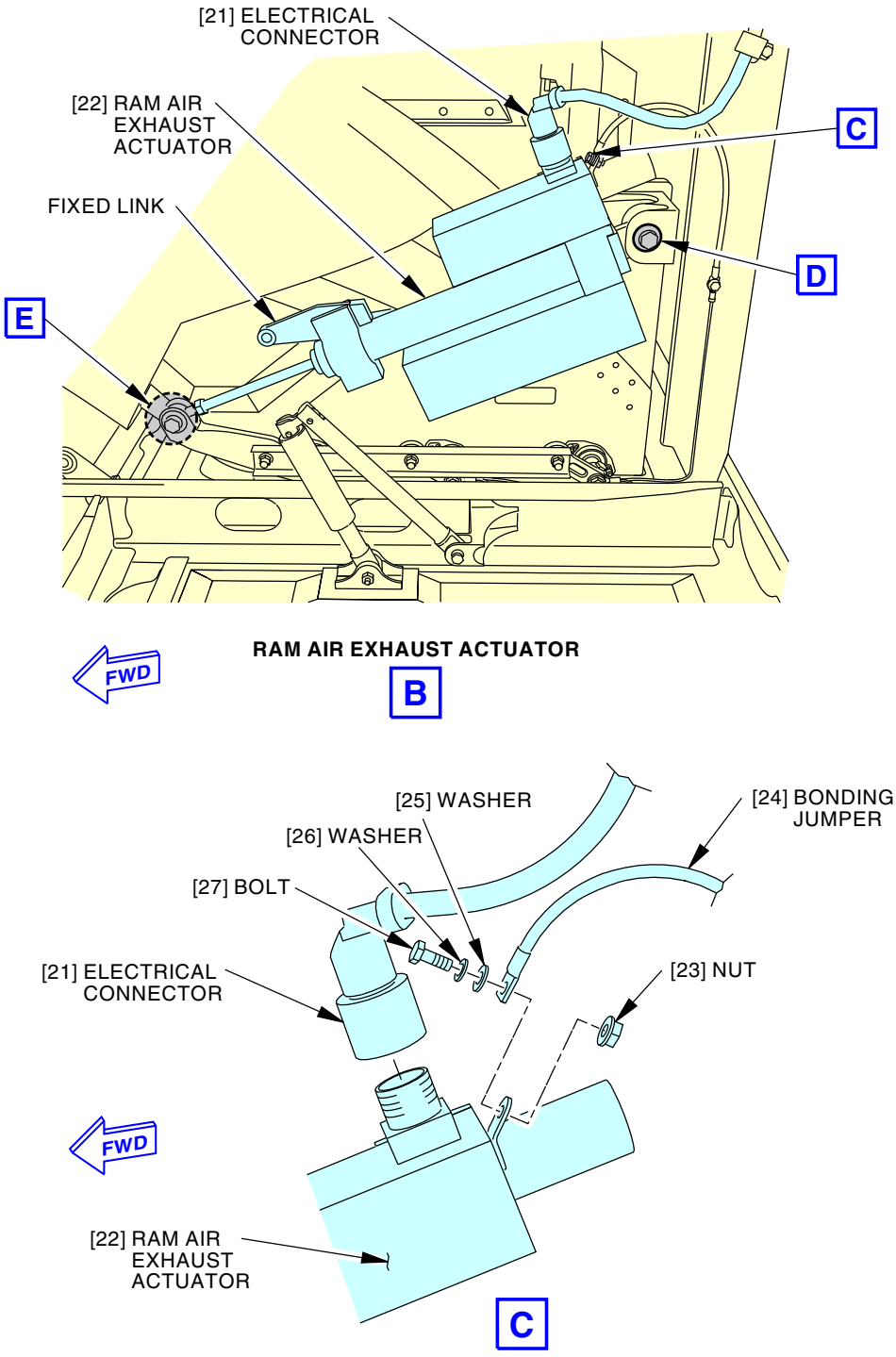

J68250 S0000173426_V2

Ram Air Exhaust Actuator Installation
Figure 202/21-52-21-990-806 (Sheet 2 of 4)

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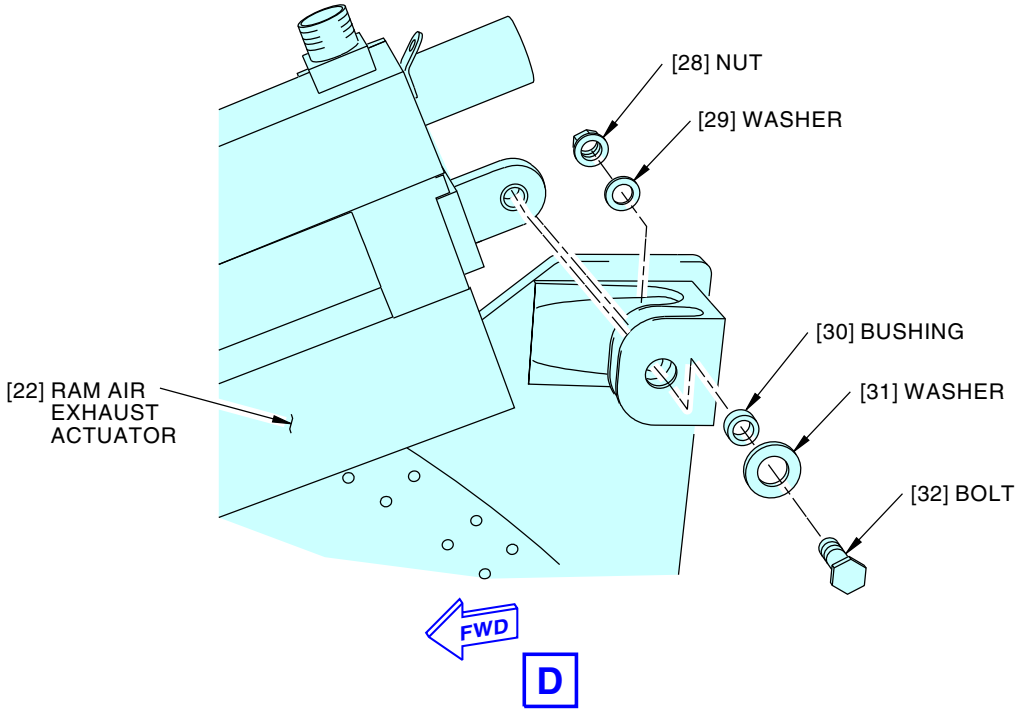

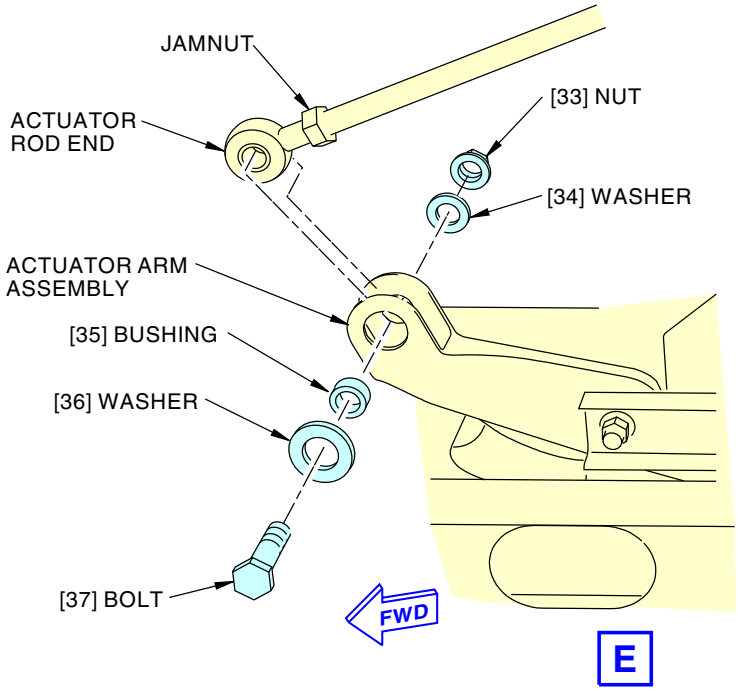

J68262 S0000176169_V3

Ram Air Exhaust Actuator Installation
Figure 202/21-52-21-990-806 (Sheet 3 of 4)

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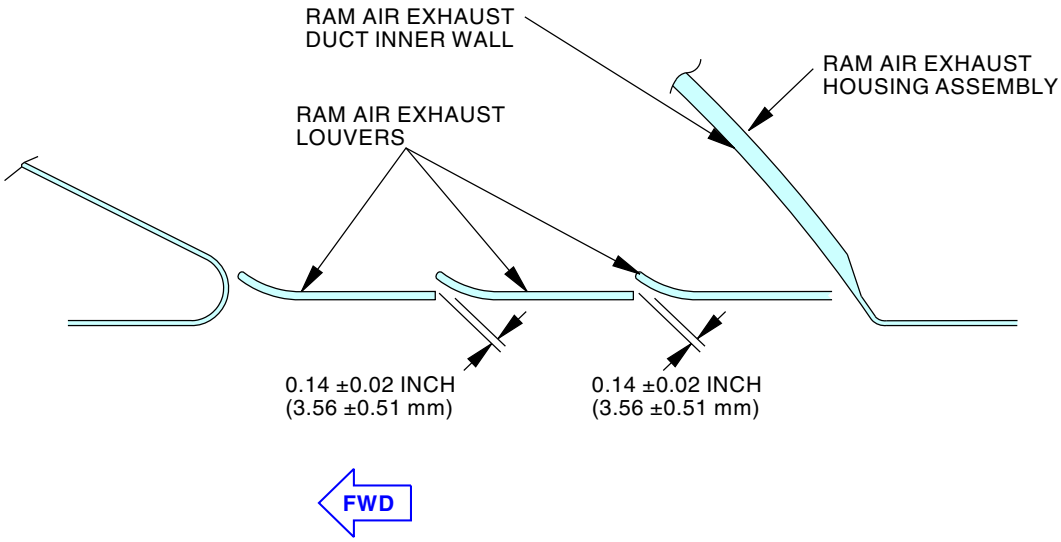

RAM AIR EXHAUST LOUVERS
(CLOSED-POSITION MEASUREMENT)

A-A

J68469 S0000175502_V3

Ram Air Exhaust Actuator Installation
Figure 202/21-52-21-990-806 (Sheet 4 of 4)

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TASK 21-52-21-400-806

5. Ram Air Exhaust Actuator Installation

(Figure 202)

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)
24-22-00-860-806	Remove Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
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. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
22	Actuator	21-52-21-05-400	ARO 001-015

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195QL	Blowout Door
196QR	Blowout Door

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F. Ram Air Exhaust Actuator Installation

SUBTASK 21-52-21-869-001

CAUTION: MAKE SURE THAT THE FIXED LINK ON THE RAM AIR EXHAUST ACTUATOR IS IN THE UP POSITION WHEN YOU INSTALL IT. DAMAGE TO THE ACTUATOR CAN OCCUR IF THE FIXED LINK IS NOT IN THE CORRECT POSITION.

(1) Make sure the fixed link on the ram air exhaust actuator is in the up position as shown in (Figure 202).

(a) If the fixed link is not in the correct position, follow the instructions on the placard which is on the ram air exhaust actuator.

SUBTASK 21-52-21-420-024

(2) Put the ram air exhaust actuator [22] in its position between the actuator arm assembly and the actuator mount assembly.

SUBTASK 21-52-21-410-014

(3) Do the steps that follow to connect the ram air exhaust actuator [22] to the actuator mount assembly:

(a) Put the bushing [30] in its location on the actuator mount assembly.

(b) Put the washer [31] on the bolt [32].

NOTE: Make sure the countersunk surface of the washer [31] is against the bolt head.

(c) Install the bolt [32], washer [31], washer [29], and the nut [28] to connect the ram air exhaust actuator [22] to the actuator mount assembly.

SUBTASK 21-52-21-410-015

(4) To install the bonding jumper [24], do the steps that follow:

(a) Clean the bond surfaces of the tab on the actuator [22], the bonding jumper [24] and the washer [25]. To clean the bond surfaces, do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

(b) Put the bonding jumper [24] in its position on the tab of the actuator [22].

(c) Install the nut [23], washer [25], washer [26] and the bolt [27].

1) Tighten the nut [23] to 28 to 35 pound-inches (2.8 to 3.9 newton-meters).

(d) With the intrinsically safe approved bonding meter, COM-1550, make sure the resistance between the tab and the airplane structure is no more than 0.008 ohm (SWPM 20-20-00).

SUBTASK 21-52-21-820-009

(5) Do the steps that follow to measure the distance between the ram air exhaust louvers:

NOTE: The ram air exhaust actuator must be in the extended position. A ram air exhaust actuator that is new will already be set to the extended position per the Hamilton Standard acceptance test procedure, HS13269 (Paragraph 4.1, Appendix A).

(a) Loosely install the bushing [35] and the bolt [37] that connects the actuator rod end to the actuator arm assembly.

(b) Use a feeler gauge to measure the distance between the louvers.

(c) Make sure the distance between the louvers measures 0.12 to 0.16 inch (3.05 to 4.06 millimeters).

(d) Do the steps that follow if the distance between the louvers is not 0.12 to 0.16 inch (3.05 to 4.06 millimeters):

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1) Remove the bolt [37] and the bushing [35] that you installed.
2) Remove the lockwire from the jamnut on the actuator rod end.

CAUTION

USE TWO WRENCHES TO LOOSEN THE JAMNUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE ACTUATOR CAN OCCUR.

3) Use a wrench to hold the actuator rod end while you use a second wrench to loosen the jamnut.
4) Adjust the actuator rod end until the distance measures 0.12 to 0.16 inch (3.05 to 4.06 millimeters).
   a) Loosely install the bolt [37] and the bushing [35] that connect the actuator rod end to the actuator arm assembly while you check the measurement.

CAUTION

USE TWO WRENCHES TO TIGHTEN THE JAMNUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE ACTUATOR CAN OCCUR.

5) Use a wrench to hold the actuator rod end while you use a second wrench to tighten the jamnut 180 to 220 inch-pounds.
6) Install the lockwire on the jamnut.

(e) Install the bolt [37], washer [36], bushing [35], washer [34], and the nut [33] to connect the actuator rod end to the actuator arm assembly.

SUBTASK 21-52-21-410-016

(6) Connect the electrical connector [21] to the ram air exhaust actuator [22].

SUBTASK 21-52-21-865-005

(7) If you removed the ram air exhaust actuator [22] for the left cooling pack, do the step that follows:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-21-865-006

(8) If you removed the ram air exhaust actuator [22] for the right cooling pack, do the step that follows:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

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G. Ram Air Exhaust Actuator Installation Test

SUBTASK 21-52-21-861-002

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

SUBTASK 21-52-21-740-006

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET AND EXIT DOORS, LINKAGES, AND ACTUATORS BEFORE YOU DO THIS TEST. INJURIES TO PERSONNEL CAN OCCUR.

(2) Use a maintenance access terminal (MAT) to do an LRU replacement test of the ram air exhaust louvers and actuator (TASK 45-10-00-740-808):

NOTE: While the MAT test is in operation, do a visual check to make sure the ram air exhaust louvers and actuator move freely and smoothly.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) LRU REPLACEMENT TEST
6) Pack Actuators Test, L (or R as appropriate)
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) Make these selections on the MAT:

1) EXTENDED MAINTENANCE
2) EXISTING FAULTS
3) 21 Cabin Temperature Control System

(e) Make sure that there are no maintenance messages for the cabin temperature control system.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-21-410-017

(1) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-21-410-018

(2) If you removed the ram air exhaust actuator [22] for the left cooling pack, do the step that follows:

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Close this access panel:

Number	Name/Location
195QL	Blowout Door

SUBTASK 21-52-21-410-019

(3) If you removed the ram air exhaust actuator [22] for the right cooling pack, do the step that follows:

Close this access panel:

Number	Name/Location
196QR	Blowout Door

SUBTASK 21-52-21-862-002

(4) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

——— END OF TASK ———

TASK 21-52-21-800-801

6. Ram Air Exhaust Louvers and Actuator Adjustment

A. General

(1) This procedure has instructions to do a check of the louvers for the ram air exhaust system.

(2) This check will determine the distance between two louvers when the ram air exhaust louvers are in the closed position and, if necessary, adjust the ram air exhaust louvers and actuator. It is necessary to do this check/adjustment any time you remove or install a component of the ram air exhaust system.

(Figure 202)

(3) The ram air exhaust louvers and ram air inlet doors are usually open when the airplane is on the ground. It is necessary to use a maintenance access terminal (MAT) to close the louvers for the ram air exhaust system to do the adjustment procedure.

(4) The special function on the MAT positions the (left/right) ram air inlet doors and the ram air exhaust louvers to the full closed position. The ram air inlet doors and the ram air exhaust louvers will move to the full closed position after 5 to 10 seconds.

(5) The same sequence of steps is used for the ram air exhaust louvers for the left or the right cooling pack.

(6) 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)
36-00-00-860-801	Depressurize the Pneumatic System (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
135	Environmental Control Systems Bay, Left

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(Continued)

Zone	Area
136	Environmental Control Systems Bay, Right
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195QL	Blowout Door
196QR	Blowout Door

E. Prepare for the Ram Air Exhaust Louvers and Actuator Adjustment

SUBTASK 21-52-21-860-039

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

SUBTASK 21-52-21-860-040

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-21-860-041

(3) Make sure the applicable L PACK switch or R PACK switch is set to the OFF position.

NOTE: The L PACK switch and the R PACK switch are on the pilot's overhead panel, P5. The L (R) PACK switch must be set to OFF and the cooling pack must not be turning or the special functions check on the MAT will not operate.

SUBTASK 21-52-21-010-005

(4) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-52-21-860-042

(5) For the ram air exhaust actuator on the left cooling pack, do the steps that follow:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(b) Open this access panel:

Number	Name/Location
195QL	Blowout Door

to get access to the left ram air exhaust actuator.

SUBTASK 21-52-21-860-043

(6) For the ram air exhaust actuator on the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Open this access panel:

Number	Name/Location
196QR	Blowout Door

to get access to the right ram air exhaust actuator.

F. Ram Air Exhaust Louvers and Actuator Adjustment

SUBTASK 21-52-21-860-044

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET DOORS AND RAM AIR EXHAUST LOUVERS, LINKAGES AND ACTUATORS BEFORE YOU DO THIS SPECIAL FUNCTION. POSSIBLE INJURY TO PERSONNEL CAN OCCUR.

(1) Use a maintenance access terminal (MAT) to do the Close Ram Doors Special Function for the left (right) ram air exhaust louvers.

NOTE: This special function will close the ram air inlet doors and the ram air exhaust louvers to the rigged position.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) OTHER FUNCTIONS
3) SPECIAL FUNCTIONS
4) 21 Cabin Temperature Control System
5) Close left (right) Ram Doors
6) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE
2) START FUNCTION

(c) When the function is completed, make sure that COMPLETE shows adjacent to FUNCTION CONDITION on the MAT.

SUBTASK 21-52-21-860-045

(2) For the ram air exhaust actuator on the left cooling pack, do the steps that follow:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-21-860-046

(3) For the ram air exhaust actuator on the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-52-21-820-011

(4) Do the steps that follow to measure the distance between the ram air exhaust louvers:

(Figure 202)

(a) Loosely install the bushing [35] and the bolt [37] that connects the actuator rod end to the actuator arm assembly.

(b) Use a feeler gauge to measure the distance between the louvers.

(c) Make sure the distance between the louvers measures 0.12 to 0.16 inch (3.05 to 4.06 millimeters).

(d) Do the steps that follow if the distance between the louvers is not 0.12 to 0.16 inch (3.05 to 4.06 millimeters):

1) Remove the bolt [37] and the bushing [35] that you installed.

2) Remove the lockwire from the jamnut on the actuator rod end.

CAUTION

USE TWO WRENCHES TO LOOSEN THE JAMNUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE ACTUATOR CAN OCCUR.

3) Use a wrench to hold the actuator rod end while you use a second wrench to loosen the jamnut.

4) Adjust the actuator rod end until the distance measures 0.12 to 0.16 inch (3.05 to 4.06 millimeters).

a) Loosely install the bolt [37] and the bushing [35] that connect the actuator rod end to the actuator arm assembly while you check the measurement.

CAUTION

USE TWO WRENCHES TO TIGHTEN THE JAMNUT. IF YOU DO NOT USE TWO WRENCHES, DAMAGE TO THE ACTUATOR CAN OCCUR.

5) Use a wrench to hold the actuator rod end while you use a second wrench to tighten the jamnut 180 to 220 inch-pounds.

6) Install the lockwire on the jamnut.

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(e) Install the bolt [37], washer [36], bushing [35], washer [34], and the nut [33] to connect the actuator rod end to the actuator arm assembly.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-21-860-047

(1) If you adjusted the ram air exhaust actuator for the left cooling pack, do the step that follows:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(b) Close this access panel:

Number	Name/Location
195QL	Blowout Door

SUBTASK 21-52-21-860-048

(2) If you adjusted the ram air exhaust actuator for the right cooling pack, do the step that follows:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Close this access panel:

Number	Name/Location
196QR	Blowout Door

SUBTASK 21-52-21-410-006

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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RAM AIR INLET DUCT - REMOVAL/INSTALLATION

1. General

A. This procedure contains these tasks:

(1) A removal of the ram air inlet duct assembly.

(2) An installation of the ram air inlet duct assembly.

B. The ram air inlet duct assembly includes the ram air inlet duct and the ram air header assembly.

TASK 21-52-22-000-801

2. Ram Air Inlet Duct Removal

(Figure 401)

A. References

Reference	Title
21-52-01-000-801	Dual Heat Exchanger Removal (P/B 401)
21-52-05-000-801	Water Spray Nozzle Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
38-31-01-000-801	Forward Drain Mast Removal (P/B 401)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right

C. Access Panels

Number	Name/Location
191PL	Forward Wing To Body Fairing Panel
192PR	Forward Wing To Body Fairing Panel
195BL	ECS High Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196BR	Underwing Fairing Panel
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-22-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-22-860-002

(2) When the ram air inlet duct for the left cooling pack will be removed, do these steps:

(a) Open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

(b) Do this task: Dual Heat Exchanger Removal, TASK 21-52-01-000-801.

SUBTASK 21-52-22-860-003

(3) When the ram air inlet duct for the right cooling pack will be removed, do these steps:

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(a) Open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

(b) Do this task: Dual Heat Exchanger Removal, TASK 21-52-01-000-801.

E. Ram Air Header Assembly Removal

SUBTASK 21-52-22-020-001

(1) Do this task: Water Spray Nozzle Removal, TASK 21-52-05-000-801.

SUBTASK 21-52-22-020-011

(2) Do the steps that follow to remove the bonding jumper from the ram air ram air header assembly [1].

(a) Remove the nut [8] and the washer [9] that attach the bonding jumper [10] to the ram air header assembly [1].

(b) Move the bonding jumper [10] away from the ram air header assembly [1].

SUBTASK 21-52-22-820-001

(3) Loosen the clamps [7].

SUBTASK 21-52-22-820-002

(4) Move the flexible hose [6] off the ram air header assembly [1].

SUBTASK 21-52-22-020-002

(5) Carefully remove the ram air ram air header assembly [1] through the opening in the airplane structure.

F. Ram Air Inlet Duct Removal

SUBTASK 21-52-22-020-003

(1) To remove the ram air inlet duct for the left cooling pack, remove the forward drain mast (TASK 38-31-01-000-801).

SUBTASK 21-52-22-020-004

(2) To remove the ram air inlet duct for the left cooling pack, remove this access panel:

Number	Name/Location
191PL	Forward Wing To Body Fairing Panel

SUBTASK 21-52-22-020-005

(3) To remove the ram air inlet duct for the right cooling pack, remove this access panel:

Number	Name/Location
192PR	Forward Wing To Body Fairing Panel

SUBTASK 21-52-22-020-012

(4) Do the steps that follow to remove the bonding jumper from the left ram air ram air inlet duct [4]:

(a) Open this access panel:

Number	Name/Location
195BL	ECS High Pressure Connection Door

(b) Remove the nut [11] and the washer [12] that attach the bonding jumper [13] to the ram air inlet duct [4].

(c) Move the bonding jumper [13] away from the ram air inlet duct [4].

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SUBTASK 21-52-22-020-013

(5) Do the steps that follow to remove the bonding jumper from the right ram air ram air inlet duct [4]:

(a) Open this access panel:

Number	Name/Location
196BR	Underwing Fairing Panel

(b) Remove the nut [11] and the washer [12] that attach the bonding jumper [13] to the ram air inlet duct [4].

(c) Move the bonding jumper [13] away from the ram air inlet duct [4].

SUBTASK 21-52-22-020-006

(6) Remove the bolts [2] and the washers [3], at 20 locations.

SUBTASK 21-52-22-820-003

(7) Hold the ram air inlet duct [4] while you open the duct support clamp [5].

SUBTASK 21-52-22-020-007

(8) Carefully remove the ram air ram air inlet duct [4] through the opening in the airplane structure.

——— END OF TASK ———

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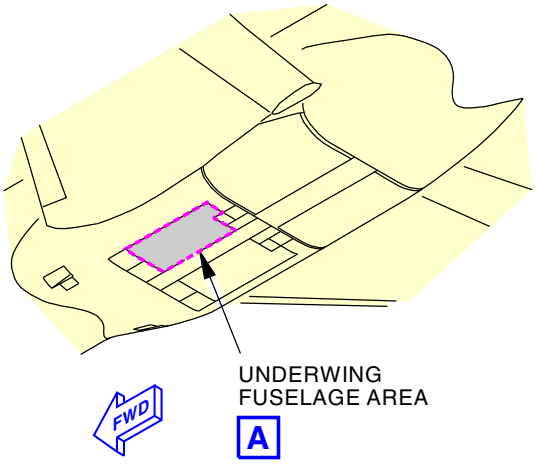

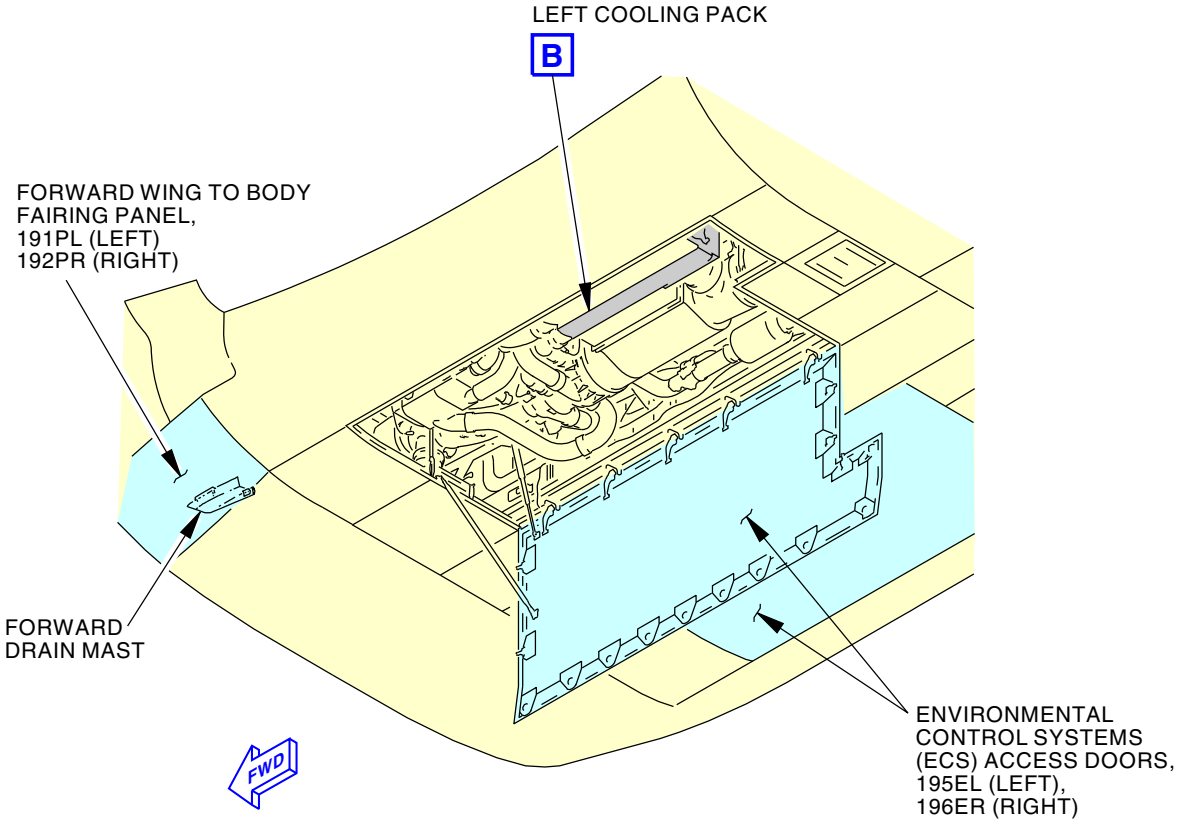

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Ram Air Inlet Duct Installation
Figure 401/21-52-22-990-801 (Sheet 1 of 4)

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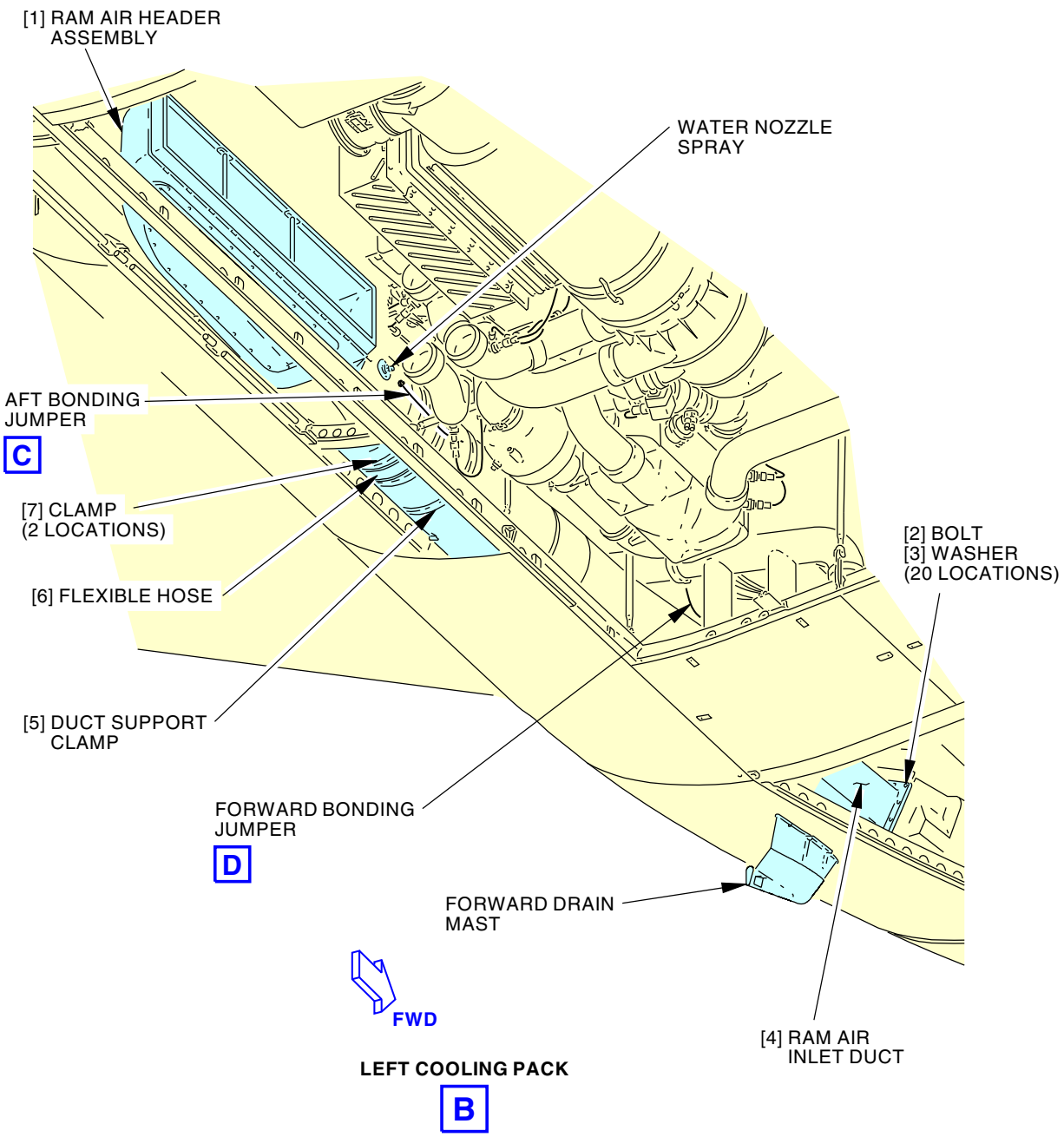

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Ram Air Inlet Duct Installation
Figure 401/21-52-22-990-801 (Sheet 2 of 4)

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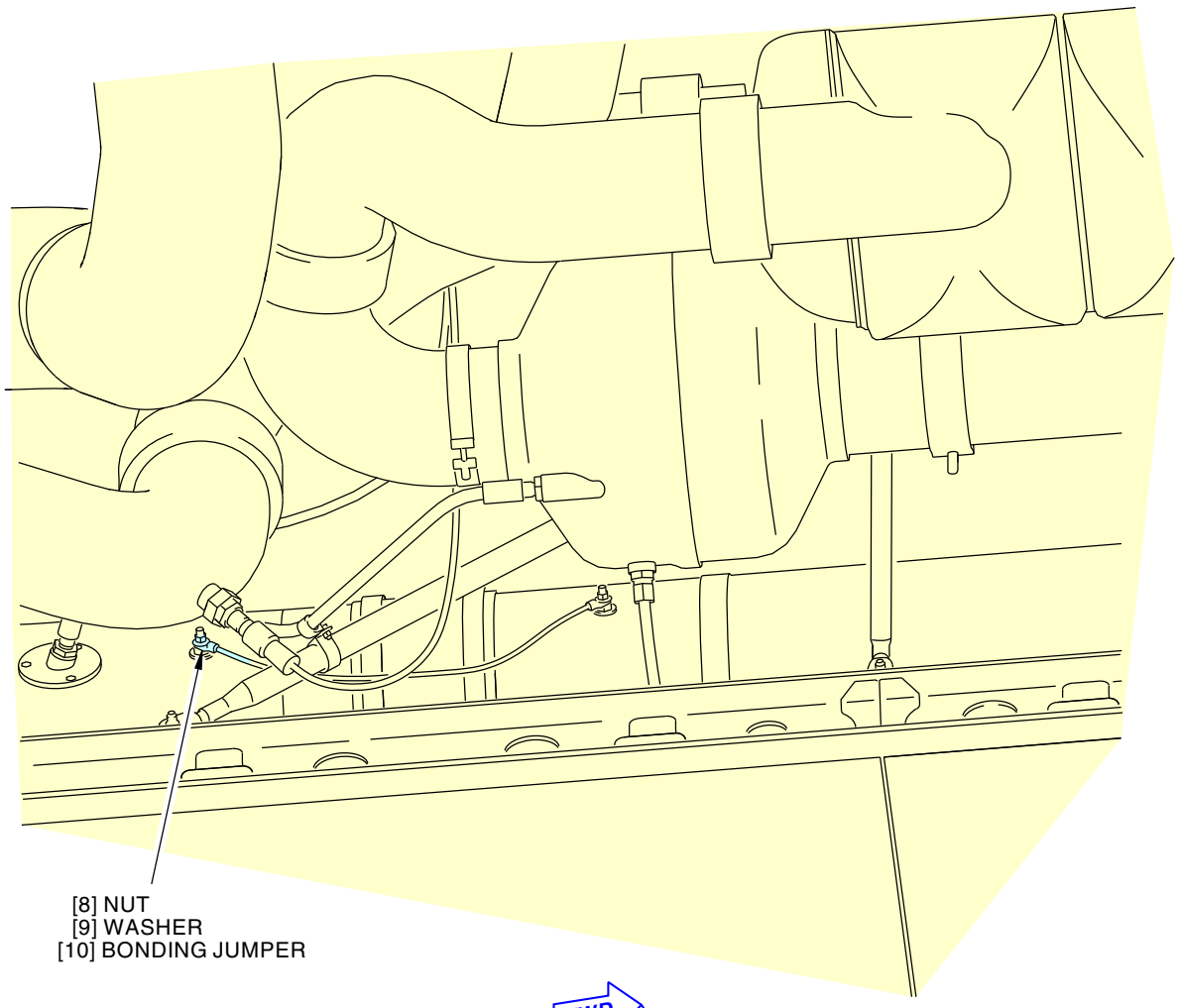

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Ram Air Inlet Duct Installation
Figure 401/21-52-22-990-801 (Sheet 3 of 4)

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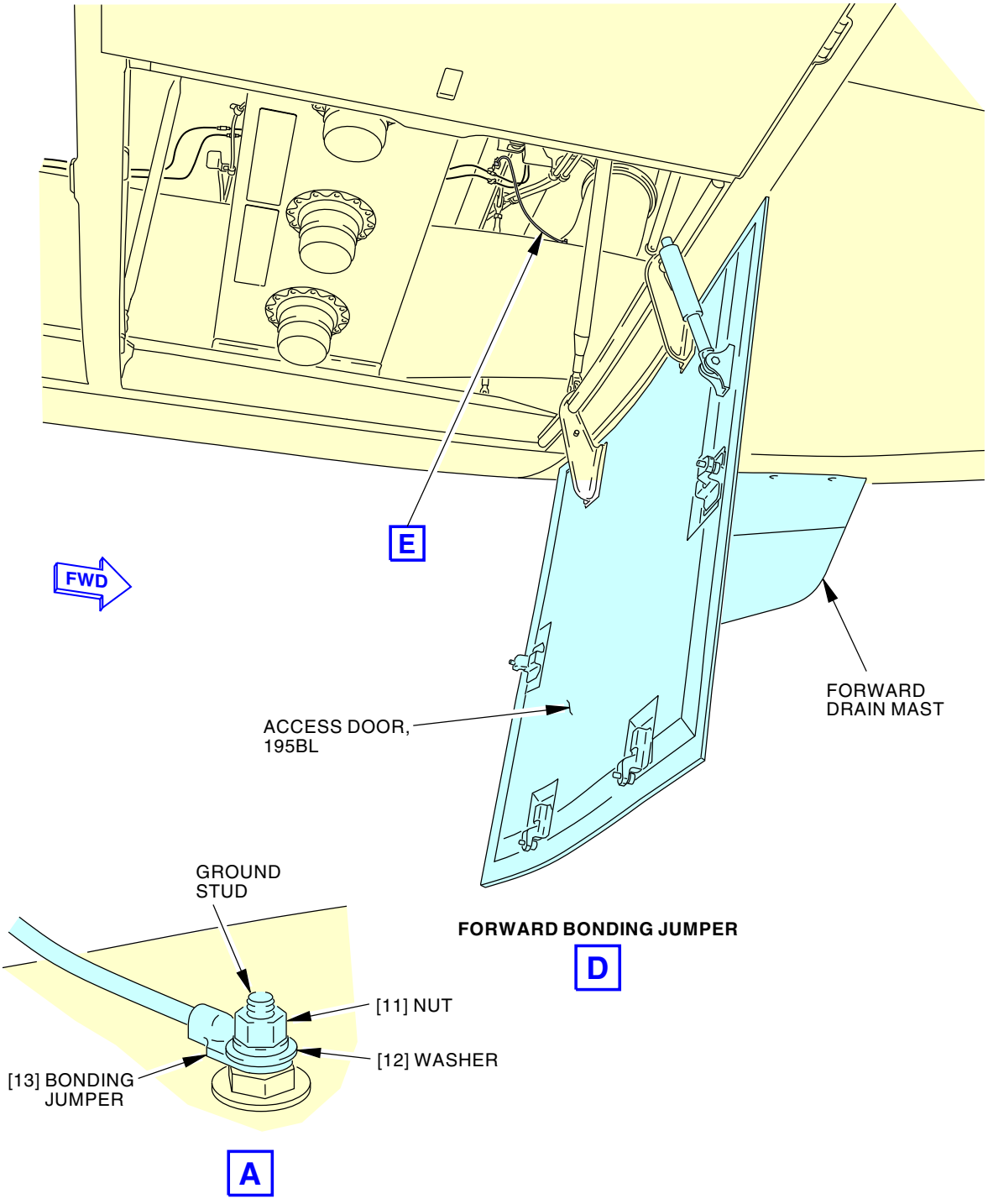

Ram Air Inlet Duct Installation
Figure 401/21-52-22-990-801 (Sheet 4 of 4)

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TASK 21-52-22-400-801

3. Ram Air Inlet Duct Installation

(Figure 401)

A. References

Reference	Title
20-10-22-110-802	Clean Bare, Clad, or Plated Metal with Solvent (P/B 701)
21-52-01-400-801	Dual Heat Exchanger Installation (P/B 401)
21-52-05-400-801	Water Spray Nozzle Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
38-31-01-400-801	Forward Drain Mast 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
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Ram air header assembly	21-52-05-01-035	ARO ALL
		21-52-05-01-040	ARO ALL
4	Ram air inlet duct	21-52-05-01-250	ARO ALL
		21-52-05-01-255	ARO ALL

E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
191	Forward Wing-to-Body Fairings, Left
192	Forward Wing-to-Body Fairings, Right

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F. Access Panels

Number	Name/Location
191PL	Forward Wing To Body Fairing Panel
192PR	Forward Wing To Body Fairing Panel
195BL	ECS High Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196BR	Underwing Fairing Panel
196ER	Environmental Control Systems (ECS) Access Door

G. Ram Air Inlet Duct Installation

SUBTASK 21-52-22-210-001

(1) Inspect the flexible hose [6] for damage or deterioration.

(a) If you find damage or deterioration, then install a new flexible hose [6].

SUBTASK 21-52-22-420-001

(2) Carefully move the ram air ram air inlet duct [4] through the opening in the airplane structure.

SUBTASK 21-52-22-420-002

(3) Loosely install the duct support clamp [5] on the ram air ram air inlet duct [4].

SUBTASK 21-52-22-420-003

(4) Install the bolt [2] and the washer [3], at 20 locations to attach the ram air ram air inlet duct [4] to the airplane structure.

(a) Tighten the bolts [2] to 30 in-lb (3.4 N·m) - 40 in-lb (4.5 N·m).

SUBTASK 21-52-22-420-004

(5) Tighten the duct support clamp [5] on the ram air ram air inlet duct [4] from 10 in-lb (1.1 N·m) to 18 in-lb (2.0 N·m).

SUBTASK 21-52-22-420-009

(6) To install the bonding jumper [13], do the steps that follow:

(a) Clean the bond surfaces of the bonding jumper [13] and the washer [12] (TASK 20-10-22-110-802).

(b) Put the bonding jumper [13] on the ground stud.

(c) Install the washer [12] and the nut [11] on the bonding jumper terminal.

1) Tighten the nut [11] from 28 in-lb (3.2 N·m) to 35 in-lb (4.0 N·m).

(d) With the intrinsically safe approved bonding meter, COM-1550, make sure the resistance between the ground stud and the airplane structure is less than 0.010 ohm (SWPM 20-20-00).

(e) Apply a thin, continuous layer of sealant, A00247, on the bonding jumper terminal connection.

SUBTASK 21-52-22-020-008

(7) If you installed the ram air inlet duct for the left cooling pack, install this access panel:

Number	Name/Location
191PL	Forward Wing To Body Fairing Panel

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SUBTASK 21-52-22-020-009

(8) If you installed the ram air inlet duct for the right cooling pack, install this access panel:

Number	Name/Location
192PR	Forward Wing To Body Fairing Panel

SUBTASK 21-52-22-020-010

(9) If you installed the ram air inlet duct for the left cooling pack, install the forward drain mast (TASK 38-31-01-400-801).

SUBTASK 21-52-22-410-001

(10) Close these access panels:

Number	Name/Location
195BL	ECS High Pressure Connection Door
196BR	Underwing Fairing Panel

H. Ram Air Header Assembly Installation

SUBTASK 21-52-22-420-005

(1) Carefully move the ram air ram air header assembly [1] through the opening in the airplane structure.

SUBTASK 21-52-22-820-004

(2) Do this task: Dual Heat Exchanger Installation, TASK 21-52-01-400-801.

SUBTASK 21-52-22-420-006

(3) If the ram air header assembly [1] and the ram air ram air inlet duct [4] are not aligned, then do these steps to adjust the rods which support the inlet duct:

(a) Loosen the lock nuts.

(b) Turn the rod as necessary to align the ram air header assembly [1] and the ram air inlet duct [4].

(c) Tighten the lock nuts to 60 in-lb (6.8 N·m).

SUBTASK 21-52-22-420-007

(4) Move the flexible hose [6] over the ram air ram air header assembly [1].

SUBTASK 21-52-22-420-008

(5) Install the clamps [7], at two locations, around the flexible hose [6] and tighten from 10 in-lb (1.1 N·m) to 18 in-lb (2.0 N·m).

(a) Make sure the clamps [7] are not on the duct beads.

NOTE: Each of the two locations has two clamps connected end to end to go around the duct.

SUBTASK 21-52-22-820-005

(6) Do this task: Water Spray Nozzle Installation, TASK 21-52-05-400-801.

SUBTASK 21-52-22-420-010

(7) To install the bonding jumper [10], do the steps that follow:

(a) Clean the bond surfaces of the bonding jumper [10] and the washer [9] (TASK 20-10-22-110-802).

(b) Put the bonding jumper [10] on the ground stud.

(c) Install the washer [9] and the nut [8] on the bonding jumper terminal.

1) Tighten the nut [8] from 28 in-lb (3.2 N·m) to 35 in-lb (4.0 N·m).

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(d) With the intrinsically safe approved bonding meter, COM-1550, make sure the resistance between the ground stud and the airplane structure is less than 0.010 ohm (SWPM 20-20-00).

(e) Apply a thin, continuous layer of sealant, A00247 on the bonding jumper terminal connection.

I. Ram Air Inlet Duct Installation Test

SUBTASK 21-52-22-860-004

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

SUBTASK 21-52-22-860-005

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-22-860-006

(3) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-22-860-007

(4) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the AUTO position.

SUBTASK 21-52-22-790-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(5) Make sure there is no air leakage at the duct connections.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-22-860-008

(1) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

SUBTASK 21-52-22-860-009

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-22-860-010

(3) Close the applicable access panels:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

END OF TASK

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LOW LIMIT VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the low limit valve

(2) An installation of the low limit valve.

TASK 21-52-30-000-801

2. Low Limit Valve Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-30-860-005

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-30-860-001

(2) To remove the low limit valve [5] for the left cooling pack, do the steps that follow:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-30-860-002

(3) To remove the low limit valve [5] for the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)

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(Continued)

Right Power Management Panel, P210

Row	Col	Number	Name
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-52-30-010-001

(4) To get access to the low limit valve [5] for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-30-010-002

(5) To get access to the low limit valve [5] for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Low Limit Valve Removal

SUBTASK 21-52-30-030-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the electrical connector [11] from the low limit valve [5].

SUBTASK 21-52-30-020-001

(2) Do the steps that follow to remove the bonding jumper [8] from the low limit valve [5]:

(a) Remove the nut [9], washer [12], washers [10], and bolt [13].

(b) Remove the bonding jumper [8].

SUBTASK 21-52-30-930-001

(3) Make a note of the position of the low limit valve [5] on the ducts.

NOTE: This will help you remember what position to put the low limit valve [5] in during the installation.

SUBTASK 21-52-30-020-002

(4) Do the steps that follows to remove the coupling [3] that connects the low limit valve [5] to the 1st-stage turbine bypass duct:

(a) Remove the coupling [3].

NOTE: The clamshell coupling latches are designed such that they can not be disengaged when the system is pressurized. In order to disengage the latch, it is recommended that you pull the two ducts which are connected together towards each other. This will permit the latch to be easily lifted over the coupling in the unpressurized condition.

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(b) Move the sleeve [4] onto the 1st-stage turbine bypass duct.

(c) Remove the bonding spring [2].

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SUBTASK 21-52-30-020-003

(5) Remove the coupling [6] that connects the low limit valve [5] to the air cycle machine.

SUBTASK 21-52-30-020-004

(6) Remove the low limit valve [5].

SUBTASK 21-52-30-020-006

(7) Remove the sleeve [4] from the 1st-stage turbine bypass duct.

SUBTASK 21-52-30-020-007

(8) Remove and discard the packings [1] from the flange groove of the low limit valve [5] and the 1st-stage turbine bypass duct.

SUBTASK 21-52-30-020-005

(9) Remove and discard the packing [7] from the flange groove of the low limit valve [5].

——— END OF TASK ———

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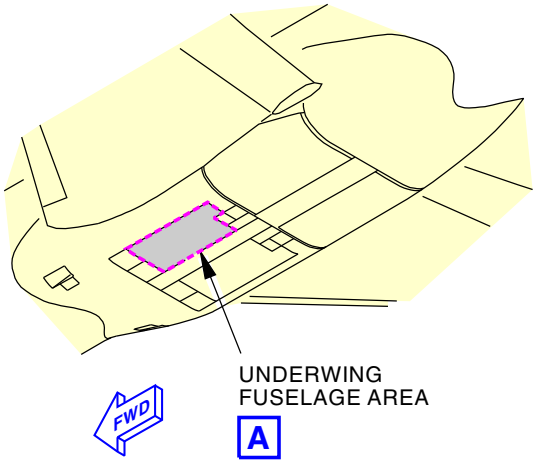

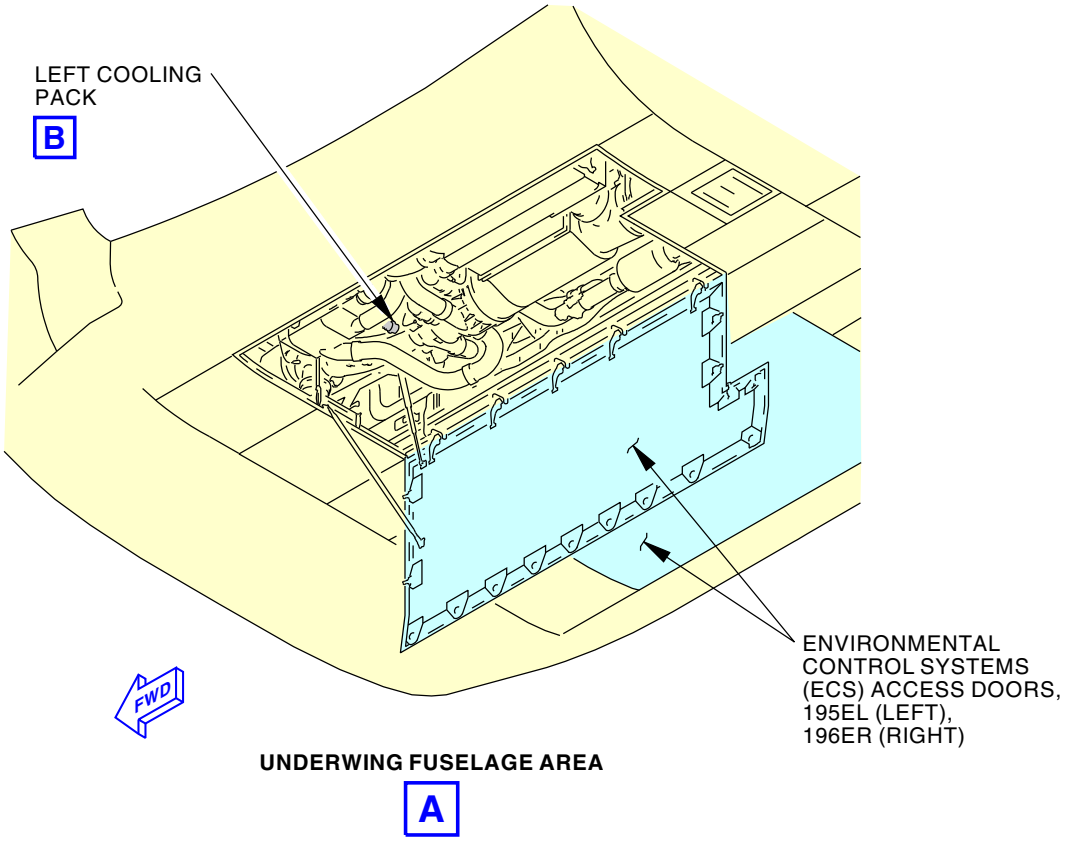

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Low Limit Valve Installation
Figure 401/21-52-30-990-801 (Sheet 1 of 2)

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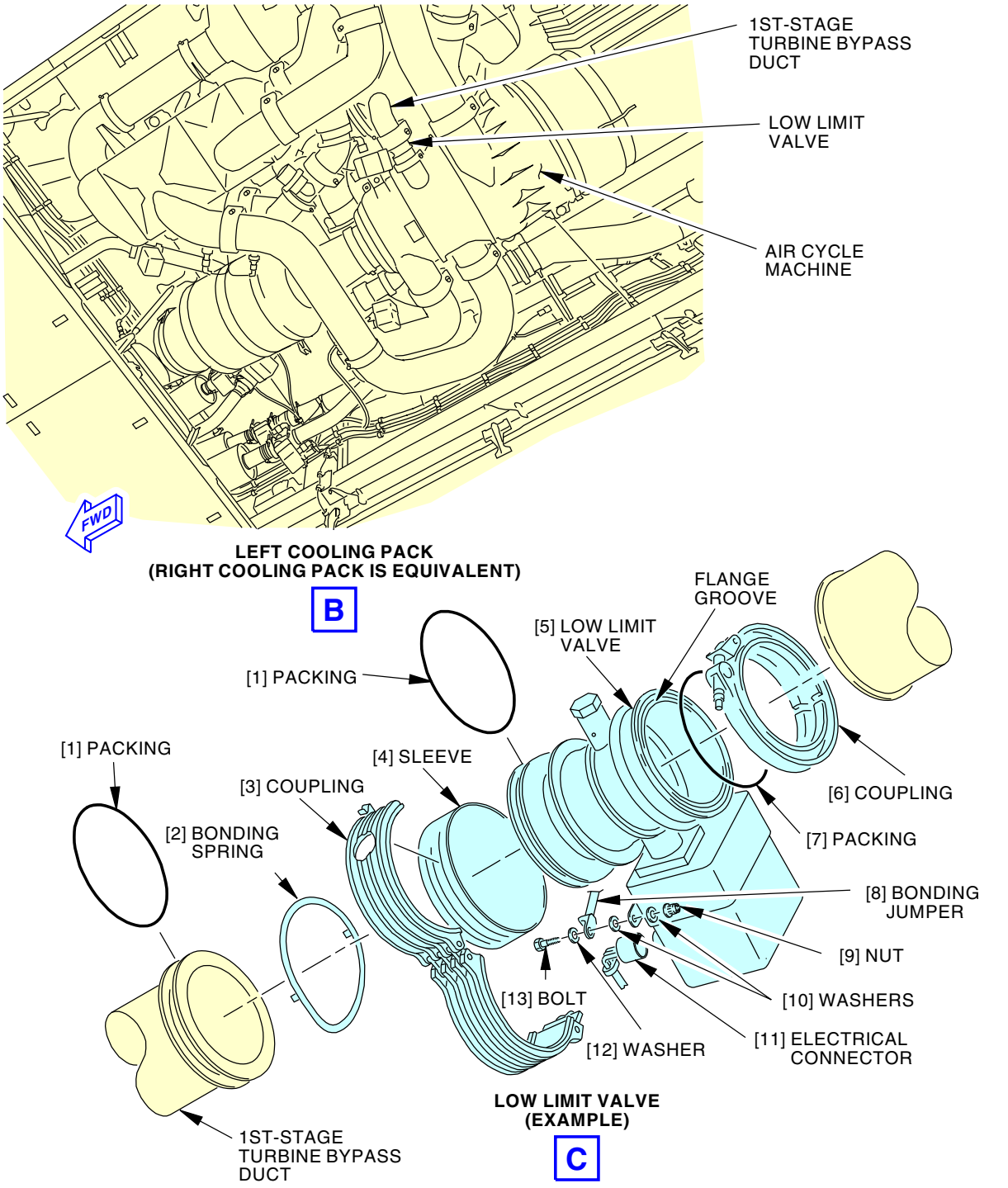

Low Limit Valve Installation
Figure 401/21-52-30-990-801 (Sheet 2 of 2)

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TASK 21-52-30-400-801

3. Low Limit Valve Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00649	Lubricant - O-Ring - Krytox GPL206	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Packing	21-52-00-01-571	ARO ALL
5	Valve	21-52-00-01-451	ARO ALL
7	Packing	21-52-00-01-605	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Low Limit Valve Installation

SUBTASK 21-52-30-420-001

(1) Put a new packing [7] in the flange groove of the low limit valve [5].

SUBTASK 21-52-30-420-007

(2) Do these steps to install the new packings [1] and the sleeve [4]:

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WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(a) Apply the Krytox GPL206 lubricant, D00649 or Krytox 240AC perfluoropolyether grease, D50063 or Christo-lube MCG111 grease, D50011 to the new packings [1] and to the inside diameter of the sleeve [4].

(b) Install the new packings [1] on the low limit valve [5] and the 1st-stage turbine bypass duct.

(c) Install the sleeve [4] over the 1st-stage turbine bypass duct.

SUBTASK 21-52-30-420-002

(3) Put the low limit valve [5] in its position between the 1st-stage turbine bypass duct and the air cycle machine.

SUBTASK 21-52-30-420-003

(4) Install the coupling [6] to connect the low limit valve [5] to the air cycle machine.

(a) Tighten the coupling [6] to 50 in-lb (5.65 N·m)-55 in-lb (6.21 N·m).

SUBTASK 21-52-30-420-004

(5) Do the steps that follow to install the coupling [3] that connects the low limit valve [5] to the 1st-stage turbine bypass duct:

CAUTION MAKE SURE THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL DAMAGE THE DOWNSTREAM COMPONENTS.

(a) Install the bonding spring [2].

NOTE: The tabs on the bonding spring go towards the turbine bypass duct flange. You can use the sleeve to help hold the bonding spring in position while you align the ducts.

(b) Put the sleeve [4] in position over the 1st-stage turbine bypass duct and the low limit valve flange.

NOTE: Make sure you cannot see the flange grooves when you install the sleeve [4].

(c) Install the coupling [3].

SUBTASK 21-52-30-420-005

(6) Do the steps that follow to install the bonding jumper [8] to the low limit valve [5]:

(a) Make sure the bonding jumper [8], washer [12], washers [10] and nut [9] are clean.

(b) Put the bonding jumper [8] into the correct position on the low limit valve [5].

(c) Install the bolt [13], washer [12], washers [10], and nut [9].

SUBTASK 21-52-30-420-006

(7) Connect the electrical connector [11] to the low limit valve [5].

SUBTASK 21-52-30-860-003

(8) If you removed low limit valve [5] for the left cooling pack, do the steps that follow:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-30-860-004

(9) If you removed the low limit valve [5] for the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

G. Low Limit Valve Installation Test

SUBTASK 21-52-30-860-010

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-30-710-001

(2) Use a Maintenance Access Terminal (MAT) to do the System test of the turbine bypass valve (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Pack Actuators Test, L (or R as appropriate)
7) CONTINUE.

(b) Do the instructions that show on the MAT 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.

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SUBTASK 21-52-30-710-002

(3) Do the steps that follow, to do a leak check of the low limit valve [5]:

(a) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

(b) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the AUTO position.

(c) Make these selections on the MAT, to do the applicable Right or Left System Air On Test:

NOTE: While the MAT test is in operation, the applicable valve will open. A second person should feel for air leakage while the test is in operation. If air leakage is felt, the applicable valve and couplings must be adjusted until air leakage is not felt.

1) NEW TEST
2) 21 Cabin Temperature Control System
3) SYSTEM TEST
4) (Left or Right as appropriate) System Air On
5) 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.

(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.

(h) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-30-860-007

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-30-410-001

(2) If the low limit valve for the right cooling pack was removed, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-30-410-002

(3) If the low limit valve for the left cooling pack was removed, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-30-860-016

(4) If necessary, remove electrical power (TASK 24-22-00-860-806).

END OF TASK

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LOW LIMIT VALVE - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) Low Limit Valve Operational Test

C. The Low Limit Valve Operational Test contains these initiated built in tests (IBIT) ground tests:

(1) Left Pack Actuators Test

(2) Right Pack Actuators Test

D. You will use a maintenance access terminal (MAT) to do the Left and Right Pack Actuators Tests.

E. The Left and Right Pack Actuators Tests does a test of the low limit valve for the left and right cooling packs.

TASK 21-52-30-740-801

2. Low Limit Valve - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. 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)

B. Location Zones

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

C. Low Limit Valve - Operational Test

SUBTASK 21-52-30-860-012

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-30-740-001

(2) Use a maintenance access terminal (MAT) to do the Left and Right Pack Actuators Tests. To use a MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT, to do the Left Pack Actuators Test:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) GROUND TESTS

4) 21 Cabin Temperature Control System

5) OPERATIONAL TEST

6) Left Pack Actuators

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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 low limit valve.

1) If there is a maintenance message for the low limit valve, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(e) Make these selections on the MAT, to do the Right Pack Actuators Test:

1) NEW TEST

2) 21 Cabin Temperature Control System

3) OPERATIONAL TEST

4) Right Pack Actuators

5) CONTINUE

(f) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE

2) START TEST

(g) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

(h) If FAILED shows, make sure there is no maintenance message for the low limit valve.

1) If there is a maintenance message for the low limit valve, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(i) Make these selections on the MAT, to make sure there are no maintenance messages for the low limit valve:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

(j) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages for the low limit valve.

(k) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.

2) Select CONTINUE.

3) Look at the maintenance messages that show and make sure there are no maintenance messages for the low limit valve.

4) If a maintenance message for the low limit valve shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(l) To put the MAT back to its initial condition, make these selections:

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1) LINE MAINTENANCE
2) EXIT MAINTENANCE

——— END OF TASK ———

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ECONOMY COOLING VALVE AND FILTER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Economy Cooling Valve Removal

(2) Economy Cooling Valve Installation

(3) Economy Cooling Valve Filter Removal

(4) Economy Cooling Valve Filter Installation

TASK 21-52-31-000-801

2. Economy Cooling Valve Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-31-860-006

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-31-860-001

(2) To remove the economy cooling for the left cooling pack, do the step that follows:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	23	C21645	L ECV FCV POS SNSR

SUBTASK 21-52-31-860-002

(3) To remove the economy cooling for the right cooling pack, do the step that follows:

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

Right Power Management Panel, P210

Row	Col	Number	Name
H	4	C21646	R ECV/FCV POS SNSR

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SUBTASK 21-52-31-010-001

(4) To get access to the economy cooling valve for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-31-010-002

(5) To get access to the economy cooling valve for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Economy Cooling Valve Removal

SUBTASK 21-52-31-930-001

(1) Make a note of the position of the economy cooling valve [11] on the ducts.

NOTE: This will help you remember what position to put the economy cooling valve [11] in during the installation.

SUBTASK 21-52-31-030-001

(2) Disconnect the electrical connector [4] from the economy cooling valve [11].

SUBTASK 21-52-31-020-001

(3) Do the steps that follow to remove the bonding jumper [3] from the economy cooling valve [11]:

(a) Remove the nut [9], bolt [2], washer [1], and washers [10].

(b) Remove the bonding jumper [3].

SUBTASK 21-52-31-020-002

(4) Do the step that follows to remove the coupling [6] that attaches the economy cooling valve [11] to the economy cooling inlet duct:

(a) Remove the coupling [6].

NOTE: The clamshell coupling latches are designed such that they can not be disengaged when the system is pressurized. In order to disengage the latch, it is recommended that you pull the two ducts which are connected together towards each other. This will permit the latch to be easily lifted over the coupling in the unpressurized condition.

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(b) Move the sleeve [7] onto the economy cooling inlet duct.

(c) Remove the bonding spring [8].

SUBTASK 21-52-31-020-003

(5) Remove the coupling [13] that attaches the economy cooling valve [11] to the condenser outlet duct.

SUBTASK 21-52-31-020-004

CAUTION DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(6) Remove the economy cooling valve [11].

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SUBTASK 21-52-31-020-005

(7) Remove the sleeve [7].

SUBTASK 21-52-31-020-007

(8) Remove and discard the packings [5] from the economy cooling valve [11] and the economy cooling inlet duct.

SUBTASK 21-52-31-020-006

(9) Remove and discard the packing [12] from the flange groove of the economy cooling valve [11].

——— END OF TASK ———

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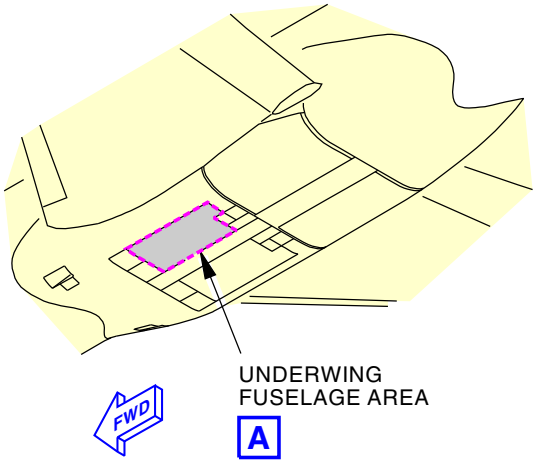

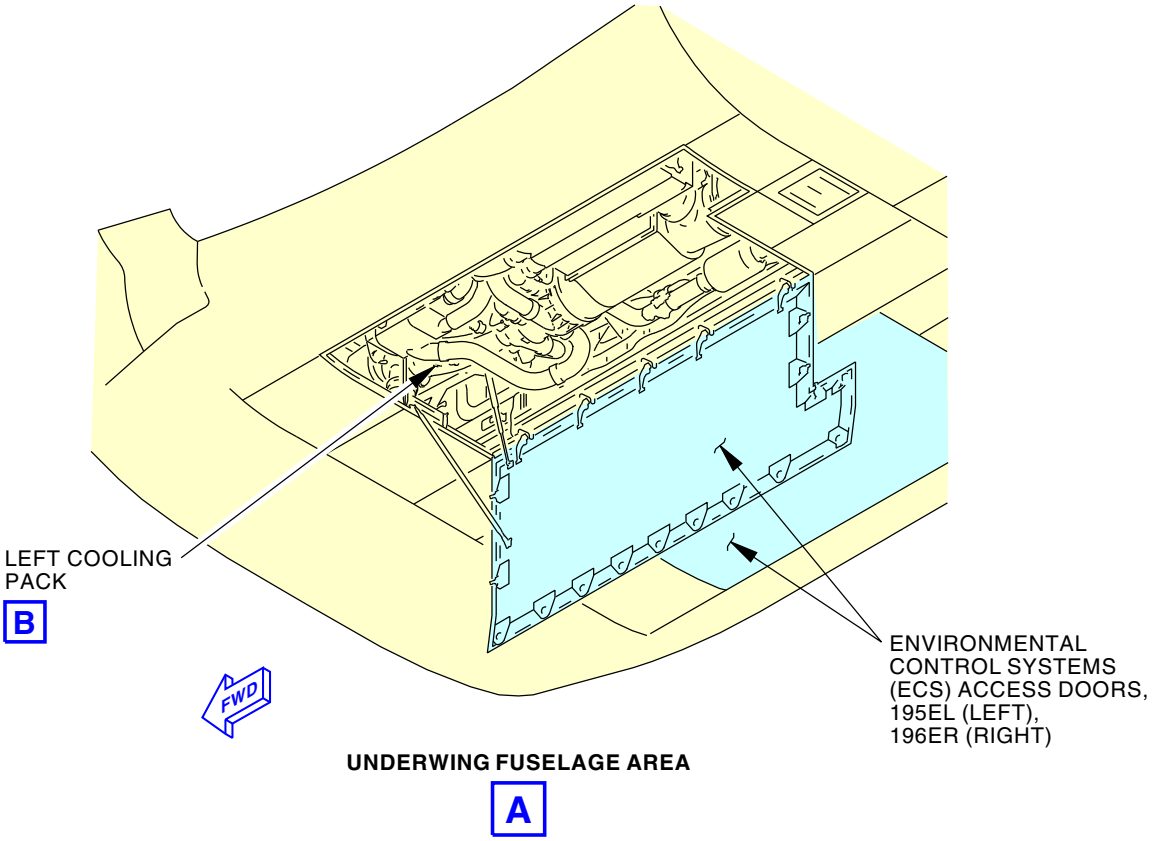

C91853 S0006404173_V2

Economy Cooling Valve Installation
Figure 401/21-52-31-990-801 (Sheet 1 of 3)

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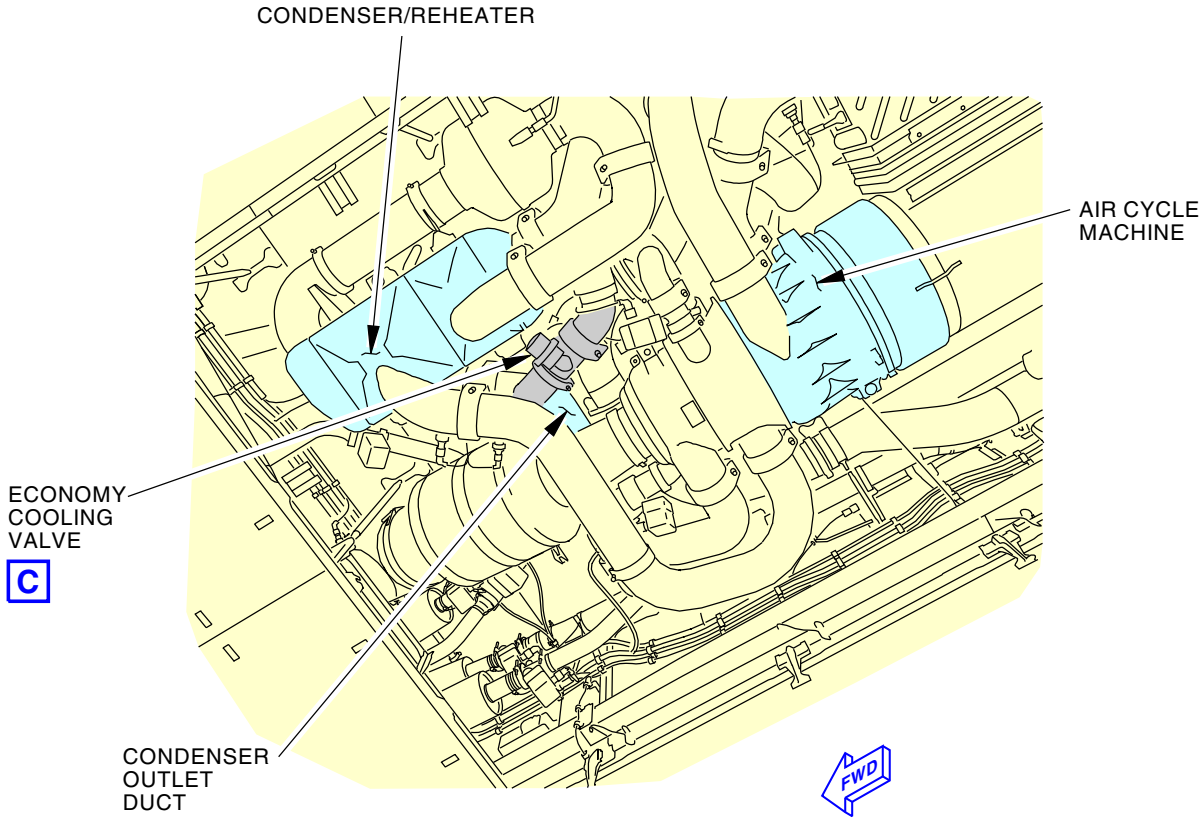

LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B

C91858 S0006404174_V2

Economy Cooling Valve Installation
Figure 401/21-52-31-990-801 (Sheet 2 of 3)

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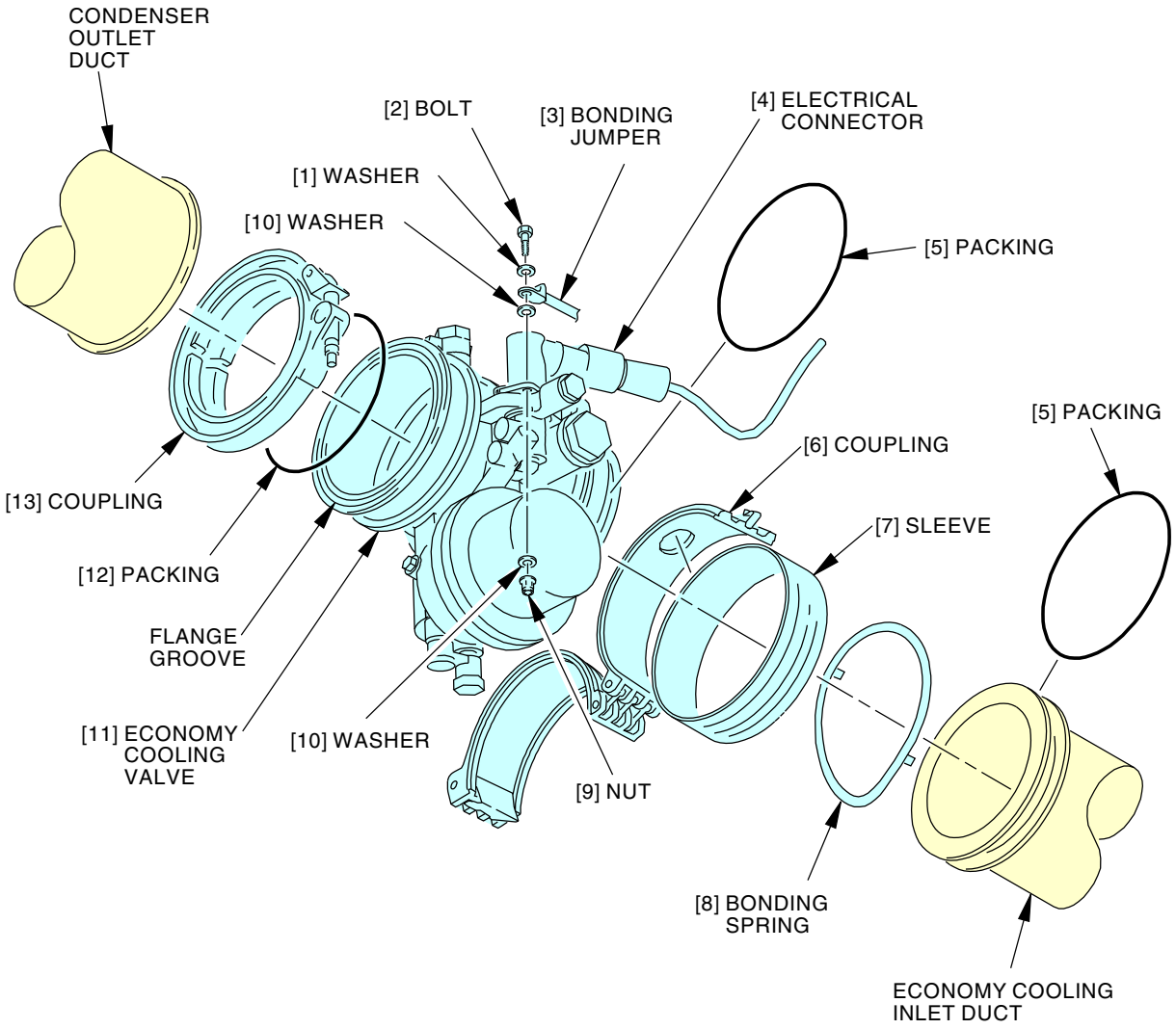

ECONOMY COOLING VALVE (EXAMPLE)

C

D03038 S0006404175_V3

Economy Cooling Valve Installation
Figure 401/21-52-31-990-801 (Sheet 3 of 3)

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TASK 21-52-31-400-801

3. Economy Cooling Valve Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00649	Lubricant - O-Ring - Krytox GPL206	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Packing	21-52-00-01-583	ARO ALL
11	Valve	21-52-00-01-448	ARO ALL
12	Packing	21-52-00-01-559	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Economy Cooling Valve Installation

SUBTASK 21-52-31-420-001

(1) Put a new packing [12] in the flange groove of the economy cooling valve [11].

SUBTASK 21-52-31-420-007

(2) Do these steps to install the new packings [5] and the sleeve [7]:

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WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(a) Apply the Krytox GPL206 lubricant, D00649 or Krytox 240AC perfluoropolyether grease, D50063 or Christo-lube MCG111 grease, D50011 to the new packings [5] and to the inside diameter of the sleeve [7].

(b) Install the new packings [5] on the economy cooling valve [11] and the economy cooling inlet duct.

(c) Install the sleeve [7] onto the economy cooling inlet duct.

SUBTASK 21-52-31-420-002

CAUTION DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(3) Put the economy cooling valve [11] in its position between the economy cooling inlet duct and the condenser outlet duct.

SUBTASK 21-52-31-420-003

(4) Install the coupling [13] to connect the economy cooling valve [11] to the condenser outlet duct.

(a) Tighten the coupling [13] to 50 in-lb (5.6 N·m) - 55 in-lb (6.2 N·m).

SUBTASK 21-52-31-420-004

(5) Do the steps that follow to install the coupling [6] that connects the economy cooling valve [11] to the economy cooling inlet duct:

CAUTION MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(a) Install the bonding spring [8].

NOTE: The tabs on the bonding spring go towards the economy cooling inlet duct flange. You can use the sleeve to help hold the bonding spring in position while you align the ducts.

(b) Put the sleeve [7] in position over the economy cooling inlet duct and the economy cooling valve flange.

1) Make sure you cannot see the flange grooves when you install the sleeve [7].

(c) Install the coupling [6].

SUBTASK 21-52-31-420-005

(6) Do the steps that follow to install the bonding jumper [3] onto the economy cooling valve [11]:

(a) Put the bonding jumper [3] onto the economy cooling valve [11].

(b) Install the two washers [10], bolt [2], washer [1] and nut [9].

SUBTASK 21-52-31-420-006

(7) Connect the electrical connector [4] onto the economy cooling valve [11].

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SUBTASK 21-52-31-860-003

(8) If you removed the economy cooling valve [11] for the left cooling pack, do the step that follows:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	23	C21645	L ECV FCV POS SNSR

SUBTASK 21-52-31-860-004

(9) If you removed the economy cooling valve [11] for the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
H	4	C21646	R ECV/FCV POS SNSR

G. Economy Cooling Valve Installation Test

SUBTASK 21-52-31-860-011

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-31-860-008

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-52-31-860-009

(3) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5 to the AUTO position.

SUBTASK 21-52-31-710-001

(4) Use a Maintenance Access Terminal (MAT) to do the System test of the economy cooling valve [11] (TASK 45-10-00-740-808).

NOTE: While the MAT test is in operation, the applicable valve will open. A second person should feel for air leakage while the test is in operation. Look at the valve position indicator to determine if the valve is open or closed. If air leakage is felt, the applicable couplings must be adjusted until air leakage is not felt.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) System Air On Test, L (or R as appropriate)
7) CONTINUE

(b) Do the instructions that show on the MAT then make these selections:

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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) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE
2) EXIT MAINTENANCE

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-31-860-005

(1) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the Pilot's Overhead panel, P5, to the OFF position.

SUBTASK 21-52-31-860-010

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-31-410-001

(3) If the economy cooling valve for the right cooling pack was removed, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-31-410-002

(4) If the economy cooling valve for the left cooling pack was removed, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-31-860-015

(5) If necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

TASK 21-52-31-000-803

4. Economy Cooling Valve (ECV) Filter Removal

(Figure 402)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

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D. Prepare for the Removal

SUBTASK 21-52-31-840-001

WARNING REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-31-010-003

(2) To remove the left ECV filter, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-31-010-004

(3) To remove the right ECV filter, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-31-010-005

CAUTION DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(4) If you cannot get access to the valve filter [4], then do these steps:

(a) Make a note of the position of the ECV.

(b) Loosen the coupling that holds the ECV to the condenser outlet duct.

(c) Loosen the channel band coupling that holds the ECV to the economy cooling inlet duct.

NOTE: The coupling latches are designed such that they can not be released when the system is pressurized. To release the latches, pull the duct toward the valve.

CAUTION DO NOT DAMAGE THE O-RING PACKING WHEN YOU ROTATE THE VALVE. THE DAMAGE CAN CAUSE LEAKAGE OF THE DUCT CONNECTIONS.

(d) Carefully rotate the ECV until you can get access to the valve filter [4].

E. Remove the Filter

SUBTASK 21-52-31-020-010

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. HOT DUCTS CAN CAUSE INJURIES TO PERSONNEL.

(1) Do these steps to remove the ECV filter [4]:

(a) Remove the threaded plug [1].

(b) Remove the compression spring [3].

(c) Remove the air filter [4].

END OF TASK

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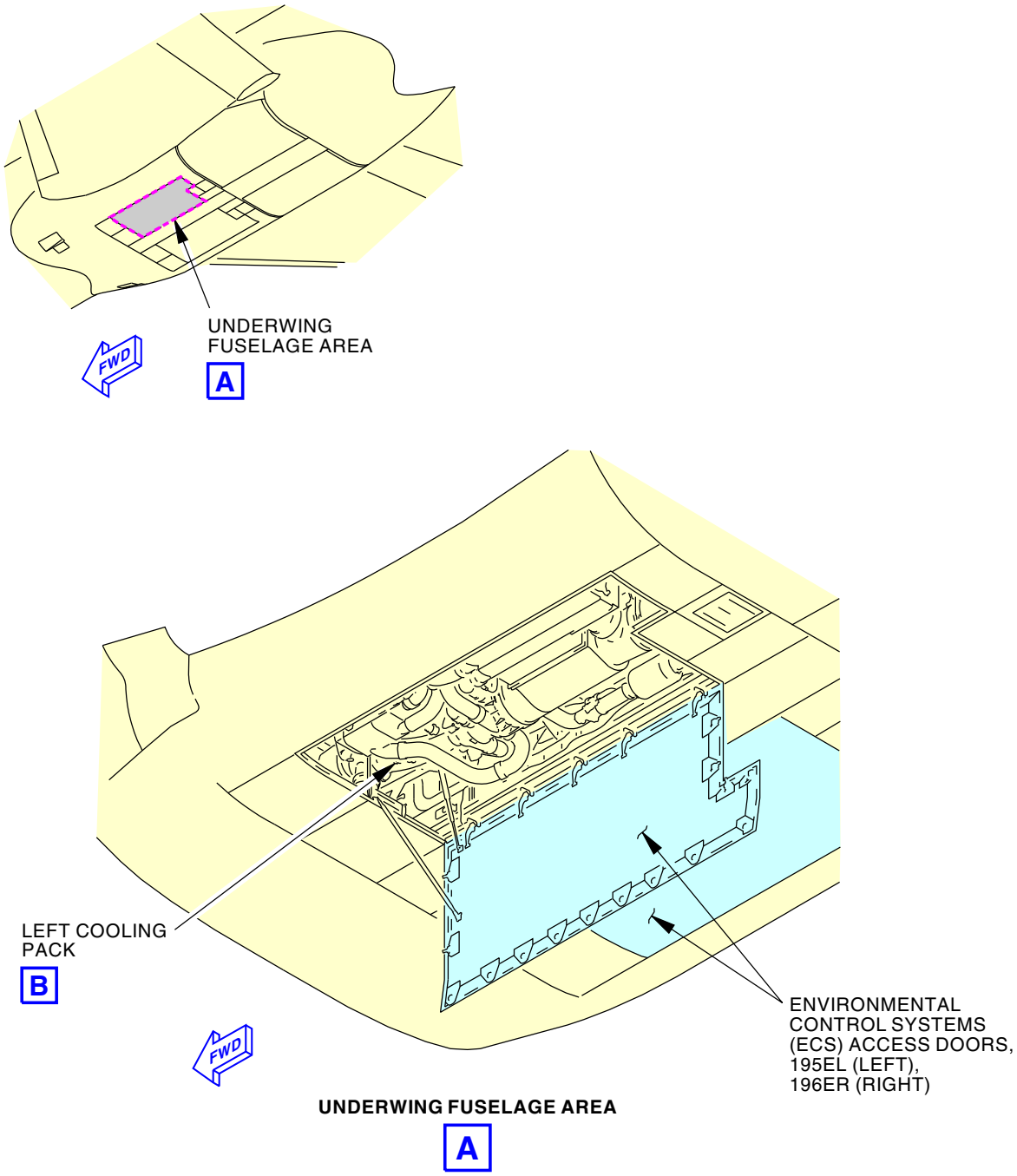

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Economy Cooling Valve Filter Installation
Figure 402/21-52-31-990-803 (Sheet 1 of 3)

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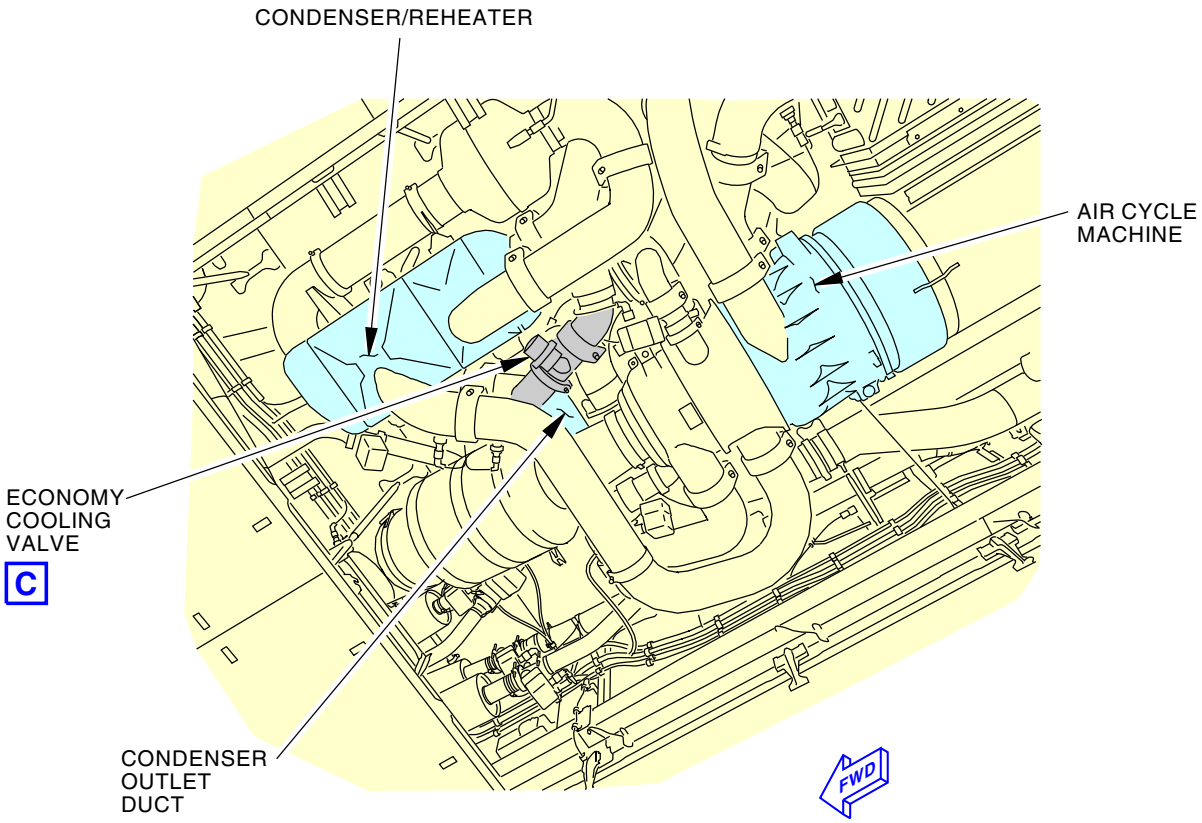

LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B

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Economy Cooling Valve Filter Installation
Figure 402/21-52-31-990-803 (Sheet 2 of 3)

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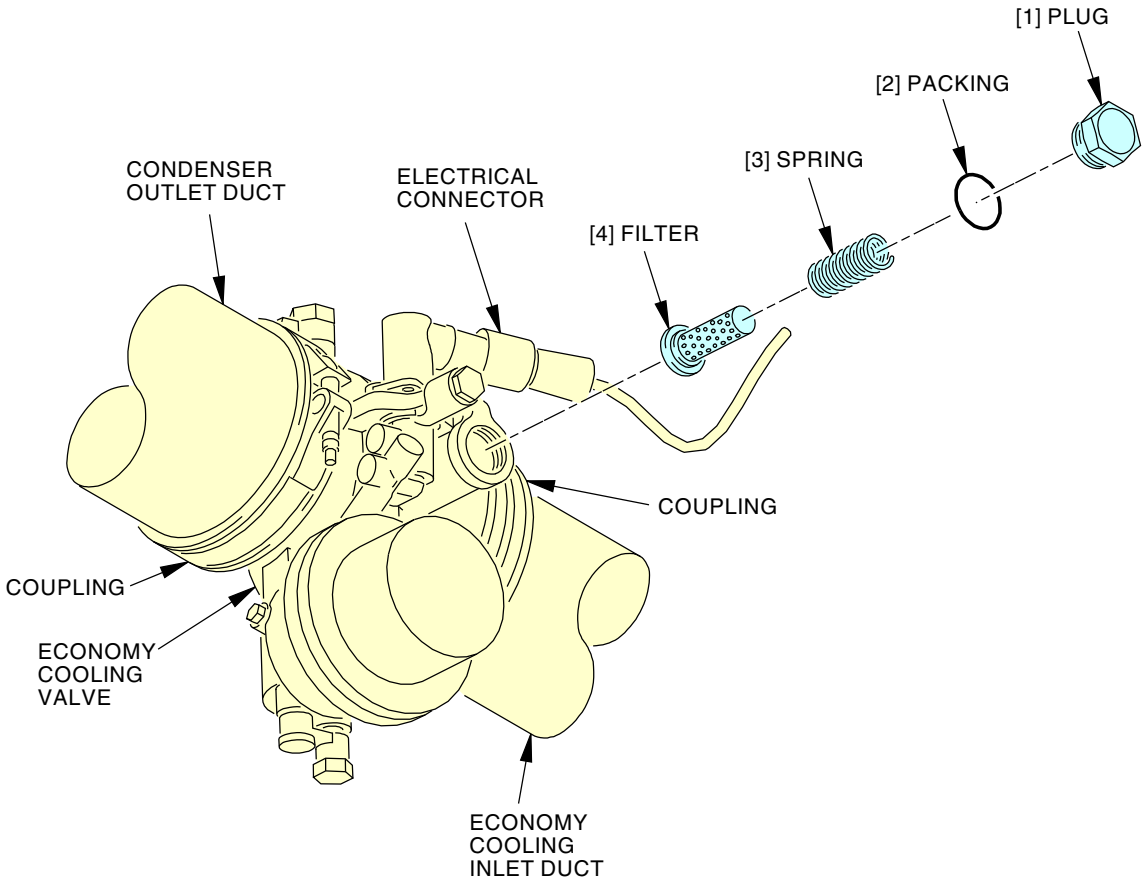

ECONOMY COOLING VALVE (EXAMPLE)

C

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Economy Cooling Valve Filter Installation
Figure 402/21-52-31-990-803 (Sheet 3 of 3)

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TASK 21-52-31-400-802

5. Economy Cooling Valve (ECV) Filter Installation

(Figure 402)

A. Consumable Materials

Reference	Description	Specification
D00669	Multi-Purpose, Moly-Lithium Type, Lubriplate Mo-Lith No. 2	

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	21-52-31-01-085	ARO ALL
4	Filter	21-52-31-01-100	ARO ALL

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Install the Filter

SUBTASK 21-52-31-420-009

(1) Do these steps to install the ECV filter [4]:

(a) Inspect the air filter [4] for a damaged screen.

(b) If the screen is damaged, then discard the filter [4] and get a new air filter [4].

(c) Install the air filter [4].

(d) Install the compression spring [3].

(e) Inspect the preformed packing [2] for damage or deterioration.

(f) If you find any damage or deterioration, then discard the packing [2] and get a new preformed packing [2].

1) Install the packing [2] onto the plug [1].

(g) Put a thin layer of lubricant, Lubriplate Mo-Lith No. 2 Lubricant, D00669, on the threads of the plug [1].

(h) Install the threaded plug [1].

(i) Tighten the plug [1] to 35 in-lb (4.0 N·m) - 45 in-lb (5.1 N·m).

SUBTASK 21-52-31-010-006

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(2) If you loosened the two valve couplings to get access to the valve filter [4], then do these steps:

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CAUTION

DO NOT DAMAGE THE O-RING PACKING WHEN YOU ROTATE THE VALVE. THE DAMAGE CAN CAUSE LEAKAGE OF THE DUCT CONNECTIONS.

(a) Carefully rotate the valve back to its original position.

(b) Tighten the channel band coupling that holds the ECV to the economy cooling inlet duct.

(c) Tighten the nut on the coupling that holds the ECV to the condenser outlet duct 50 in-lb (5.6 N·m) - 55 in-lb (6.2 N·m).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-31-010-007

(1) If you installed the left ECV filter, then close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-31-010-008

(2) If you installed the right ECV filter, then close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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ECONOMY COOLING VALVE AND FILTER - CLEANING/PAINTING

1. General

A. This procedure contains this task:

(1) Economy Cooling Valve (ECV) Filter Cleaning.

B. The ECV is a pneumatically operated valve. The ECV filter prevents unwanted material from entering the control side of the valve.

TASK 21-52-31-000-802

2. Economy Cooling Valve (ECV) Filter Cleaning

(Figure 701)

A. References

Reference	Title
21-52-31-000-803	Economy Cooling Valve (ECV) Filter Removal (P/B 401)
21-52-31-400-802	Economy Cooling Valve (ECV) Filter Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-182	Cleaner - Ultrasonic

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

D. Prepare for Cleaning the Filter

SUBTASK 21-52-31-020-009

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(1) Remove the filter from the ECV (TASK 21-52-31-000-803).

E. Clean the Filter

SUBTASK 21-52-31-100-001

(1) Do these steps to clean the filter:

WARNING

USE GOGGLES AND RUBBER GLOVES WHEN YOU CLEAN THE FILTER. CLEAN THE FILTER IN AN AREA WITH A GOOD FLOW OF AIR. THE CLEANER CAN IRRITATE YOUR EYES, SKIN, THROAT, AND LUNGS.

(a) Clean the filter in an ultrasonic cleaner, STD-182 or equivalent, as follows:

1) Ultrasonic clean with a mild alkaline cleaner such as Blue Gold FO 2085M heated to a temperature of 140°F (60°C) to 150°F (65°C) at an agitation frequency of 40 KHz for a maximum of 15 to 20 minutes.

2) If you use an equivalent mild alkaline aqueous cleaner recommended by the manufacturer of your ultrasonic cleaner, use these guidelines:

a) Use the recommended cleaner for the substrate you are cleaning.

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b) Use the recommended cleaning temperature from the manufacturer of the ultrasonic cleaner, STD-182.

c) Clean at an agitation frequency of 40 KHz for a maximum of 15 to 20 minutes.

(b) Blow dry, filtered, compressed air through the air filter to remove any contamination.

(c) Dry the filter with the compressed air:

1) Use air pressure of 25 psig (172 kPa) or less to clean and dry the filter.

2) Direct the flow of the air pressure away from personnel.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-31-420-008

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(1) Re-install the filter into the ECV (TASK 21-52-31-400-802).

——— END OF TASK ———

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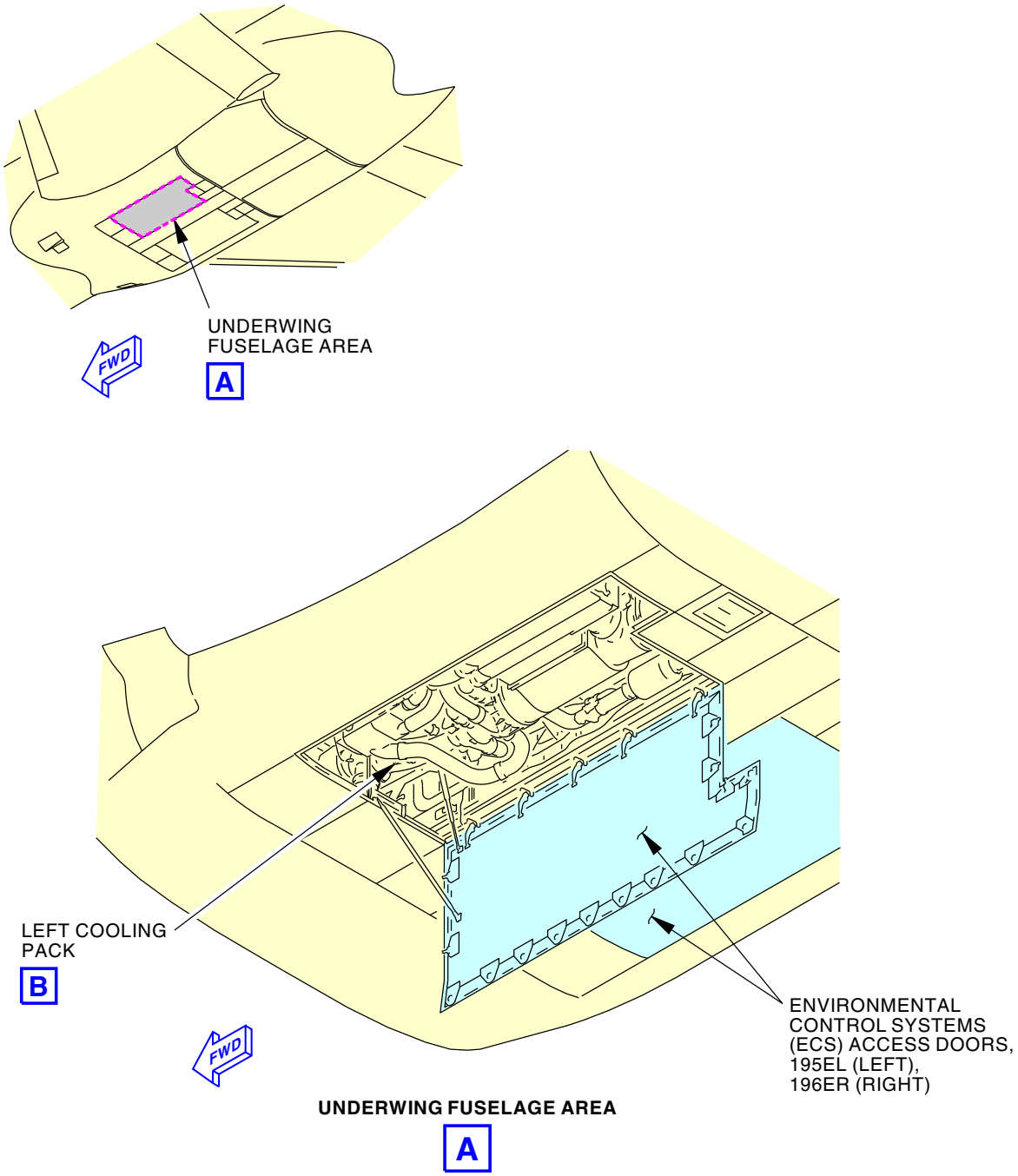

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Economy Cooling Valve Filter Cleaning
Figure 701/21-52-31-990-802 (Sheet 1 of 3)

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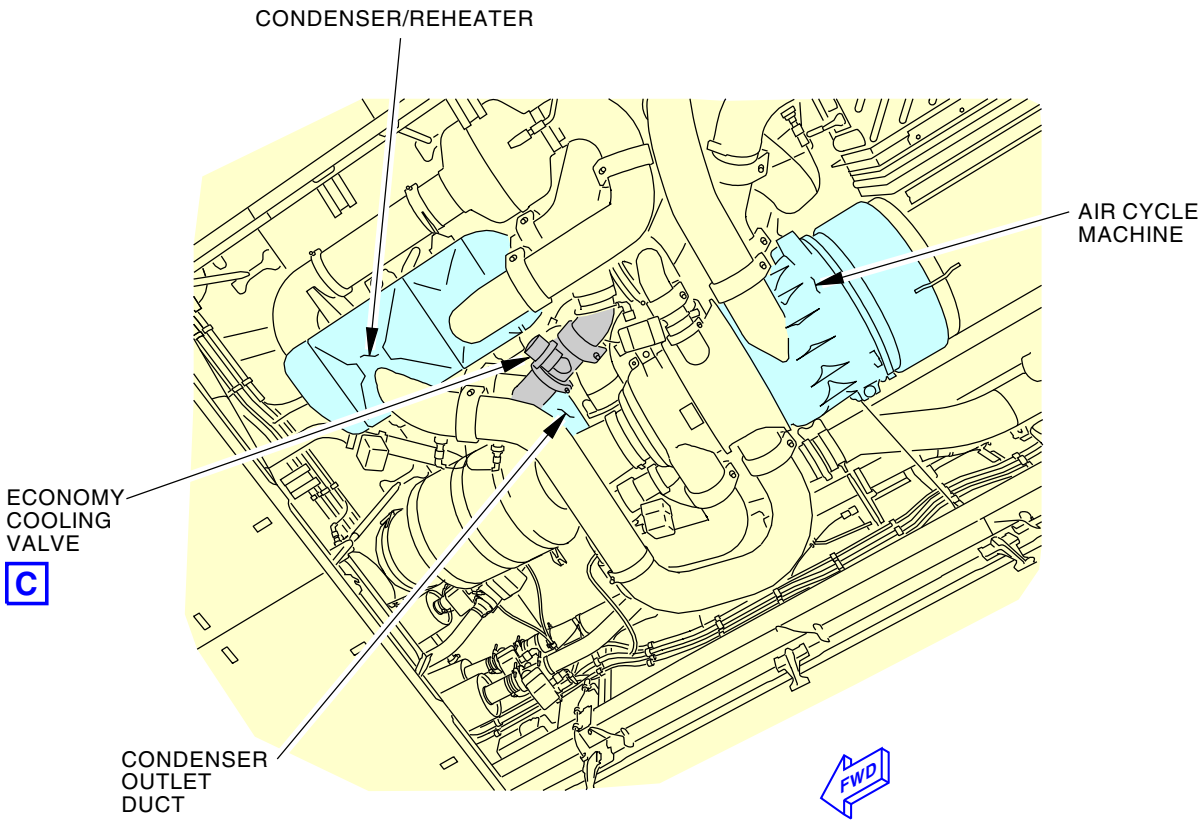

LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B

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Economy Cooling Valve Filter Cleaning
Figure 701/21-52-31-990-802 (Sheet 2 of 3)

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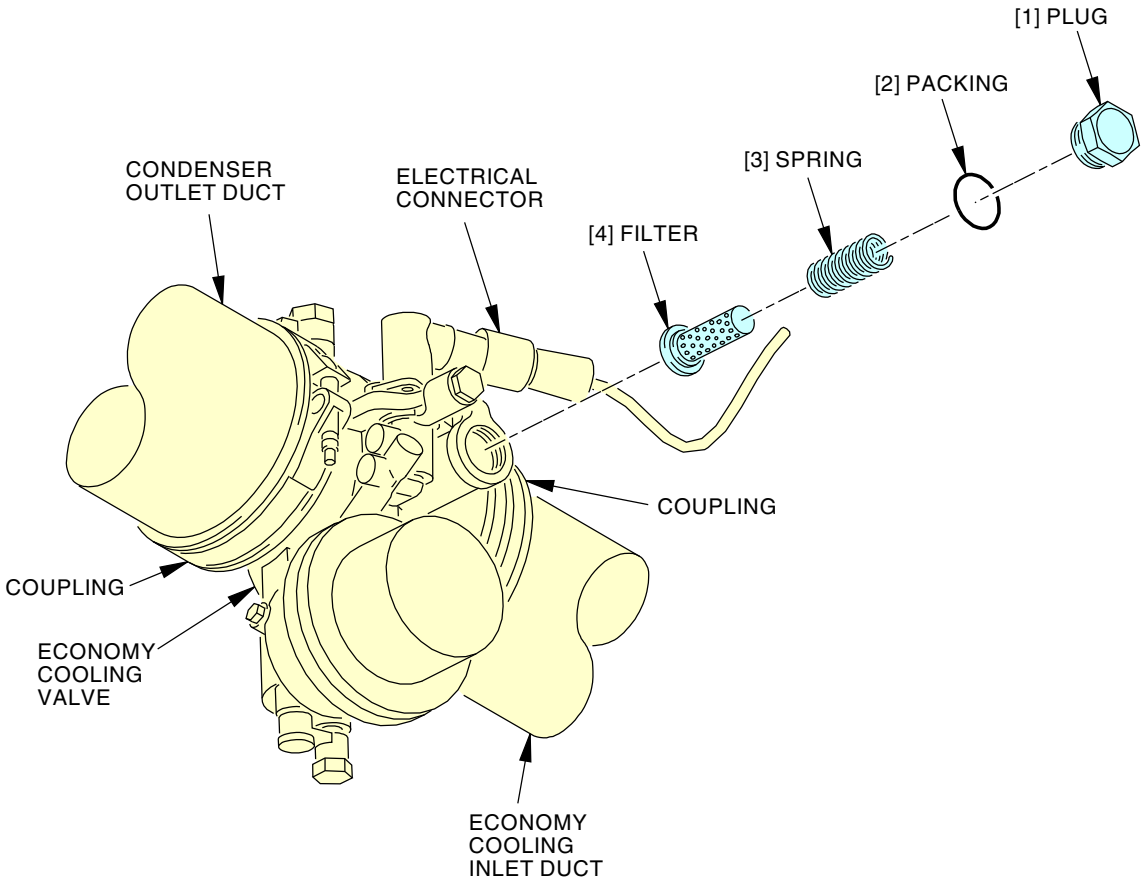

ECONOMY COOLING VALVE (EXAMPLE)

C

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Economy Cooling Valve Filter Cleaning
Figure 701/21-52-31-990-802 (Sheet 3 of 3)

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SECOND STAGE TURBINE BYPASS VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the second stage turbine bypass valve

(2) An installation of the second stage turbine bypass valve.

B. The second stage turbine bypass valve will be called the turbine bypass valve throughout this procedure.

TASK 21-52-32-000-801

2. Second Stage Turbine Bypass Valve Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-32-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-32-860-002

(2) To remove the turbine bypass valve [5] for the left cooling pack, do the steps that follow:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-32-860-003

(3) To remove the turbine bypass valve [5] for the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)

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(Continued)

Right Power Management Panel, P210

Row	Col	Number	Name
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-52-32-010-001

(4) To get access to the turbine bypass valve [5] for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-32-010-002

(5) To get access to the turbine bypass valve [5] for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Second Stage Turbine Bypass Valve Removal

SUBTASK 21-52-32-030-001

(1) Disconnect the electrical connector [11] from the turbine bypass valve [5].

SUBTASK 21-52-32-020-001

(2) Do the steps that follow to remove the bonding jumper [8] from the turbine bypass valve [5]:

(a) Remove the nut [9], bolt [13], washer [12], and washers [10].

(b) Remove the bonding jumper [8].

SUBTASK 21-52-32-930-001

(3) Make a note of the position of the turbine bypass valve [5] on the ducts.

NOTE: This will help you remember what position to put the turbine bypass valve [5] in during the installation.

SUBTASK 21-52-32-020-002

(4) Do the steps that follow to remove the coupling [3] that attaches the turbine bypass valve [5] to the second stage turbine bypass duct:

(a) Remove the coupling [3].

NOTE: The clamshell coupling latches are designed such that they can not be disengaged when the system is pressurized. In order to disengage the latch, it is recommended that you pull the two ducts which are connected together towards each other. This will permit the latch to be easily lifted over the coupling in the unpressurized condition.

WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(b) Move the sleeve [4] onto the second stage turbine bypass duct.

(c) Remove the bonding spring [2].

SUBTASK 21-52-32-020-003

(5) Remove the coupling [6] that connects the turbine bypass valve [5] to the air cycle machine.

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SUBTASK 21-52-32-020-004

(6) Remove the turbine bypass valve [5].

SUBTASK 21-52-32-020-005

(7) Remove the sleeve [4] from the second stage turbine bypass duct.

SUBTASK 21-52-32-020-007

(8) Remove and discard the packings [1] from the turbine bypass valve [5] and the second stage turbine bypass duct.

SUBTASK 21-52-32-020-006

(9) Remove and discard the packing [7] from the flange groove of the turbine bypass valve [5].

——— END OF TASK ———

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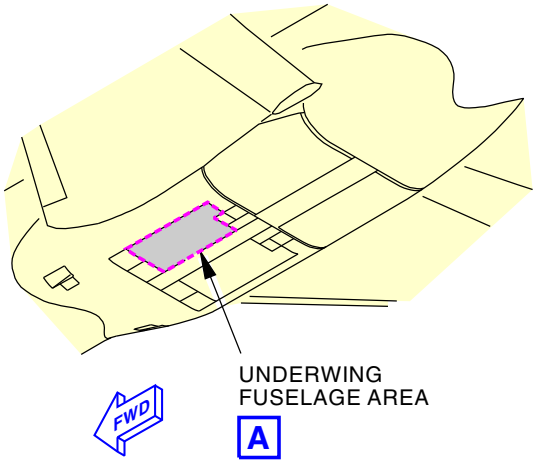

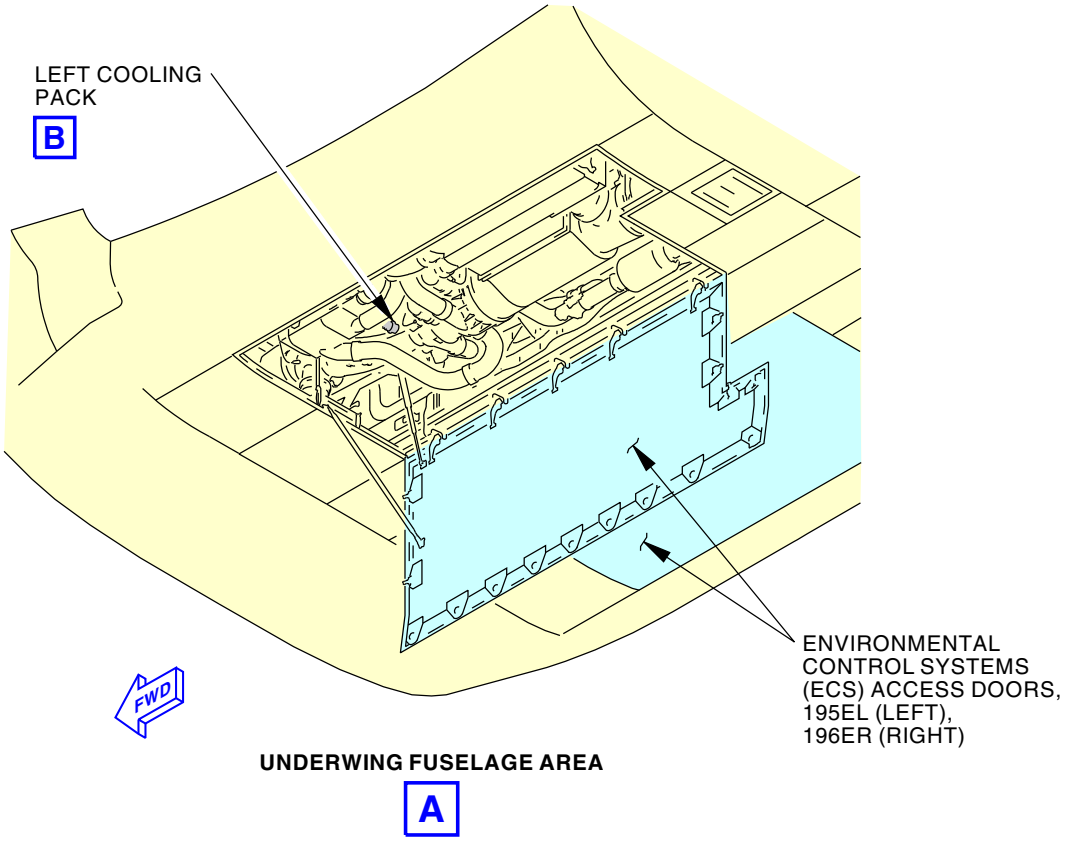

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Second Stage Turbine Bypass Valve Installation
Figure 401/21-52-32-990-801 (Sheet 1 of 2)

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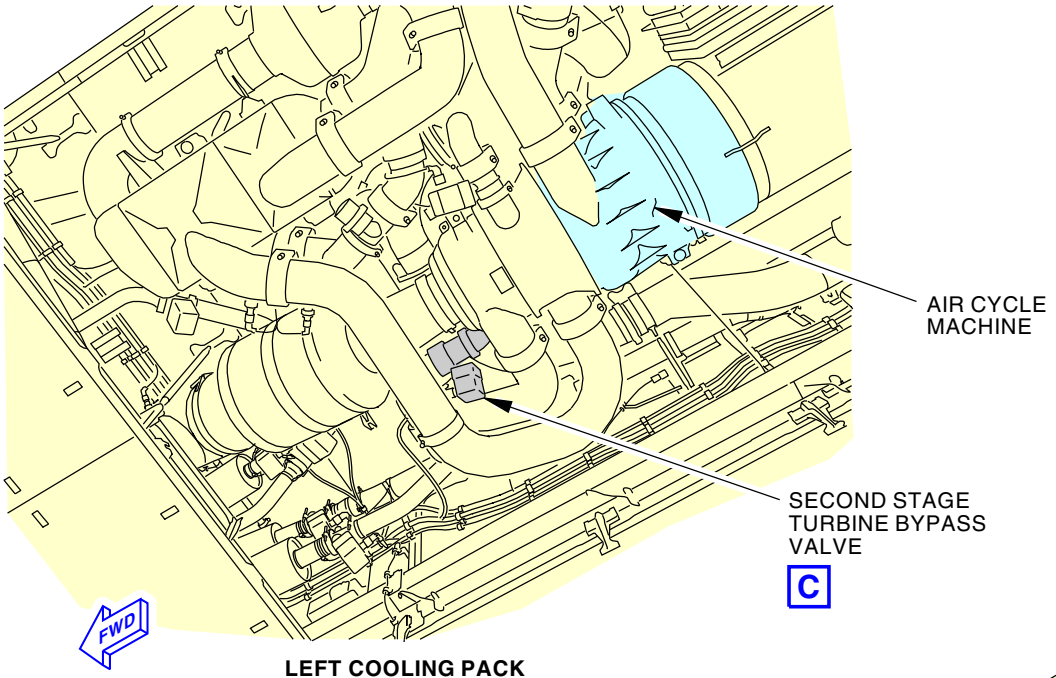
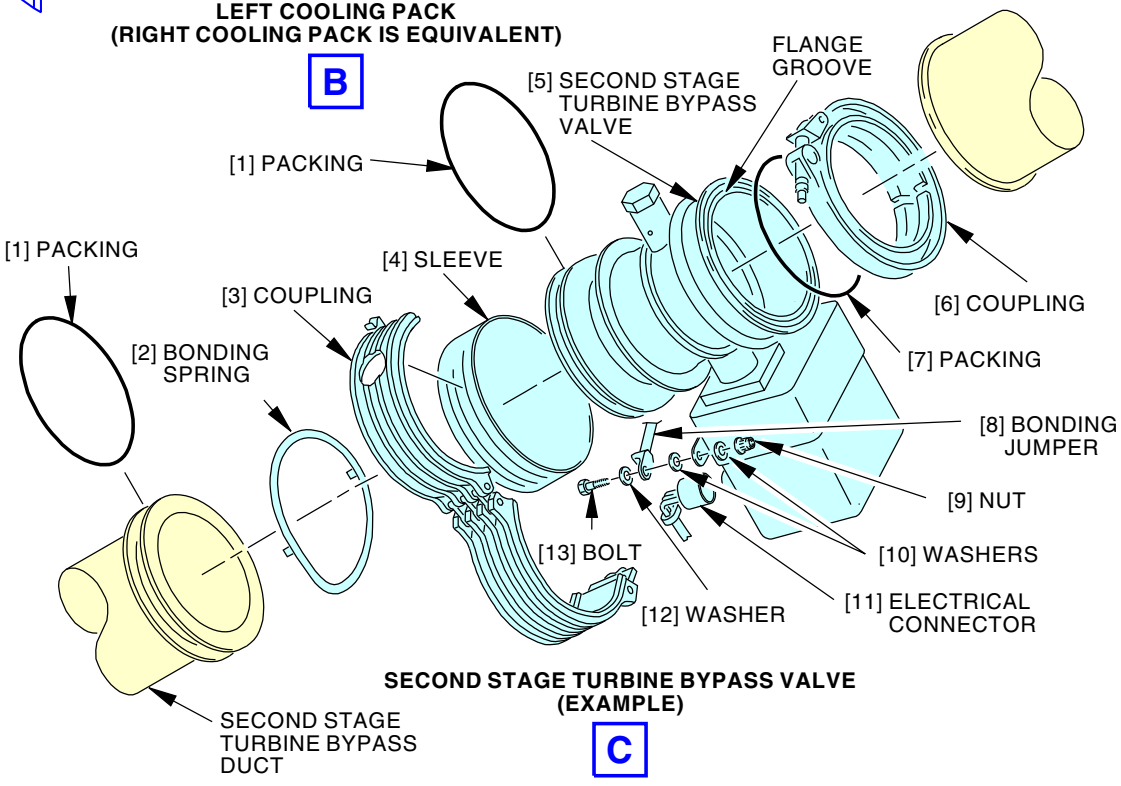


LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B



SECOND STAGE TURBINE BYPASS VALVE
(EXAMPLE)

C

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Second Stage Turbine Bypass Valve Installation
Figure 401/21-52-32-990-801 (Sheet 2 of 2)

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TASK 21-52-32-400-801

3. Second Stage Turbine Bypass Valve Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. 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)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00649	Lubricant - O-Ring - Krytox GPL206	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Packing	21-52-00-01-571	ARO ALL
5	Valve	21-52-00-01-451	ARO ALL
7	Packing	21-52-00-01-605	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Second stage Turbine Bypass Valve Installation

SUBTASK 21-52-32-420-001

(1) Put a new packing [7] in the flange groove of the turbine bypass valve [5].

SUBTASK 21-52-32-420-007

(2) Do these steps to install the new packings [1] and the sleeve [4]:

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WARNING DO NOT TOUCH THE ENDS OF THE SLEEVE. THE ENDS OF THE SLEEVE HAVE SHARP EDGES. IF YOU TOUCH THE ENDS OF THE SLEEVE, THE SHARP EDGES CAN CUT YOUR HAND.

(a) Apply the Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, or Christo-lube MCG111 grease, D50011, to the new packings [1] and to the inside diameter of the sleeve [4].

(b) Install the new packings [1] on the turbine bypass valve [5] and the second stage turbine bypass duct.

(c) Install the sleeve [4] onto the second stage turbine bypass duct.

SUBTASK 21-52-32-420-002

(3) Put the turbine bypass valve [5] in its position between the second stage turbine bypass duct and the air cycle machine.

SUBTASK 21-52-32-420-003

(4) Install the coupling [6] to connect the turbine bypass valve [5] to the air cycle machine.

(a) Tighten the coupling [6] to 50 in-lb (5.6 N·m)-55 in-lb (6.2 N·m).

SUBTASK 21-52-32-420-004

(5) Do the steps that follow to install the coupling [3] that attaches the turbine bypass valve [5] to the second stage turbine bypass duct:

CAUTION MAKE SURE THAT THE BONDING SPRINGS ARE CORRECTLY INSTALLED. IF THE SPRINGS ARE NOT CORRECTLY INSTALLED, LOOSE OR BROKEN SPRINGS WILL CAUSE DAMAGE TO THE DOWNSTREAM COMPONENTS.

(a) Install the bonding spring [2].

NOTE: The tabs on the bonding spring go towards the second stage turbine bypass duct flange. You can use the sleeve to help hold the bonding spring in position while you align the ducts.

(b) Put the sleeve [4] onto the second stage turbine bypass duct and the turbine bypass valve flange.

1) Make sure you cannot see the flange grooves when you install the sleeve [4].

(c) Install the coupling [3].

SUBTASK 21-52-32-420-005

(6) Do the steps that follow to install the bonding jumper [8] onto the turbine bypass valve [5]:

(a) Make sure the bonding jumper [8], washer [12], washers [10], and nut [9] are clean.

(b) Put the bonding jumper [8] onto the turbine bypass valve [5].

(c) Install the bolt [13], washer [12], washers [10], and nut [9].

SUBTASK 21-52-32-420-006

(7) Connect the electrical connector [11] onto the turbine bypass valve [5].

SUBTASK 21-52-32-860-004

(8) If you removed turbine bypass valve [5] for the left cooling pack, do the steps that follow:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-52-32-860-005

(9) If you removed the turbine bypass valve [5] for the right cooling pack, do the steps that follow:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

G. Second stage Turbine Bypass Valve Installation Test

SUBTASK 21-52-32-860-010

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-32-710-001

(2) Use a Maintenance Access Terminal (MAT) to do the System test of the turbine bypass valve [5] (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Pack Actuators Test, L (or R as appropriate)
7) CONTINUE

(b) Do the instructions that show on the MAT 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) Do the steps that follow, to do a leak check of the turbine bypass valve [5]:

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1) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.
2) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the AUTO position.
3) Make these selections on the MAT, to do the applicable Right or Left System Air On Test:

   NOTE: While the MAT test is in operation, the applicable valve will open. A second person should feel for air leakage while the test is in operation. If air leakage is felt, the applicable valve and couplings must be adjusted until air leakage is not felt.

   a) NEW TEST
   b) 21 Cabin Temperature Control System
   c) SYSTEM TEST
   d) Left (or Right as appropriate) System Air On
   e) CONTINUE
4) Do the instructions that show on the MAT and then make these selections:
   a) CONTINUE
   b) START TEST
5) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
6) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

(f) To put the MAT back to its initial condition, make these selections:
1) LINE MAINTENANCE
2) EXIT MAINTENANCE

(g) Push the applicable L or R PACK switch-light, on the Air Conditioning Module, in the pilot's overhead panel, P5, to the OFF position.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-32-860-007

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-32-410-001

(2) If the turbine bypass valve [5] for the right cooling pack was removed, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-32-410-002

(3) If the turbine bypass valve [5] for the left cooling pack was removed, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-32-040-001

(4) If necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

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TURBINE BYPASS VALVE - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) Turbine Bypass Valve Operational Test

C. The Turbine Bypass Valve Operational Test contains these initiated built in tests (IBIT) ground tests:

(1) Left Pack Actuators Test

(2) Right Pack Actuators Test

D. You will use a maintenance access terminal (MAT) to do the Left and Right Pack Actuators Tests.

E. The Left and Right Pack Actuators Tests does a test of the turbine bypass valve for the left and right cooling packs.

TASK 21-52-32-740-801

2. Turbine Bypass Valve - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. 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)

B. Location Zones

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

C. Turbine Bypass Valve - Operational Test

SUBTASK 21-52-32-860-012

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-52-32-740-001

(2) Use a maintenance access terminal (MAT) to do the Left and Right Pack Actuators Tests. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT, to do the Left Pack Actuators Test:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) GROUND TESTS

4) 21 Cabin Temperature Control System

5) OPERATIONAL TEST

6) Left Pack Actuators

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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 turbine bypass valve.

1) If there is a maintenance message for the turbine bypass valve, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(e) Make these selections on the MAT, to do the Right Pack Actuators Test:

1) NEW TEST

2) 21 Cabin Temperature Control System

3) OPERATIONAL TEST

4) Right Pack Actuators

5) CONTINUE

(f) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE

2) START TEST

(g) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

(h) If FAILED shows, make sure there is no maintenance message for the turbine bypass valve.

1) If there is a maintenance message for the turbine bypass valve, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(i) Make these selections on the MAT, to make sure there are no maintenance messages for the turbine bypass valve:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

(j) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages for the turbine bypass valve.

(k) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.

2) Select CONTINUE.

3) Look at the maintenance messages that show and make sure there are no maintenance messages for the turbine bypass valve.

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4) If a maintenance message for the turbine bypass valve shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(l) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE

2) EXIT MAINTENANCE

——— END OF TASK ———

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PRIMARY HEAT EXCHANGER OUTLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the primary heat exchanger outlet temperature sensor

(2) An installation of the primary heat exchanger outlet temperature sensor.

B. There is one primary heat exchanger outlet temperature sensor for each cooling pack. The primary heat exchanger outlet temperature sensors are installed on the outlet duct of each primary heat exchanger.

You can get to the temperature sensors through these access doors:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

TASK 21-52-40-000-801

2. Primary Heat Exchanger Outlet Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-40-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-40-010-001

(2) To get access to the primary heat exchanger outlet temperature sensor for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-40-010-002

(3) To get access to the primary heat exchanger outlet temperature sensor for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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E. Primary Heat Exchanger Outlet Temperature Sensor Removal

SUBTASK 21-52-40-030-001

(1) Disconnect the electrical connector [1] from the primary heat exchanger outlet temperature sensor [2].

SUBTASK 21-52-40-030-002

(2) Remove and discard the lockwire from the temperature sensor nut [4].

SUBTASK 21-52-40-020-001

CAUTION

USE TWO WRENCHES TO REMOVE THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the primary heat exchanger outlet temperature sensor [2].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the temperature sensor nut [4].

SUBTASK 21-52-40-030-003

(4) Remove and discard the packing [3] from the primary heat exchanger outlet temperature sensor [2].

——— END OF TASK ———

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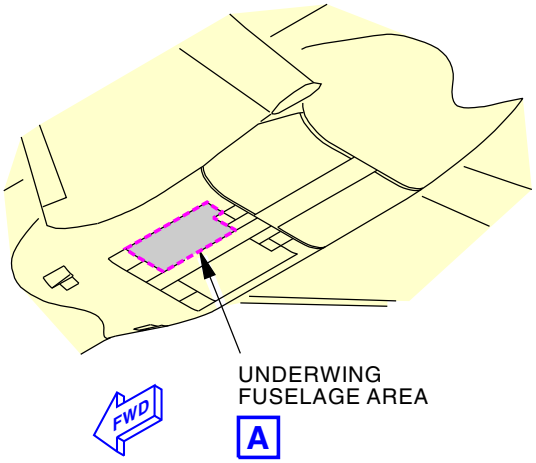

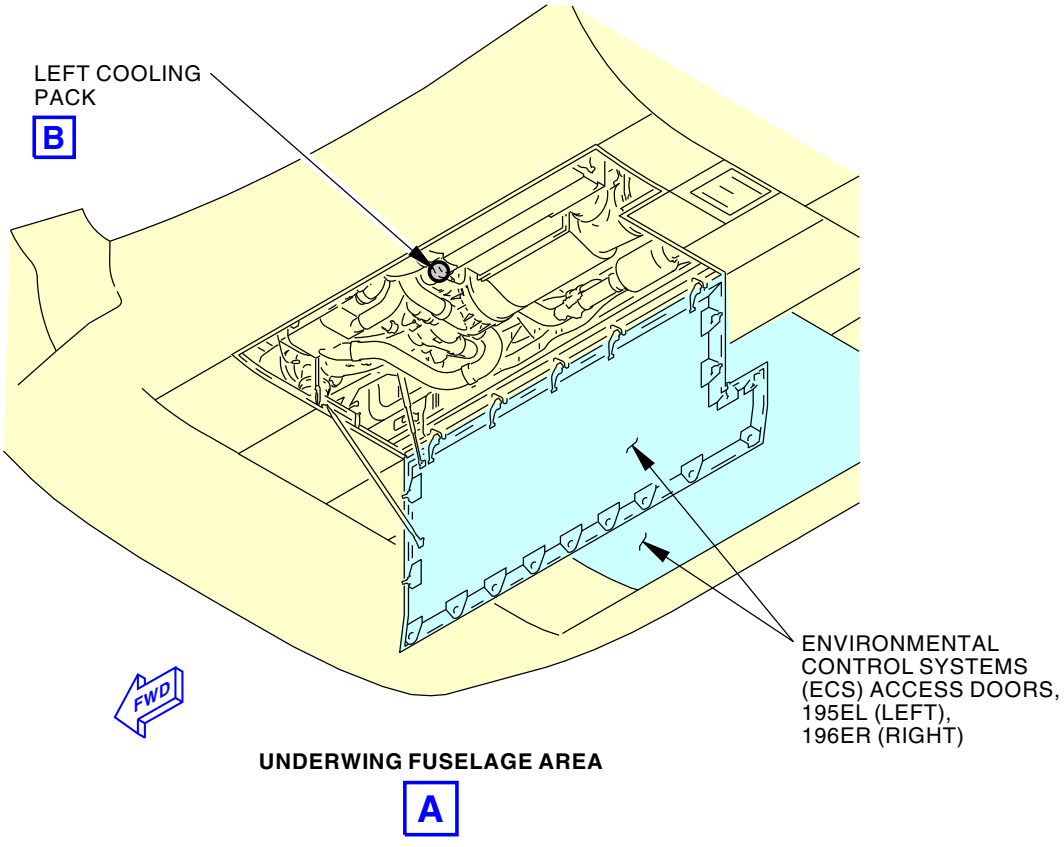

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Primary Heat Exchanger Outlet Temperature Sensor Installation
Figure 401/21-52-40-990-801 (Sheet 1 of 2)

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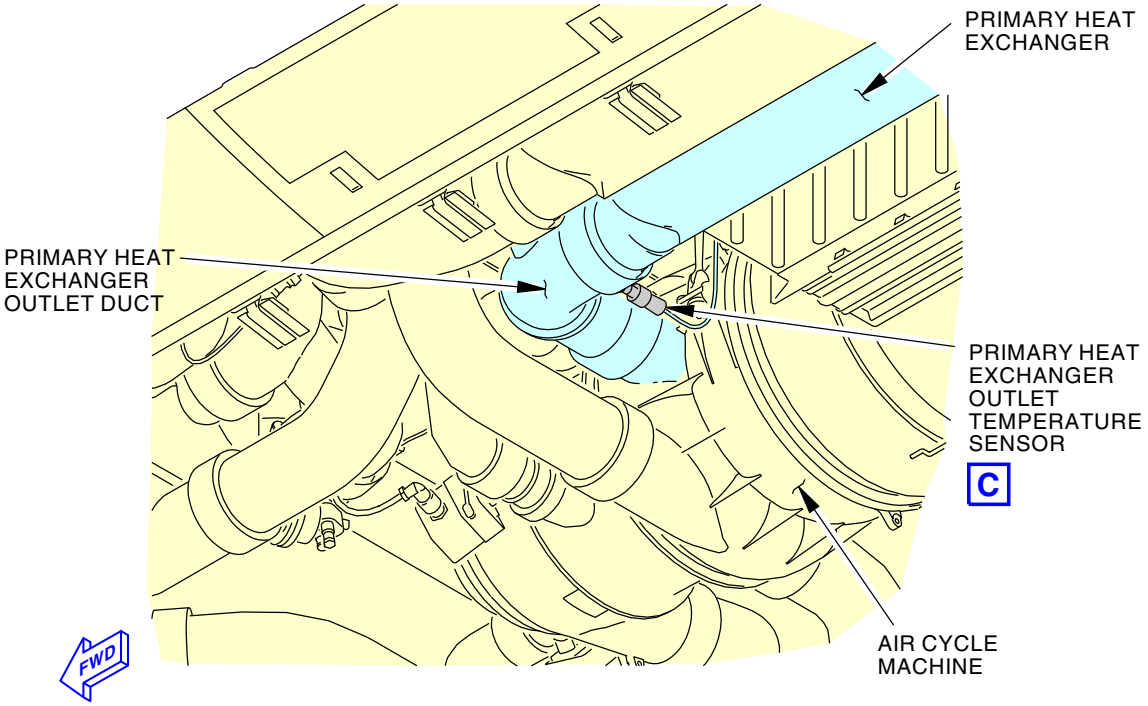
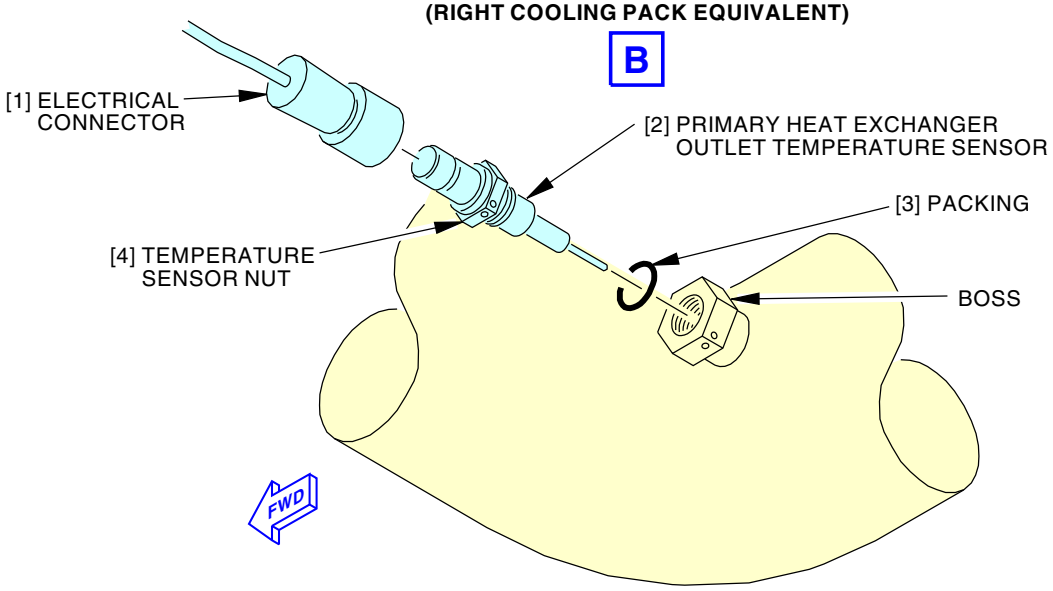


LEFT COOLING PACK
(RIGHT COOLING PACK EQUIVALENT)

B



PRIMARY HEAT EXCHANGER OUTLET TEMPERATURE SENSOR
(EXAMPLE)

C

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Primary Heat Exchanger Outlet Temperature Sensor Installation
Figure 401/21-52-40-990-801 (Sheet 2 of 2)

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TASK 21-52-40-400-801

3. Primary Heat Exchanger Outlet Temperature Sensor Installation

(Figure 401)

A. 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)

B. Consumable Materials

Reference	Description	Specification
D00386	Lubricant - Solid Film, Air Cured, Corrosion Inhibiting	MIL-L-23398 (NATO S-749)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Sensor	21-52-00-01-454	ARO ALL
3	Packing	21-52-00-01-457	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Primary Heat Exchanger Outlet Temperature Sensor Installation

SUBTASK 21-52-40-430-001

(1) Install a new packing [3] on the primary heat exchanger outlet temperature sensor [2].

SUBTASK 21-52-40-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut [4] are clean.

SUBTASK 21-52-40-640-001

(3) Apply a thin layer of the lubricant, D00386 to the threads of the primary heat exchanger outlet temperature sensor [2].

SUBTASK 21-52-40-420-001

CAUTION

USE TWO WRENCHES TO INSTALL THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to install the temperature sensor [2].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the temperature sensor nut [4]

(c) Tighten the temperature sensor nut [4] to 60 in-lb (7 N·m) - 70 in-lb (8 N·m).

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SUBTASK 21-52-40-420-002

(5) Install a new lockwire to the temperature sensor nut [4].

SUBTASK 21-52-40-430-002

(6) Connect the electrical connector [1] to the primary heat exchanger outlet temperature sensor [2].

G. Primary Heat Exchanger Outlet Temperature Sensor Installation Test

SUBTASK 21-52-40-860-002

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

SUBTASK 21-52-40-740-001

(2) Use a maintenance access terminal (MAT) to see if maintenance messages show for the primary heat exchanger outlet temperature sensors (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable temperature sensors.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable temperature sensors.
4) If a maintenance message for the pack applicable temperature sensors shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-40-410-002

(1) If you replaced the primary heat exchanger outlet temperature sensor for the left cooling pack, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-40-410-001

(2) If you replaced the primary heat exchanger outlet temperature sensor for the right cooling pack, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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COMPRESSOR DISCHARGE TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the compressor discharge temperature sensor.

(2) An installation of the compressor discharge temperature sensor.

B. There are three compressor discharge temperature sensors for each cooling pack.

NOTE: The equipment numbers in parenthesis are for the right cooling pack.

NOTE: The compressor discharge temperature sensor 1 and 2 are installed at the secondary heat exchanger inlet.

(1) Compressor discharge temperature sensor 1, M21512 (M21520).

(2) Compressor discharge temperature sensor 2, M21513 (M21522).

(3) ASCPC compressor discharge temperature sensor, M21103 (M21206).

C. You can get access to the temperature sensors through these access panels:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

TASK 21-52-41-000-801

2. Compressor Discharge Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-41-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-41-010-002

(2) To get access to the compressor discharge temperature sensors for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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SUBTASK 21-52-41-010-001

(3) To get access to the compressor discharge temperature sensors for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Compressor Discharge Temperature Sensor Removal

SUBTASK 21-52-41-030-001

(1) Disconnect the electrical connector [1] from the temperature sensor [2].

SUBTASK 21-52-41-030-002

(2) Remove and discard the lockwire from the temperature sensor nut [4].

SUBTASK 21-52-41-020-001

CAUTION

USE TWO WRENCHES TO REMOVE THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the temperature sensor [2].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the temperature sensor nut [4].

SUBTASK 21-52-41-030-003

(4) Remove and discard the packing [3] from the temperature sensor [2].

——— END OF TASK ———

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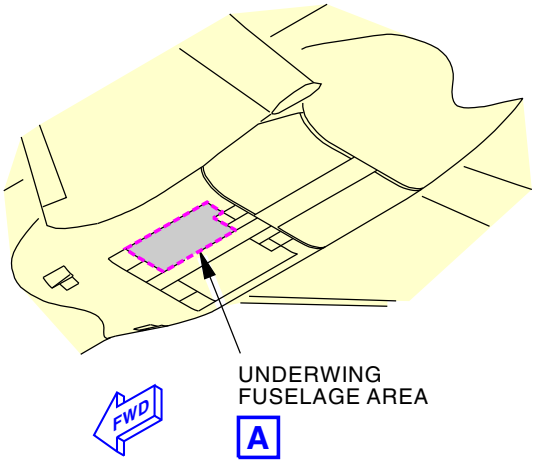

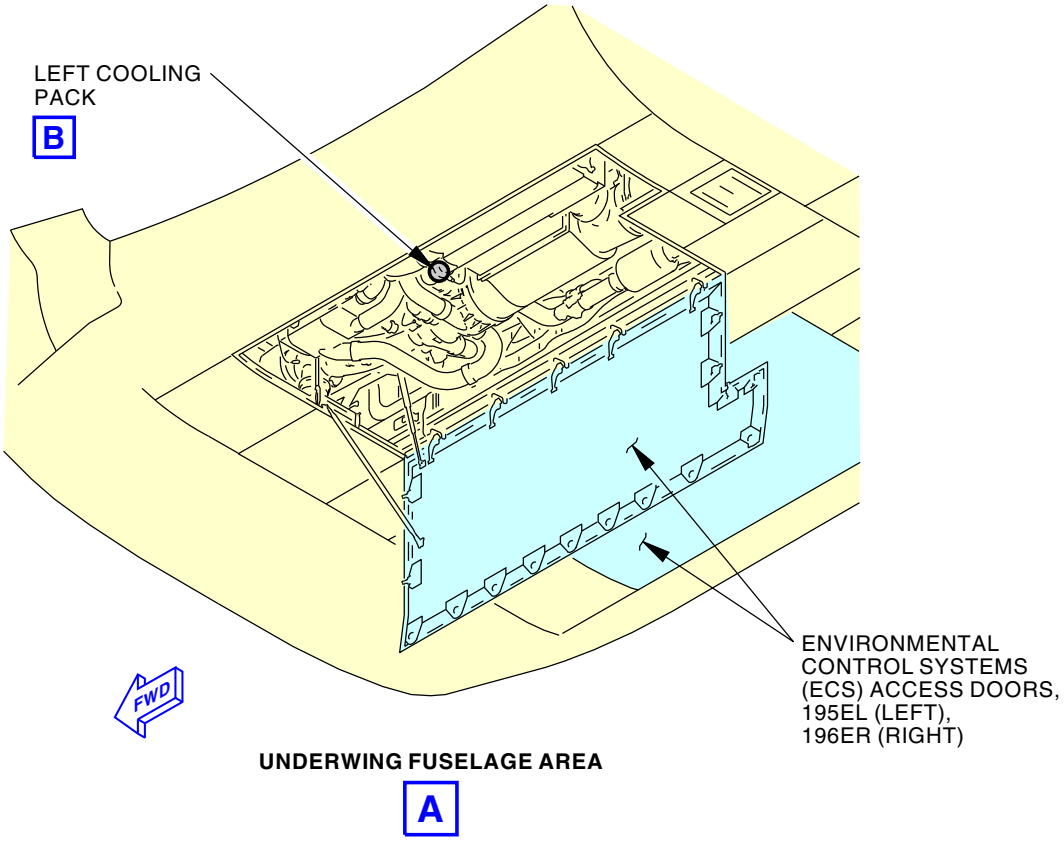

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Compressor Discharge Temperature Sensor Installation
Figure 401/21-52-41-990-801 (Sheet 1 of 2)

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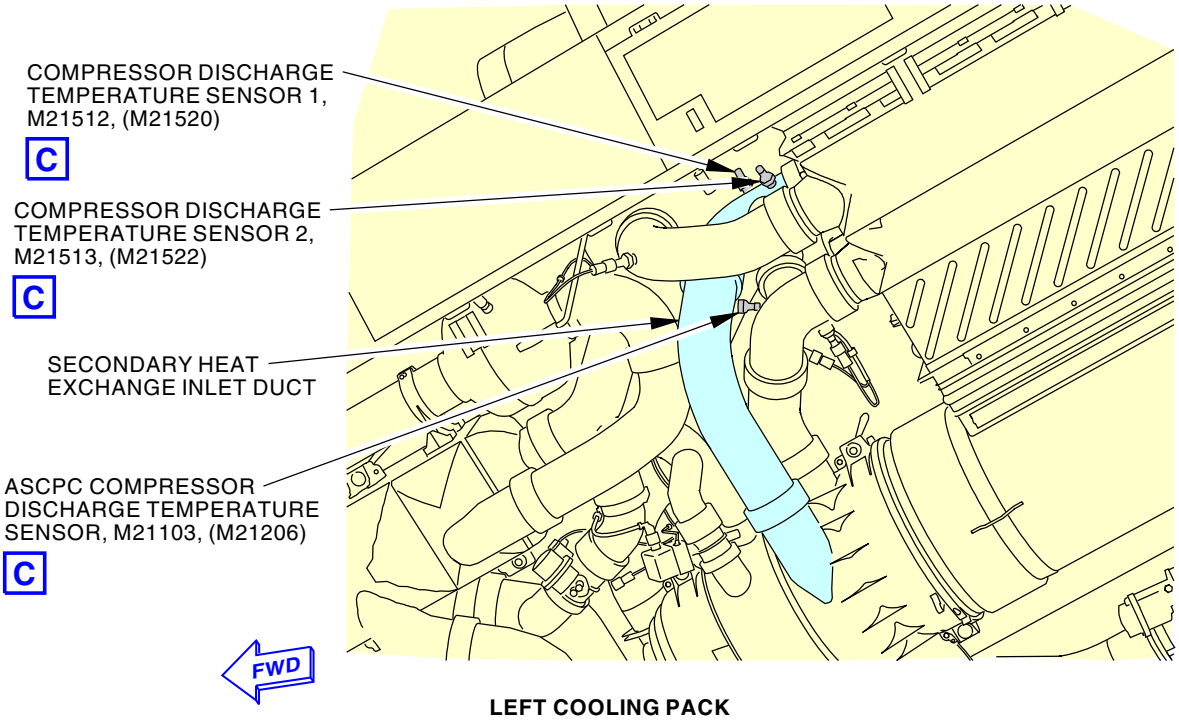
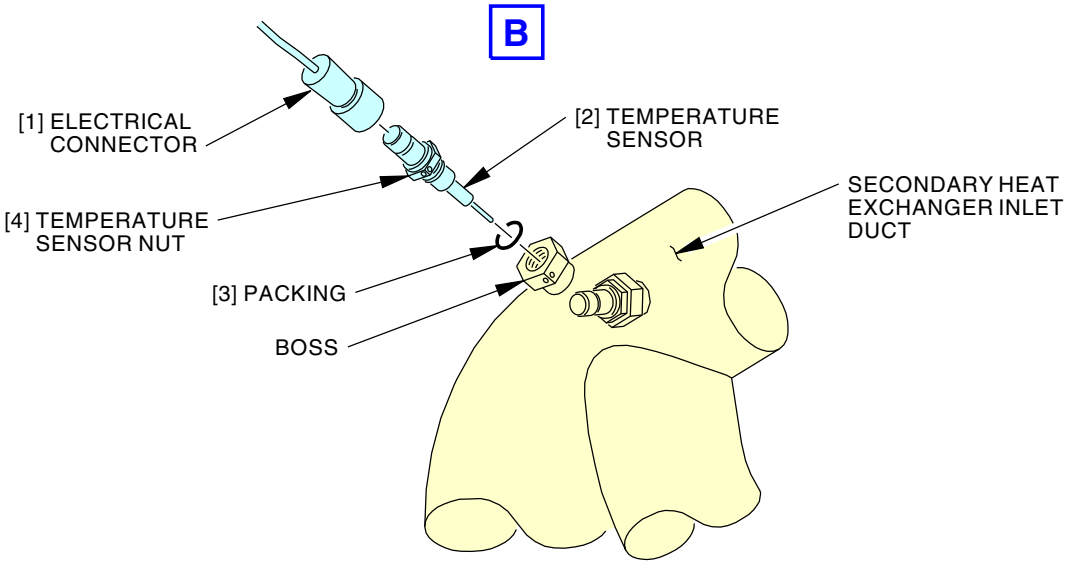


LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B



COMPRESSOR DISCHARGE TEMPERATURE SENSOR
(EXAMPLE)

C

NOTE:

THE EQUIPMENT NUMBERS IN PARENTHESIS ARE FOR THE RIGHT COOLING PACK.

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Compressor Discharge Temperature Sensor Installation
Figure 401/21-52-41-990-801 (Sheet 2 of 2)

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TASK 21-52-41-400-801

3. Compressor Discharge Temperature Sensor Installation

(Figure 401)

A. 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)

B. Consumable Materials

Reference	Description	Specification
D00386	Lubricant - Solid Film, Air Cured, Corrosion Inhibiting	MIL-L-23398 (NATO S-749)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Sensor	21-52-00-01-454	ARO ALL
3	Packing	21-52-00-01-457	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Compressor Discharge Temperature Sensor Installation

SUBTASK 21-52-41-430-001

(1) Install a new packing [3] on the temperature sensor [2].

SUBTASK 21-52-41-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut [4] are clean.

SUBTASK 21-52-41-640-001

(3) Apply a thin layer of the lubricant, D00386 to the threads of the temperature sensor [2].

SUBTASK 21-52-41-420-001

CAUTION

USE TWO WRENCHES TO INSTALL THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to install the temperature sensor [2].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the temperature sensor nut [4].

(c) Tighten the temperature temperature sensor nut [4] to 60 in-lb (7 N·m) - 70 in-lb (8 N·m).

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SUBTASK 21-52-41-430-002

(5) Install a new lockwire to the temperature sensor nut [4].

SUBTASK 21-52-41-430-003

(6) Connect the electrical connector [1] to the temperature sensor [2].

G. Compressor Discharge Temperature Sensor Installation Test

SUBTASK 21-52-41-860-002

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

SUBTASK 21-52-41-740-001

(2) Use a Maintenance Access Terminal (MAT) to see if maintenance messages show for the compressor discharge temperature sensors (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable temperature sensor.
4) If a maintenance message for the applicable pack temperature sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(d) If you replaced the ASCPC compressor discharge temperature sensor, do these steps:

1) Select GO BACK on the MAT to show EXISTING FAULTS.
2) Look for 36 Air Supply Control System.
3) If 36 Air Supply Control System shows, do these steps:
   a) Select 36 Air Supply Control System.
   b) Select CONTINUE.
   c) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable temperature sensor.
   d) If a maintenance message for the applicable pack temperature sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-41-410-002

(1) If you replaced one of the compressor discharge temperature sensors for the left cooling pack, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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SUBTASK 21-52-41-410-001

(2) If you replaced one of the compressor discharge temperature sensors for the right cooling pack, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

END OF TASK

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SECONDARY HEAT EXCHANGER OUTLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the secondary heat exchanger outlet temperature sensor.

(2) An installation of the secondary heat exchanger outlet temperature sensor.

B. There is one secondary heat exchanger outlet temperature sensor for each cooling pack.

NOTE: The equipment numbers in parenthesis are for the right cooling pack.

(1) Secondary heat exchanger outlet temperature sensor, M21510 (M21519)

C. You can get access to the temperature sensors through these access panels:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. This procedure has this reduction:

(1) The secondary heat exchanger outlet temperature sensor [1] is referred to as the temperature sensor [1].

TASK 21-52-42-000-801

2. Secondary Heat Exchanger Outlet Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-42-860-003

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-42-010-001

(2) To get access to the secondary heat exchanger outlet temperature sensor for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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SUBTASK 21-52-42-010-002

(3) To get access to the secondary heat exchanger outlet temperature sensor for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Secondary Heat Exchanger Outlet Temperature Sensor Removal

SUBTASK 21-52-42-030-001

(1) Disconnect the electrical connector [4] from the temperature sensor [1].

SUBTASK 21-52-42-030-002

(2) Remove and discard the lockwire from the temperature sensor nut [2].

SUBTASK 21-52-42-020-001

CAUTION

USE TWO WRENCHES TO REMOVE THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the temperature sensor [1].

NOTE: Use one wrench to hold the boss. Use the other wrench to turn the temperature sensor nut.

SUBTASK 21-52-42-030-003

(4) Remove and discard the packing [3] from the temperature sensor [1].

——— END OF TASK ———

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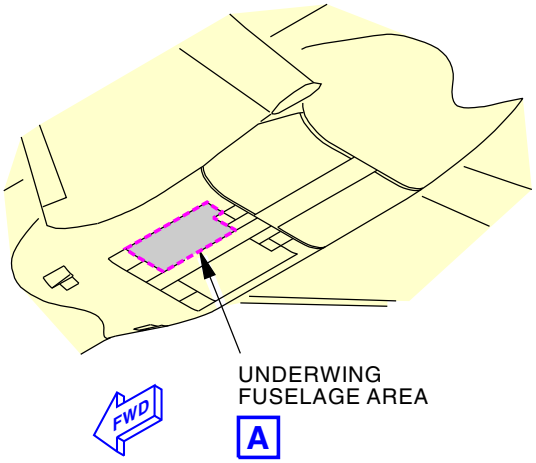

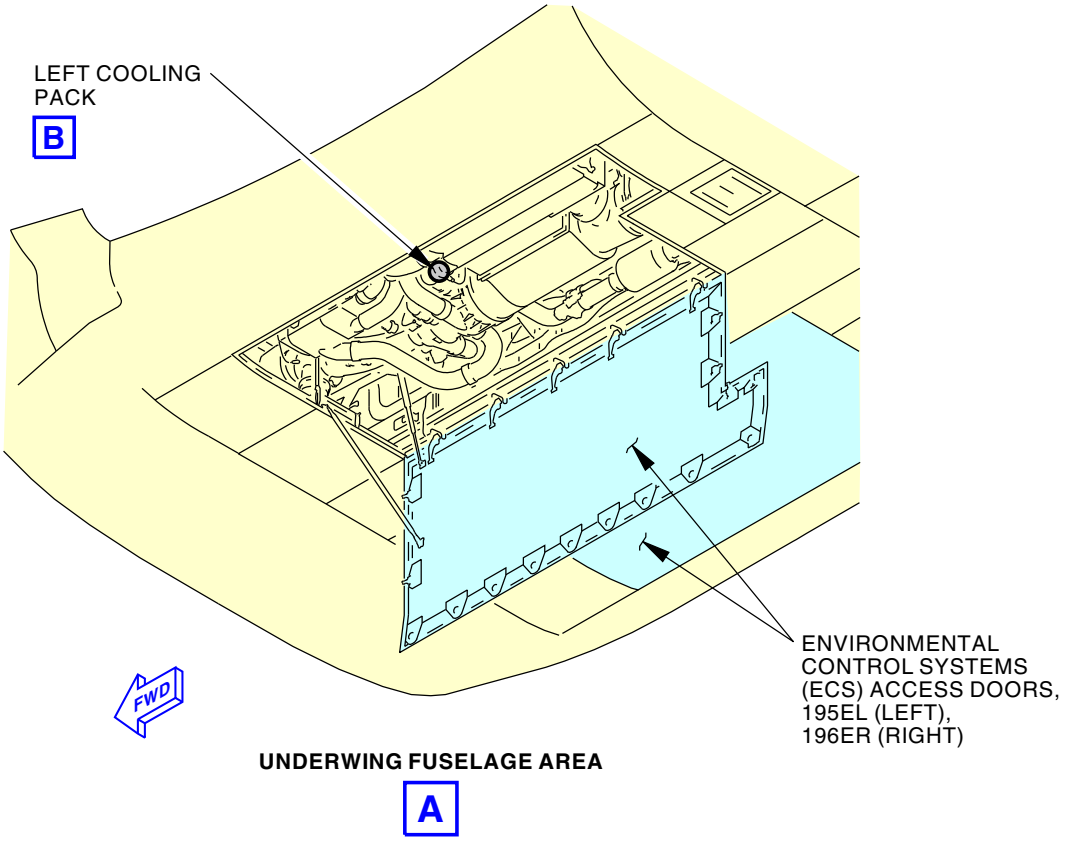

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Secondary Heat Exchanger Outlet Temperature Sensor Installation
Figure 401/21-52-42-990-801 (Sheet 1 of 2)

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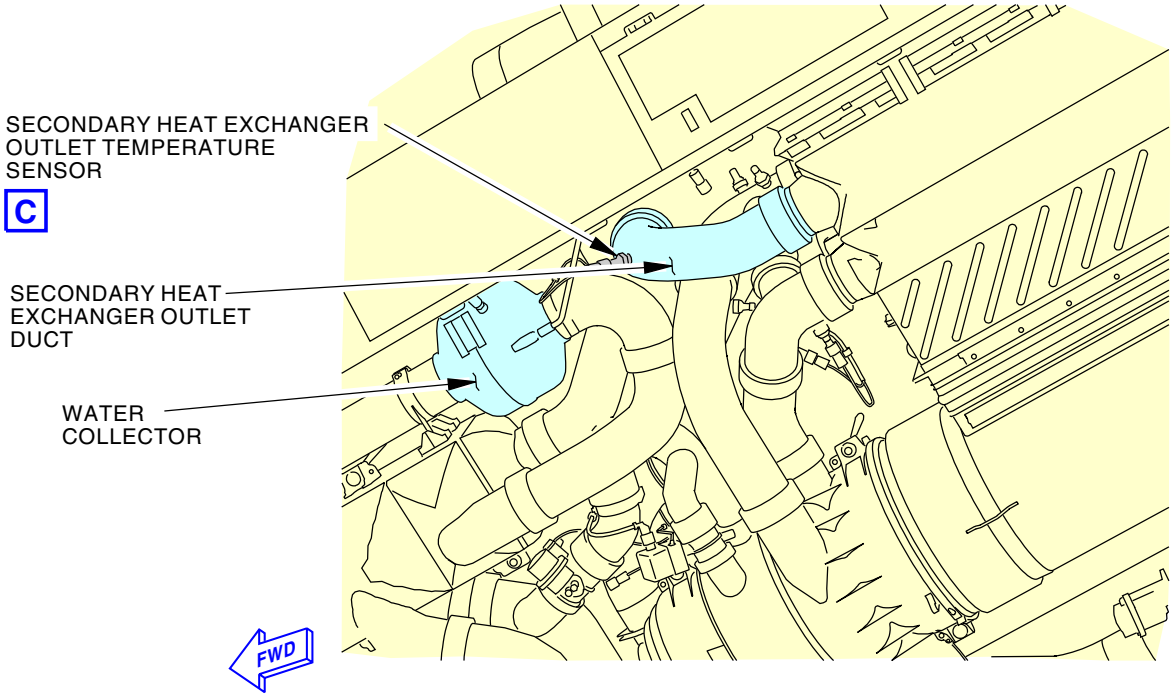
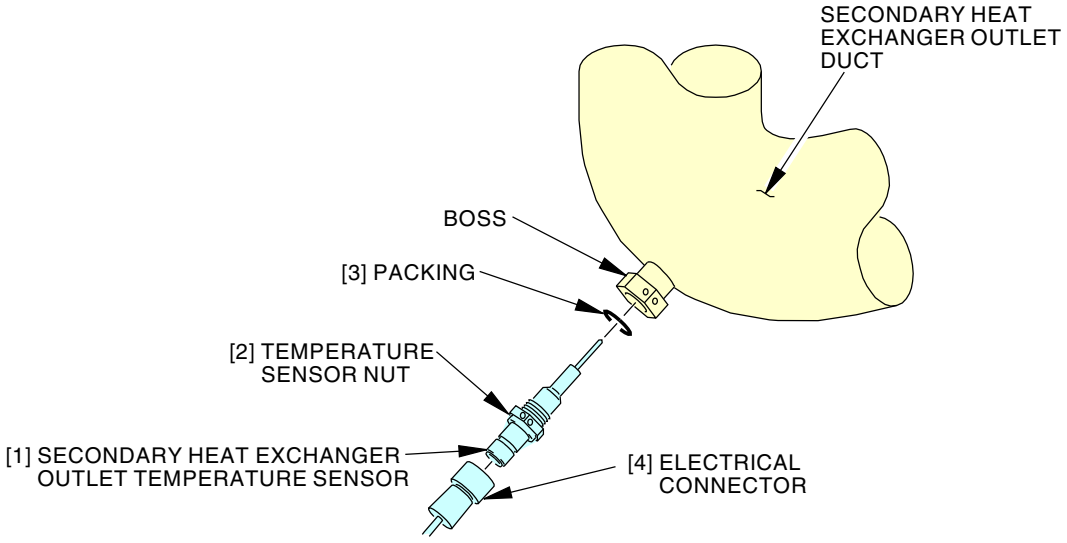


LEFT COOLING PACK
(RIGHT COOLING PACK EQUIVALENT)

B



SECONDARY HEAT EXCHANGER OUTLET TEMPERATURE SENSOR
(EXAMPLE)

C

C88426 S0006404211_V2

Secondary Heat Exchanger Outlet Temperature Sensor Installation
Figure 401/21-52-42-990-801 (Sheet 2 of 2)

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TASK 21-52-42-400-801

3. Secondary Heat Exchanger Outlet Temperature Sensor Installation

(Figure 401)

A. 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)

B. Consumable Materials

Reference	Description	Specification
D00386	Lubricant - Solid Film, Air Cured, Corrosion Inhibiting	MIL-L-23398 (NATO S-749)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-52-00-01-454	ARO ALL
3	Packing	21-52-00-01-457	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Secondary Heat Exchanger Outlet Temperature Sensor Installation

SUBTASK 21-52-42-430-001

(1) Install a new packing [3] on the temperature sensor [1].

SUBTASK 21-52-42-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut [2] are clean.

SUBTASK 21-52-42-640-001

(3) Apply a thin layer of the lubricant, D00386 to the threads of the temperature sensor [1].

SUBTASK 21-52-42-420-001

CAUTION

USE TWO WRENCHES TO INSTALL THE DUCT TEMPERATURE SENSOR IN THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE DUCT TEMPERATURE SENSOR, YOU CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to install the temperature sensor [1].

NOTE: Use one wrench to hold the boss. Use the other wrench to turn the temperature sensor nut.

(a) Tighten the temperature sensor nut [2] to 60 in-lb (6.78 N·m)-70 in-lb (7.91 N·m).

SUBTASK 21-52-42-430-002

(5) Install a new lockwire to the temperature sensor nut [2].

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SUBTASK 21-52-42-430-003

(6) Connect the electrical connector [4] to the temperature sensor [1].

G. Secondary Heat Exchanger Outlet Temperature Sensor Installation Test

SUBTASK 21-52-42-860-001

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

SUBTASK 21-52-42-740-001

(2) Use a maintenance access terminal (MAT) to see if maintenance messages show for the secondary heat exchanger outlet temperature sensors (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS.

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable temperature sensors.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable temperature sensors.
4) If a maintenance message for the pack applicable temperature sensors shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-42-410-001

(1) If you replaced the secondary heat exchanger outlet temperature sensor for the left cooling pack, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-42-410-002

(2) If you replaced the secondary heat exchanger outlet temperature sensor for the right cooling pack, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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SECONDARY HEAT EXCHANGER OUTLET TEMPERATURE SENSOR - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) Secondary Heat Exchanger Outlet Temperature Sensor Operational Test

C. The Secondary Heat Exchanger Outlet Temperature Sensor Operational Test contains these initiated built in tests (IBIT) ground tests:

(1) Left Cabin Temperature Controller Operational Test

(2) Right Cabin Temperature Controller Operational Test

D. You will use a maintenance access terminal (MAT) to do the Left and Right Cabin Temperature Controller Tests.

E. The Left and Right Cabin Temperature Tests does a test of the secondary heat exchanger outlet temperature sensor for the left and right cooling packs.

TASK 21-52-42-740-801

2. Secondary Heat Exchanger Outlet Temperature Sensor - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. 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)

B. Location Zones

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

C. Prepare for the Test

SUBTASK 21-52-42-860-004

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

D. Secondary Heat Exchanger Outlet Temperature Sensor - Operational Test

SUBTASK 21-52-42-740-002

(1) Use a maintenance access terminal (MAT) to do the left and right cabin temperature controller test. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT, to do the left cabin temperature controller test:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) GROUND TESTS

4) 21 Cabin Temperature Control System

5) OPERATIONAL TEST

6) Left Cabin Temperature Controller

7) CONTINUE

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(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) Make these selections on the MAT, to do the right cabin temperature controller test:

1) NEW TEST

2) 21 Cabin Temperature Control System

3) OPERATIONAL TEST

4) Right Cabin Temperature Controller

5) CONTINUE

(f) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE

2) START TEST

(g) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

(h) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 21-52-42-740-003

(2) Do the steps which follow to do a check for existing faults of the Cabin Temperature Control System:

(a) Make these selections on the MAT:

1) EXTENDED MAINTENANCE

2) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the secondary heat exchanger outlet temperature sensors.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.

2) Select CONTINUE.

3) Look at the maintenance messages that show and make sure there are no maintenance messages for the secondary heat exchanger outlet temperature sensors.

4) If a maintenance message for the secondary heat exchanger outlet temperature sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(d) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE

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2) EXIT MAINTENANCE

——— END OF TASK ———

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CONDENSER INLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the condenser inlet temperature sensor

(2) An installation of the condenser inlet temperature sensor.

B. There are two condenser inlet temperature sensors for each cooling pack. The temperature sensors are installed on the condenser inlet duct.

NOTE: The equipment numbers in parenthesis are for the right cooling pack.

(1) Condenser inlet temperature sensor 1, M21515 (M21524)

(2) Condenser inlet temperature sensor 2, M21531 (M21525)

C. You can get access to the temperature sensors through these access panels:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

TASK 21-52-43-000-801

2. Condenser Inlet Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-43-860-003

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-43-010-001

(2) To get access to the condenser inlet temperature sensors for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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SUBTASK 21-52-43-010-002

(3) To get access to the condenser inlet temperature sensors for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Condenser Inlet Temperature Sensor Removal

SUBTASK 21-52-43-030-001

(1) Disconnect the electrical connector [1] from the condenser inlet temperature sensor [2].

SUBTASK 21-52-43-030-002

(2) Remove and discard the lockwire from the temperature sensor nut [4].

SUBTASK 21-52-43-020-001

CAUTION

USE TWO WRENCHES TO REMOVE THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the condenser inlet temperature sensor [2].

NOTE: Use one wrench to hold the boss. Use the other to turn the temperature sensor nut.

SUBTASK 21-52-43-030-003

(4) Remove and discard the packing [3] from the condenser inlet temperature sensor [2].

END OF TASK

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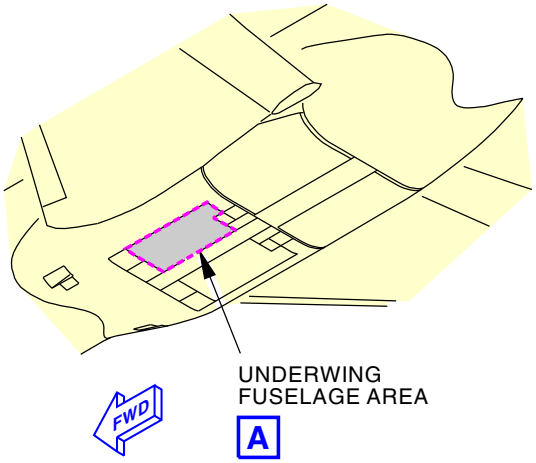

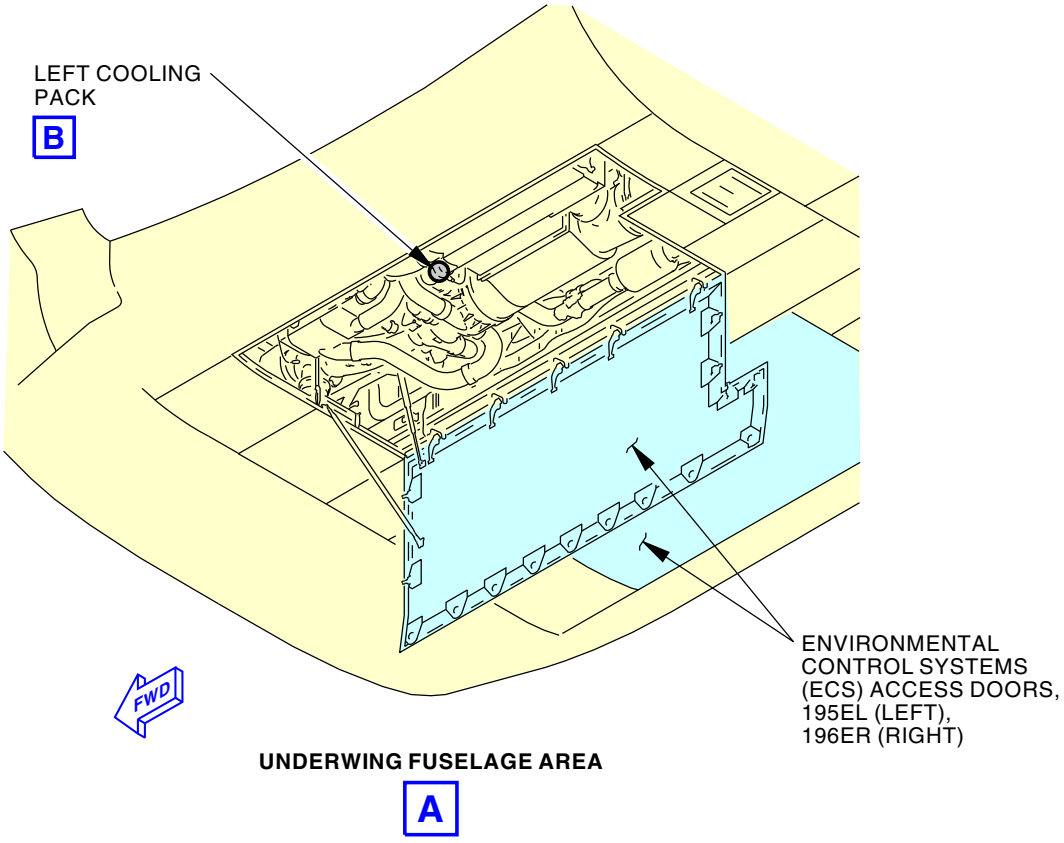

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Condenser Inlet Temperature Sensor Installation
Figure 401/21-52-43-990-801 (Sheet 1 of 2)

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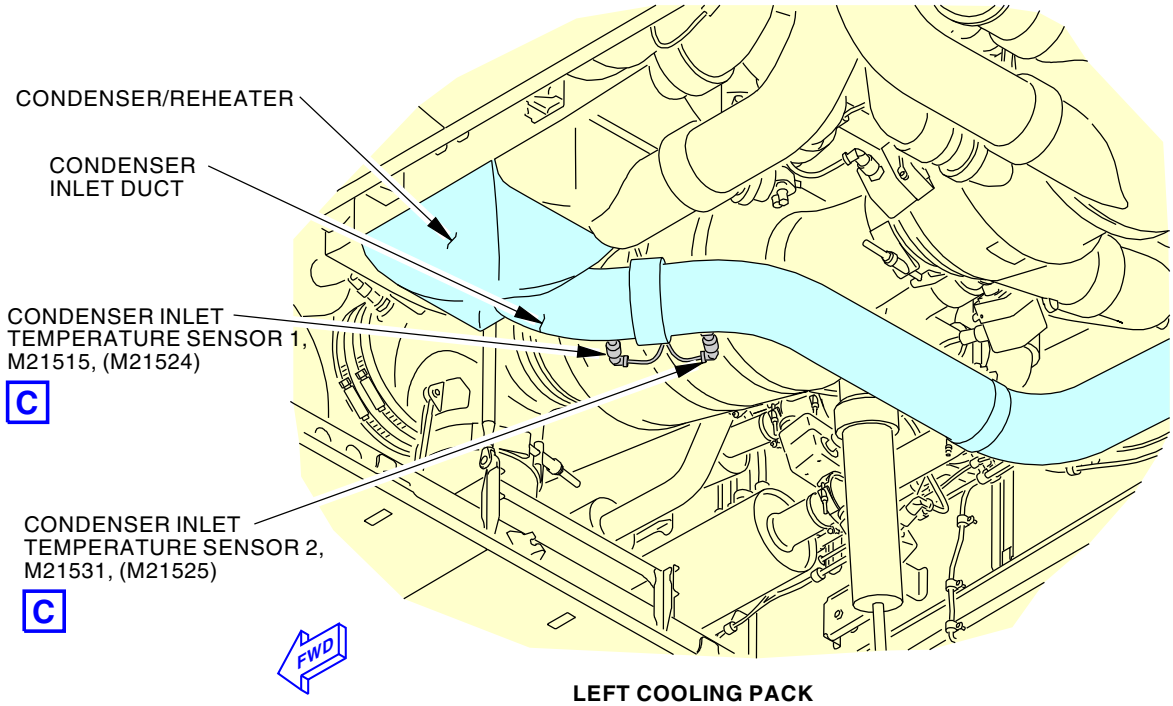
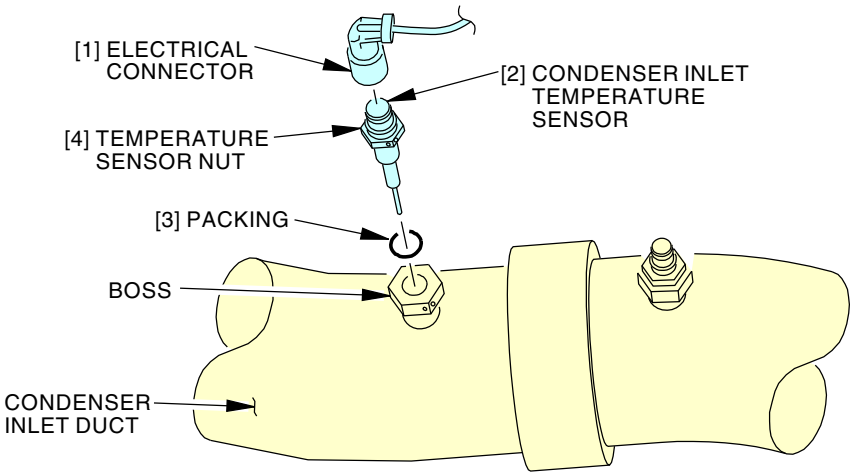


LEFT COOLING PACK
(RIGHT COOLING PACK IS EQUIVALENT)

B



CONDENSER INLET TEMPERATURE SENSOR
(EXAMPLE)

C

NOTE: THE EQUIPMENT NUMBERS IN PARENTHESIS ARE FOR THE RIGHT COOLING PACK.

C88925 S0006404219_V3

Condenser Inlet Temperature Sensor Installation
Figure 401/21-52-43-990-801 (Sheet 2 of 2)

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TASK 21-52-43-400-801

3. Condenser Inlet Temperature Sensor Installation

(Figure 401)

A. 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)

B. Consumable Materials

Reference	Description	Specification
D00386	Lubricant - Solid Film, Air Cured, Corrosion Inhibiting	MIL-L-23398 (NATO S-749)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Sensor	21-52-00-01-460	ARO ALL
3	Packing	21-52-00-01-463	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Condenser Inlet Temperature Sensor Installation

SUBTASK 21-52-43-430-001

(1) Install a new packing [3] on the condenser inlet temperature sensor [2].

SUBTASK 21-52-43-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut [4] are clean.

SUBTASK 21-52-43-640-001

(3) Apply a thin layer of the lubricant, D00386 to the threads of the condenser inlet temperature sensor [2].

SUBTASK 21-52-43-420-001

CAUTION

USE TWO WRENCHES TO INSTALL THE DUCT TEMPERATURE SENSOR IN THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE DUCT TEMPERATURE SENSOR, YOU CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to install the condenser inlet temperature sensor [2].

NOTE: Use one wrench to hold the boss. Use the other wrench to turn the temperature sensor nut.

(a) Tighten the temperature sensor nut [4] to 60 in-lb (6.78 N·m)-70 in-lb (7.91 N·m).

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SUBTASK 21-52-43-430-002

(5) Install a new lockwire to the temperature sensor nut [4].

SUBTASK 21-52-43-430-003

(6) Connect the electrical connector [1] to the condenser inlet temperature sensor [2].

G. Condenser Inlet Temperature Sensor Installation Test

SUBTASK 21-52-43-860-001

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

SUBTASK 21-52-43-740-001

(2) Use a maintenance access terminal (MAT) to see if maintenance messages show for the condenser inlet temperature sensors (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS.

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable temperature sensors.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable temperature sensors.
4) If a maintenance message for the applicable pack temperature sensor shows, refer to the Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-43-410-001

(1) If you replaced the condenser inlet temperature sensor for the left cooling pack, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-43-410-002

(2) If you replaced the condenser inlet temperature sensor for the right cooling pack, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

END OF TASK

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TURBINE INLET TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the turbine inlet temperature sensor.

(2) An installation of the turbine inlet temperature sensor.

B. There is one turbine inlet temperature sensor for each cooling pack.

NOTE: The equipment numbers in parenthesis are for the right cooling pack.

(1) Turbine inlet temperature sensor, M21514 (M21523)

C. You can get access to the temperature sensors through these access panels:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

TASK 21-52-44-000-801

2. Turbine Inlet Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-44-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-44-010-001

(2) To get access to the turbine inlet temperature sensor for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-44-010-002

(3) To get access to the turbine inlet temperature sensor for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

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E. Turbine Inlet Temperature Sensor Removal

SUBTASK 21-52-44-030-001

(1) Disconnect the electrical connector [1] from the turbine inlet temperature sensor [2].

SUBTASK 21-52-44-030-002

(2) Remove and discard the lockwire from the temperature sensor nut [3].

SUBTASK 21-52-44-020-001

CAUTION

USE TWO WRENCHES TO REMOVE THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the turbine inlet temperature sensor [2].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the temperature sensor nut [3].

SUBTASK 21-52-44-030-003

(4) Remove and discard the packing [4] from the turbine inlet temperature sensor [2].

——— END OF TASK ———

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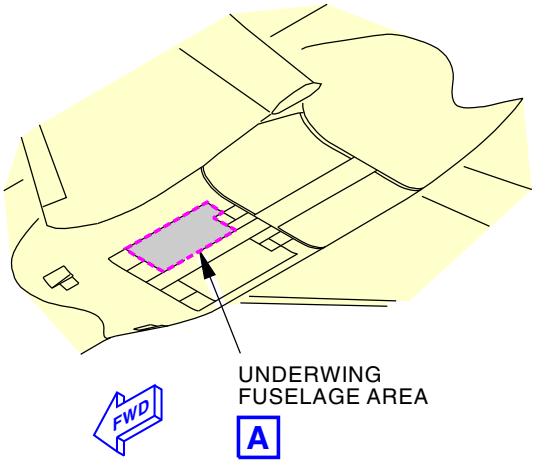

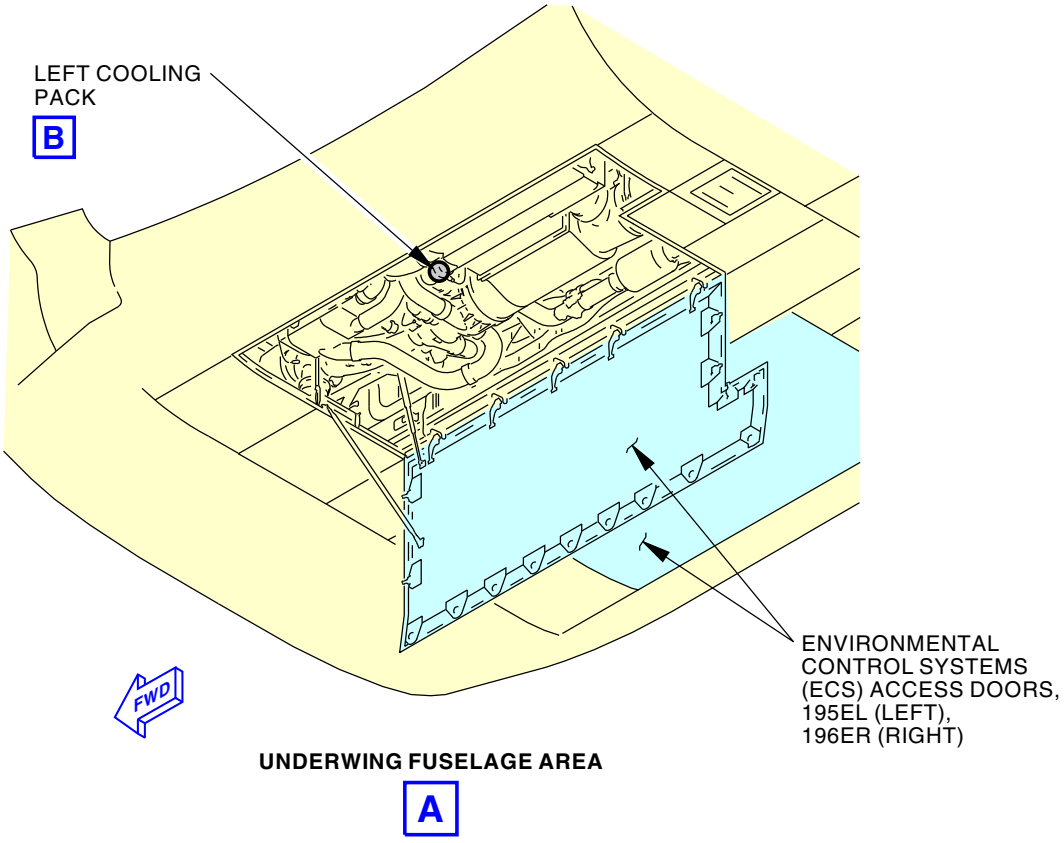

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Turbine Inlet Temperature Sensor Installation
Figure 401/21-52-44-990-801 (Sheet 1 of 2)

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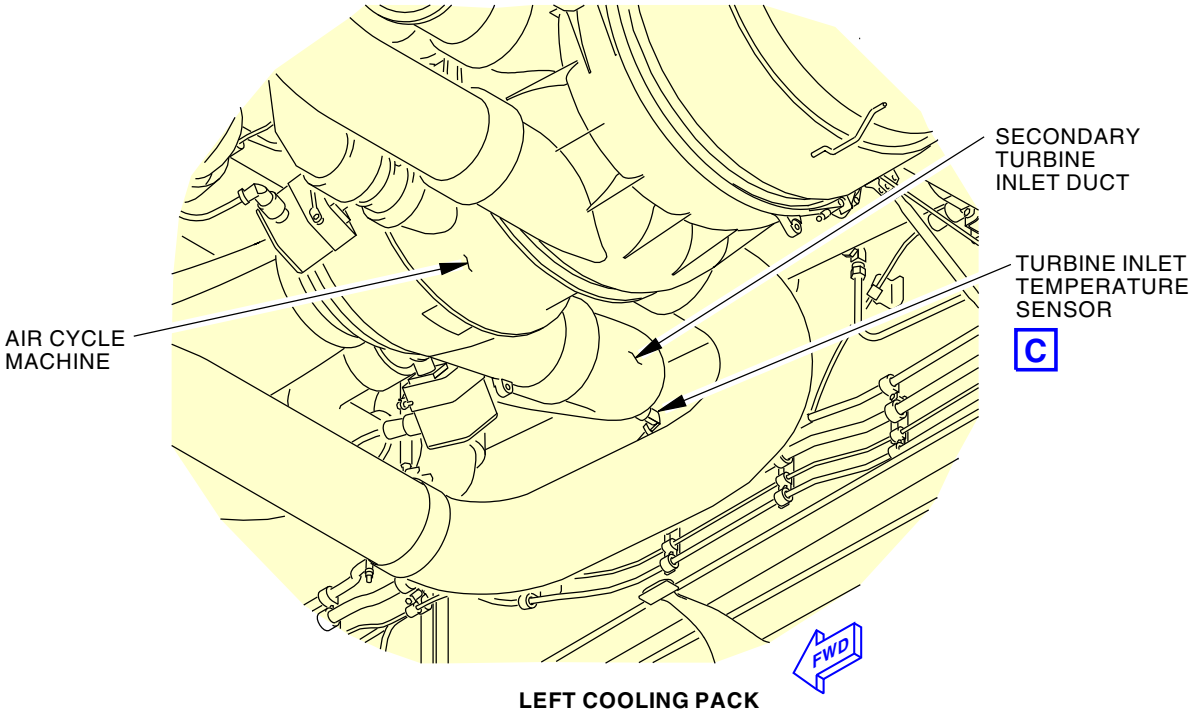
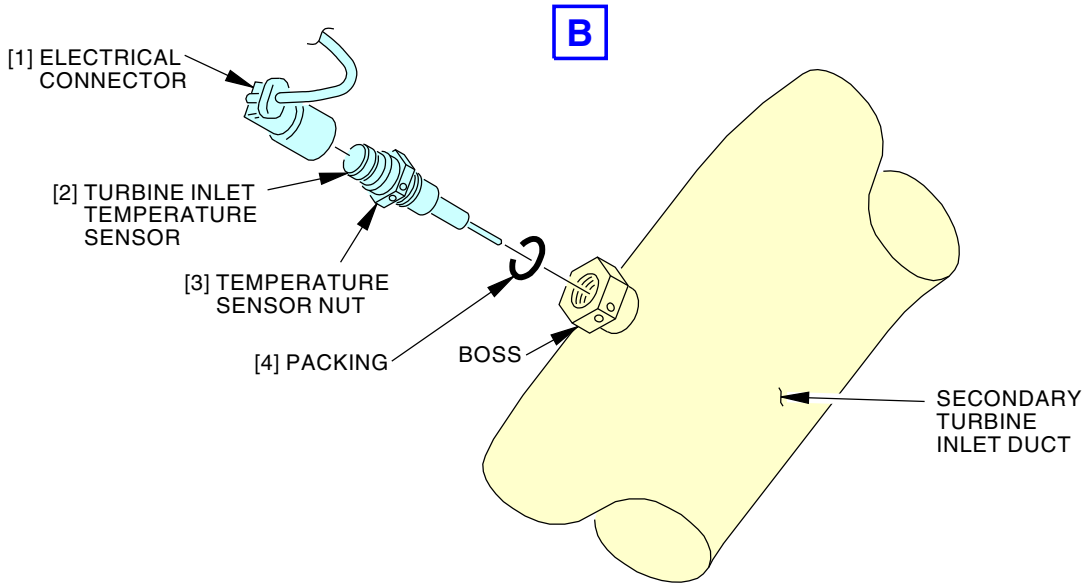


LEFT COOLING PACK
(RIGHT COOLING PACK EQUIVALENT)

B



TURBINE INLET TEMPERATURE SENSOR
(EXAMPLE)

C

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Turbine Inlet Temperature Sensor Installation
Figure 401/21-52-44-990-801 (Sheet 2 of 2)

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TASK 21-52-44-400-801

3. Turbine Inlet Temperature Sensor Installation

(Figure 401)

A. 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)

B. Consumable Materials

Reference	Description	Specification
D00386	Lubricant - Solid Film, Air Cured, Corrosion Inhibiting	MIL-L-23398 (NATO S-749)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Sensor	21-52-00-01-460	ARO ALL
4	Packing	21-52-00-01-463	ARO ALL

D. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

F. Turbine Inlet Temperature Sensor Installation

SUBTASK 21-52-44-430-001

(1) Install a new packing [4] on the turbine inlet temperature sensor [2].

SUBTASK 21-52-44-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut [3] are clean.

SUBTASK 21-52-44-640-001

(3) Apply a thin layer of the lubricant, D00386 to the threads of the turbine inlet temperature sensor [2].

SUBTASK 21-52-44-420-001

CAUTION

USE TWO WRENCHES TO INSTALL THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to install the turbine inlet temperature sensor [2].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the temperature sensor nut [3].

(c) Tighten the temperature sensor [2] to 60 in-lb (7 N·m) - 70 in-lb (8 N·m).

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SUBTASK 21-52-44-430-002

(5) Install a new lockwire on the temperature sensor nut [3].

SUBTASK 21-52-44-430-003

(6) Connect the electrical connector [1] to the turbine inlet temperature sensor [2].

G. Turbine Inlet Temperature Sensor Installation Test

SUBTASK 21-52-44-860-002

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

SUBTASK 21-52-44-740-001

(2) Use a maintenance access terminal (MAT) to see if maintenance messages show for the turbine inlet temperature sensors (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable temperature sensors.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable temperature sensors.
4) If a maintenance message for the pack applicable temperature sensors shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-44-410-001

(1) If you replaced the turbine inlet temperature sensor for the left cooling pack, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-44-410-002

(2) If you replaced the turbine inlet temperature sensor for the right cooling pack, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

END OF TASK

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PACK DISCHARGE TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the pack discharge temperature sensor.

(2) An installation of the pack discharge temperature sensor.

B. There are two pack discharge temperature sensors for each cooling pack.

NOTE: The equipment numbers in parenthesis are for the right cooling pack.

(1) Pack discharge temperature sensor, M21534 (M21527)

(2) ASCPC (Air Supply and Cabin Pressure Controller) pack discharge temperature sensor, M21535 (M21528)

C. You can get access to the temperature sensors through the Environmental Control Systems (ECS) access doors or through the Low Pressure Connection access doors.

TASK 21-52-45-000-801

2. Pack Discharge Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-52-45-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-45-010-001

(2) To get access to the pack discharge temperature sensor for the left cooling pack, open this access panel:

Number	Name/Location
195CL	ECS Low Pressure Connection Door

or open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

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SUBTASK 21-52-45-010-002

(3) To get access to the pack discharge temperature sensor for the right cooling pack, open this access panel:

Number	Name/Location
196CR	ECS Low Pressure Connection Door

or open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Pack Discharge Temperature Sensor Removal

SUBTASK 21-52-45-030-001

(1) Disconnect the electrical connector [2] from the pack discharge temperature sensor [3].

SUBTASK 21-52-45-030-002

(2) Remove and discard the lockwire [1] from the temperature sensor nut [5] and the boss.

SUBTASK 21-52-45-020-001

CAUTION

USE TWO WRENCHES TO REMOVE THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the pack discharge temperature sensor [3].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the temperature sensor nut [5].

SUBTASK 21-52-45-030-003

(4) Remove and discard the o-ring [4] from the pack discharge temperature sensor [3].

END OF TASK

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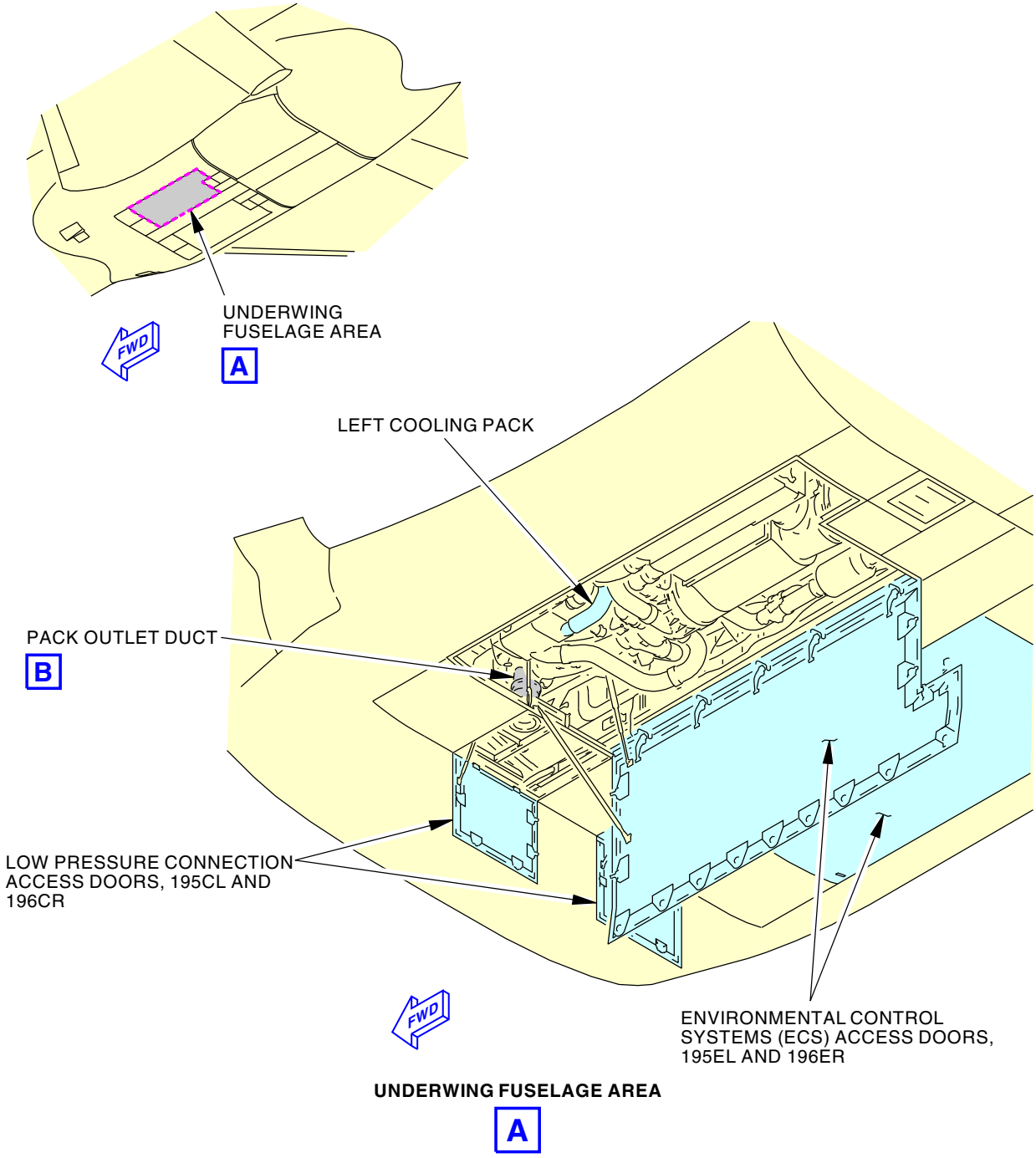

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Pack Discharge Temperature Sensor Installation
Figure 401/21-52-45-990-801 (Sheet 1 of 2)

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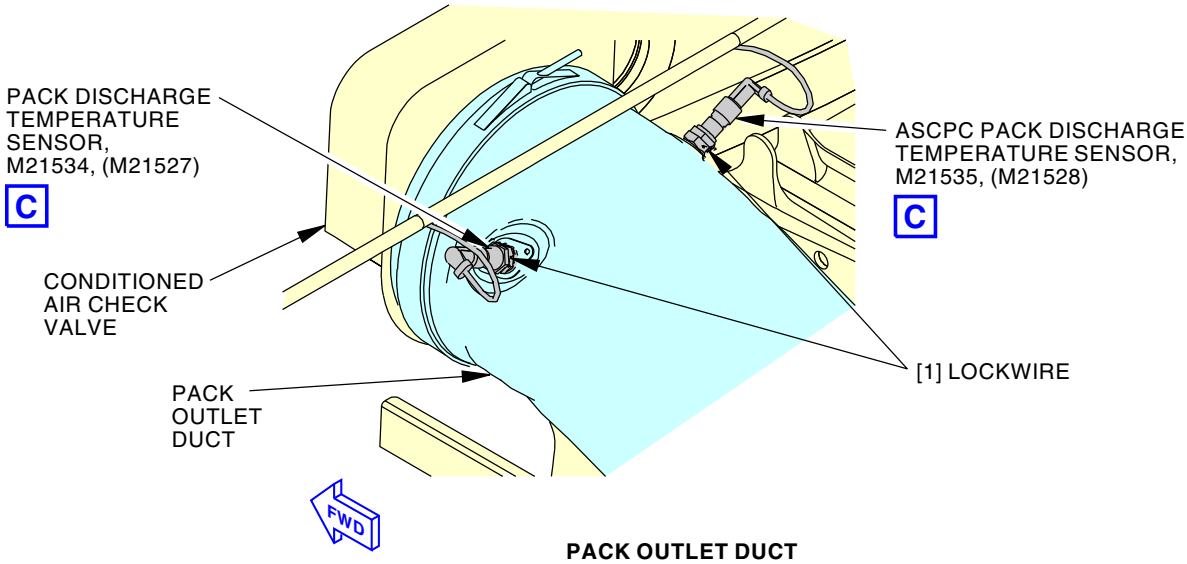
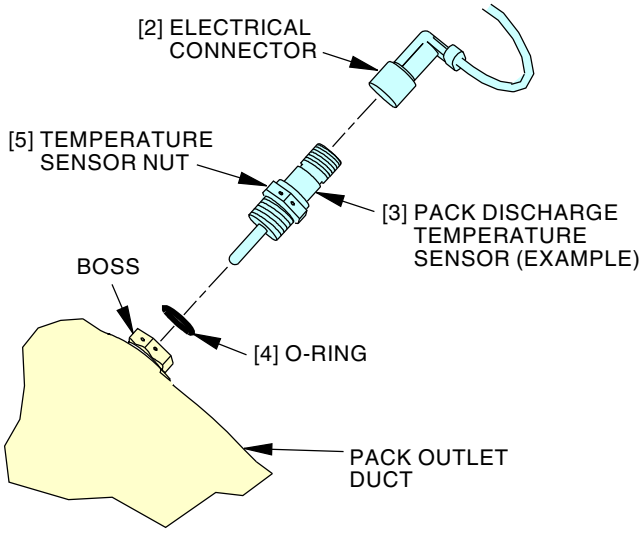


PACK OUTLET DUCT
(LEFT COOLING PACK IS SHOWN)
(RIGHT COOLING PACK IS EQUIVALENT)

B



PACK DISCHARGE TEMPERATURE SENSOR
(EXAMPLE)

NOTE: THE EQUIPMENT NUMBERS IN PARENTHESIS ARE FOR THE RIGHT COOLING PACK.

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Pack Discharge Temperature Sensor Installation
Figure 401/21-52-45-990-801 (Sheet 2 of 2)

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TASK 21-52-45-400-801

3. Pack Discharge Temperature Sensor Installation

(Figure 401)

A. 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)

B. Consumable Materials

Reference	Description	Specification
D00386	Lubricant - Solid Film, Air Cured, Corrosion Inhibiting	MIL-L-23398 (NATO S-749)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Sensor	21-52-45-02-040	ARO ALL
4	O-ring	21-52-45-02-035	ARO ALL

D. Location Zones

Zone	Area
195	Underwing Wing-to-Body Fairings, Left
196	Underwing Wing-to-Body Fairings, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
195CL	ECS Low Pressure Connection Door
195EL	Environmental Control Systems (ECS) Access Door
196CR	ECS Low Pressure Connection Door
196ER	Environmental Control Systems (ECS) Access Door

F. Pack Discharge Temperature Sensor Installation

SUBTASK 21-52-45-420-001

(1) Install a new o-ring [4] on the pack discharge temperature sensor [3].

SUBTASK 21-52-45-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut [5] are clean.

SUBTASK 21-52-45-640-001

(3) Apply a thin layer of the lubricant, D00386 to the threads of the pack discharge temperature sensor [3].

SUBTASK 21-52-45-420-002

CAUTION

USE TWO WRENCHES TO INSTALL THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to install the pack discharge temperature sensor [3].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the temperature sensor nut [5].

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(c) Tighten the temperature sensor nut [5] to 60 in-lb (6.8 N·m) - 70 in-lb (7.9 N·m).

SUBTASK 21-52-45-430-001

(5) Install a new lockwire [1] on the pack discharge temperature sensor [3] and the boss.

SUBTASK 21-52-45-430-002

(6) Connect the electrical connector [2] to the pack discharge temperature sensor [3].

G. Pack Discharge Temperature Sensor Installation Test

SUBTASK 21-52-45-860-002

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

SUBTASK 21-52-45-740-001

(2) Use a maintenance access terminal (MAT) to see if maintenance messages show for the pack discharge temperature sensors (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.
2) Select CONTINUE.
3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable temperature sensor.
4) If a maintenance message for the applicable pack temperature sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(d) If you replaced the ASCPC pack discharge temperature sensor, do these steps:

1) Select GO BACK on the MAT to show EXISTING FAULTS.
2) Look for 36 Air Supply Control System.
3) If 36 Air Supply Control System shows, do these steps:

a) Select 36 Air Supply Control System.
b) Select CONTINUE.
c) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable temperature sensors.
d) If a maintenance message for the applicable pack temperature sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-45-410-001

(1) If you replaced the pack discharge temperature sensor for the left cooling pack, close this access panel:

Number	Name/Location
195CL	ECS Low Pressure Connection Door

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or close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-52-45-410-002

(2) If you replaced the pack discharge temperature sensor for the right cooling pack, close this access panel:

Number	Name/Location
196CR	ECS Low Pressure Connection Door

or close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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MIX MANIFOLD DISCHARGE TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the mix manifold discharge temperature sensor

(2) An installation of the mix manifold discharge temperature sensor.

B. There are four mix manifold discharge temperature sensors.

(1) Mix manifold discharge temperature sensor 1 L, M21532

(2) Mix manifold discharge temperature sensor 2 L, M21533

(3) Mix manifold discharge temperature sensor 1 R, M21526

(4) Mix manifold discharge temperature sensor 2 R, M21529

C. You can get access to the mix manifold discharge temperature sensors through the forward cargo compartment.

TASK 21-52-46-000-801

2. Mix Manifold Discharge Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
52-34-00-860-802	Open the Door Electrically with the Internal Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
821	Forward Large Cargo Door

C. Prepare for the Removal

SUBTASK 21-52-46-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-52-46-860-002

(2) Make sure the LOWER RECIRC FANS switch-lights are set to the OFF position.

NOTE: The LOWER RECIRC FANS switch-lights are on the Air Conditioning Module in the Pilot's Overhead Panel, P5.

SUBTASK 21-52-46-010-001

(3) Do this task: Open the Door Electrically with the Internal Cargo Door Control Switch, TASK 52-34-00-860-802.

SUBTASK 21-52-46-010-002

(4) To get access to the mix manifold discharge temperature sensor [1], remove the Station 998 end wall (TASK 25-52-17-000-801).

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D. Mix Manifold Discharge Temperature Sensor Removal

SUBTASK 21-52-46-030-001

(1) Disconnect the electrical connector [2] from the mix manifold discharge temperature sensor [1].

SUBTASK 21-52-46-030-002

(2) Remove and discard the lockwire from the temperature sensor nut [4].

SUBTASK 21-52-46-020-001

CAUTION

USE TWO WRENCHES TO REMOVE THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the temperature sensor [1].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the temperature sensor nut [4].

SUBTASK 21-52-46-030-003

(4) Remove and discard the packing [3] from the mix manifold discharge temperature sensor [1].

——— END OF TASK ———

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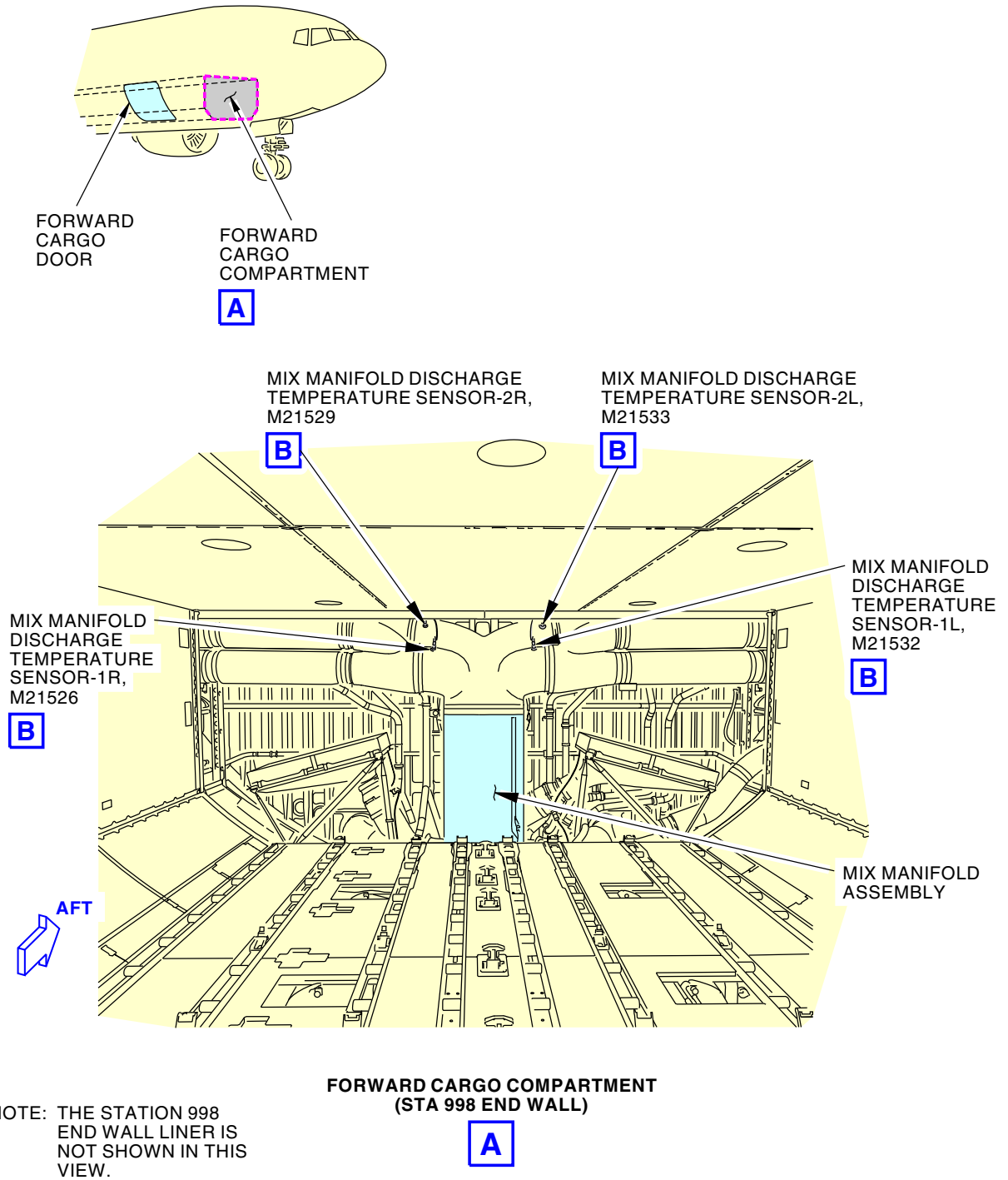

Mix Manifold Discharge Temperature Sensor Installation
Figure 401/21-52-46-990-801 (Sheet 1 of 2)

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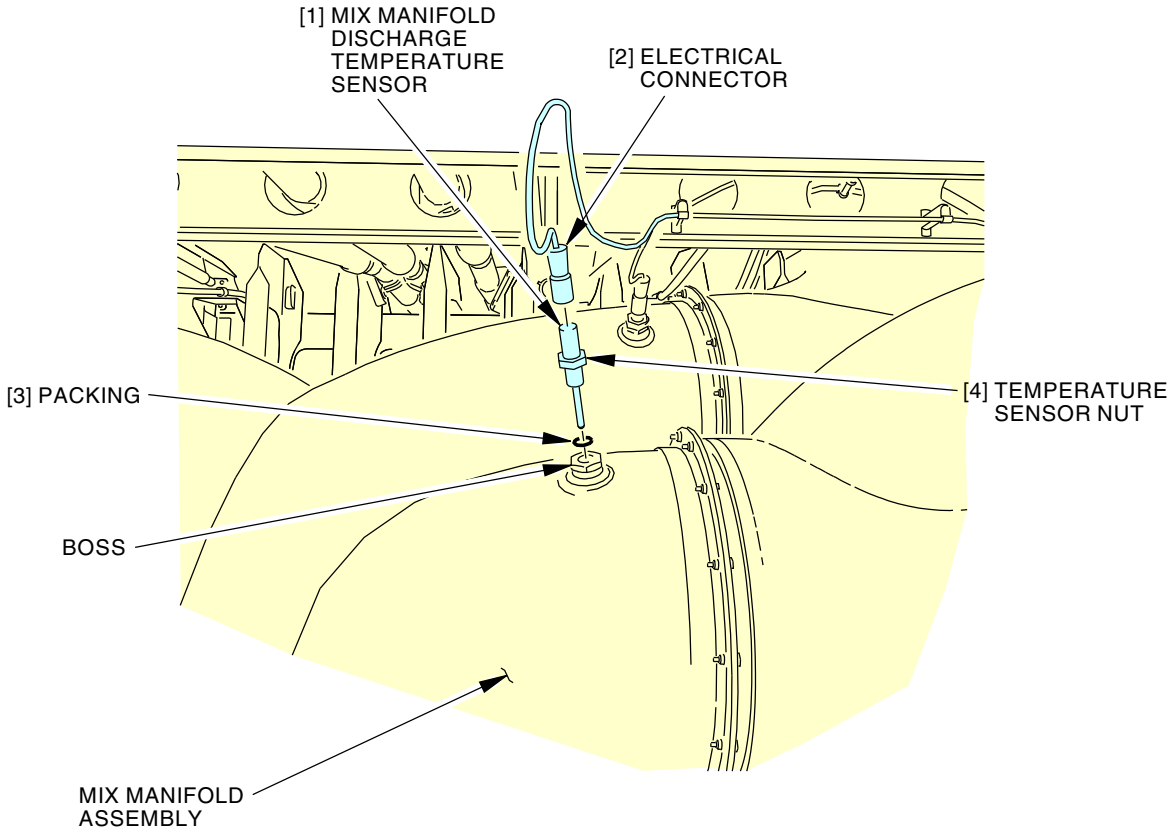

MIX MANIFOLD DISCHARGE TEMPERATURE SENSOR (EXAMPLE)

B

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Mix Manifold Discharge Temperature Sensor Installation
Figure 401/21-52-46-990-801 (Sheet 2 of 2)

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TASK 21-52-46-400-801

3. Mix Manifold Discharge Temperature Sensor Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-52-46-02A-005	ARO ALL
3	Packing	21-52-46-02A-010	ARO ALL

C. Location Zones

Zone	Area
125	Area Aft of Forward Cargo Compartment, Left
126	Area Aft of Forward Cargo Compartment, Right
212	Flight Compartment, Right
821	Forward Large Cargo Door

D. Mix Manifold Discharge Temperature Sensor Installation

SUBTASK 21-52-46-430-001

(1) Install a new packing [3] on the mix manifold discharge temperature sensor [1].

SUBTASK 21-52-46-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut [4] are clean.

SUBTASK 21-52-46-420-001

CAUTION

USE TWO WRENCHES TO INSTALL THE TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to install the mix manifold discharge temperature sensor [1].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the temperature sensor nut [4].

(c) Tighten the temperature sensor nut [4] to 18 in-lb (2.0 N·m) - 24 in-lb (2.7 N·m).

SUBTASK 21-52-46-430-002

(4) Install a new lockwire on the temperature sensor nut [4].

SUBTASK 21-52-46-430-003

(5) Connect the electrical connector [2] to the mix manifold discharge temperature sensor [1].

E. Mix Manifold Discharge Temperature Sensor Installation Test

SUBTASK 21-52-46-860-003

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

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SUBTASK 21-52-46-740-001

(2) Use a Maintenance Access Terminal (MAT) to look for maintenance messages for the mix manifold discharge temperature sensors (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the applicable temperature sensors.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.

2) Select CONTINUE.

3) Look at the maintenance messages that show and make sure there are no maintenance messages for the applicable temperature sensors.

4) If a maintenance message for the applicable pack temperature sensor shows, refer to the Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

(d) To put the MAT back to its initial condition, make these selections:

1) LINE MAINTENANCE

2) EXIT MAINTENANCE

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-52-46-410-001

(1) To install the Station 998 end wall, do this task: Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801.

SUBTASK 21-52-46-410-002

(2) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

——— END OF TASK ———

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AIR CONDITIONING MODULE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Air Conditioning Module Removal

(2) Air Conditioning Module Installation

B. The AIR CONDITIONING module is found on the Forward Overhead Panel, P5. It has these controls for the air conditioning system:

(1) The L/R PACK switches

(2) The L/R TRIM AIR switches

(3) The RECIRC FANS UPPER/LOWER switches

(4) The AIR COND RESET switch

(5) The FLT DECK TEMP selector

(6) The CABIN TEMP selector

(7) The EQUIPMENT COOLING override switch

TASK 21-60-01-000-801

2. Air Conditioning Module Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)

B. Location Zones

Zone	Area
212	Flight Compartment, Right

C. Prepare for the Removal

SUBTASK 21-60-01-860-001

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

D. Air Conditioning Module Removal

SUBTASK 21-60-01-020-001

(1) Do these steps to remove the air conditioning module from the Forward Overhead Panel, P5:

(a) Turn the six quarter-turn fasteners [1] which hold the air conditioning module [2] to the Forward Overhead Panel, P5.

(b) Carefully lower the air conditioning module [2] out of the Forward Overhead Panel, P5.

(c) Disconnect the electrical connector [3].

(d) Disconnect the electrical connector [4].

(e) Disconnect the electrical connector [5].

(f) Remove the air conditioning module [2].

END OF TASK

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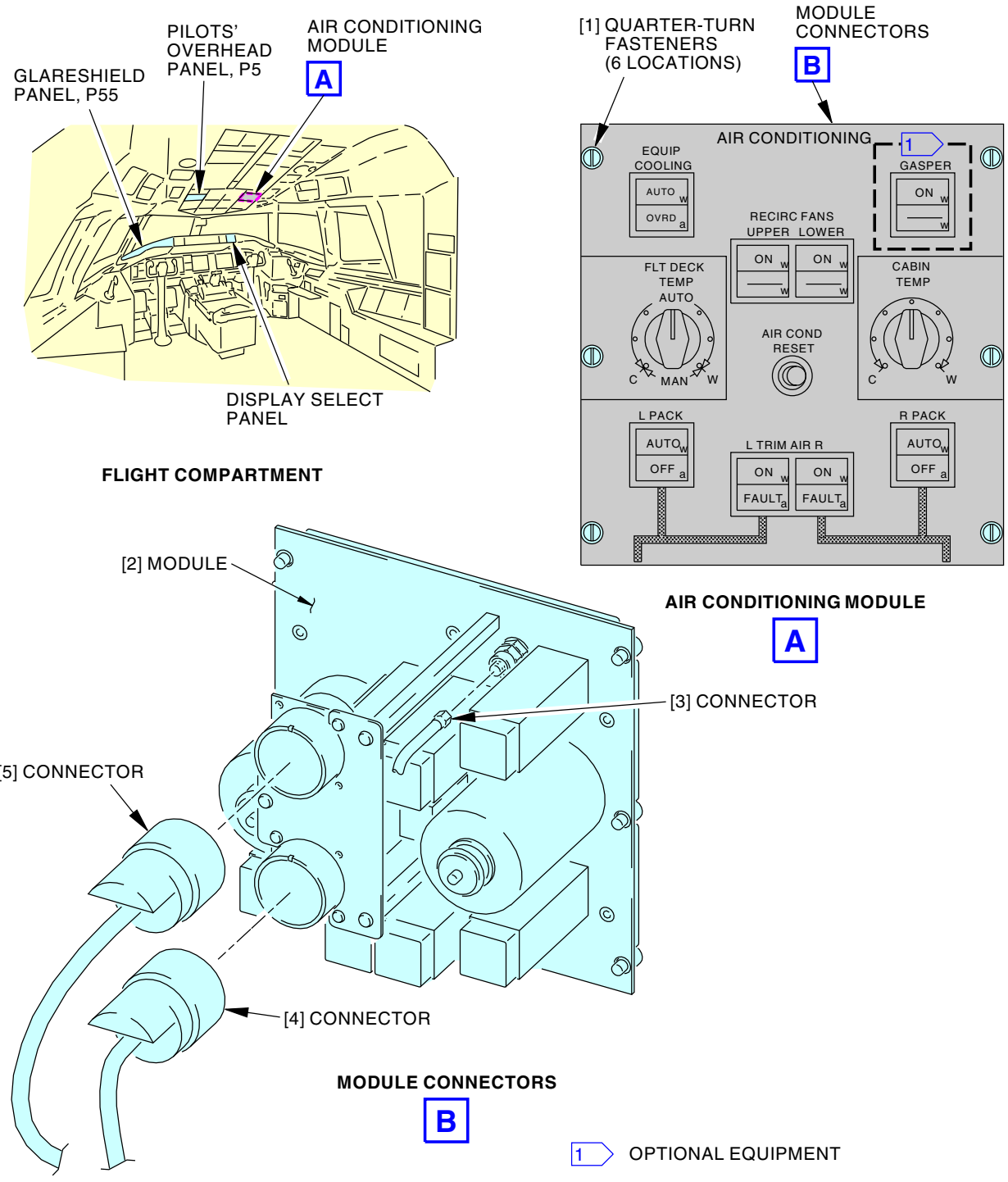

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Air Conditioning Module Installation
Figure 401/21-60-01-990-801

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TASK 21-60-01-400-801

3. Air Conditioning Module Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Module	21-25-01-10A-005	ARO ALL
		21-25-07-10A-005	ARO ALL
		21-27-01-01A-005	ARO ALL
		21-51-51-01A-005	ARO ALL
		21-61-05-01A-005	ARO ALL
		21-62-51-01A-005	ARO ALL
		31-12-11-01B-410	ARO ALL

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Air Conditioning Module Installation

SUBTASK 21-60-01-420-001

(1) Do these steps to install the air conditioning module into the Forward Overhead Panel, P5:

(a) Reconnect the electrical connector [5].

(b) Reconnect the electrical connector [4].

(c) Reconnect the electrical connector [3].

(d) Carefully put the air conditioning module [2] into the Forward Overhead Panel, P5.

(e) Turn the six quarter-turn fasteners [1].

E. Air Conditioning Module Installation Test

SUBTASK 21-60-01-860-002

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

SUBTASK 21-60-01-860-003

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

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SUBTASK 21-60-01-840-001

WARNING MAKE SURE THERE IS AN EXIT IN THE AIRPLANE FUSELAGE FOR THE CONDITIONED AIR. IF THERE IS NO EXIT FOR THE CONDITIONED AIR, THEN PRESSURIZATION OF THE CABIN WILL OCCUR. PRESSURIZATION OF THE CABIN CAN CAUSE INJURY TO PERSONS.

(3) Do one of these steps to make sure that there is an exit for the conditioned air:

(a) Make sure that the forward and aft outflow valves are open.

(b) Make sure that at least one passenger entry door is open.

SUBTASK 21-60-01-210-001

(4) Do these steps to make sure that the indicator lights operate.

(a) Put the IND LTS switch in the TEST position.

NOTE: The IND LTS switch is located on the Forward Overhead Panel, P5.

(b) Make sure that the L TRIM AIR fault indicator light is on.

(c) Make sure that the R TRIM AIR fault indicator light is on.

(d) Make sure that the EQUIP COOLING OVRD indicator light is on.

(e) Put the IND LTS switch back to the DIM or the BRT position.

SUBTASK 21-60-01-860-004

(5) Push the L INBD, the LWR CTR, or the R INBD button on the Display Select Panel.

NOTE: The Display Select Panel is found on the Glareshield Center Panel, P55

SUBTASK 21-60-01-860-005

(6) Push the AIR button on the Display Select Panel.

NOTE: This shows the air synoptic page on the L INBD, the LWR CTR, or the R INBD display.

SUBTASK 21-60-01-210-002

(7) Do these steps to make sure that the pack switches operate:

(a) Push the L PACK switch.

NOTE: The pack flow control valves open at a controlled rate. Wait 20 seconds for the indications to appear.

(b) Make sure that the AUTO indicator is on and the OFF indicator light is off.

(c) Make sure that the air synoptic display shows that the left pack is on.

(d) Push the L PACK switch.

NOTE: The pack flow control valves close at a controlled rate. Wait 40 seconds for the indications to appear.

(e) Make sure that the OFF indicator light is on and the AUTO indicator is off.

(f) Make sure that the air synoptic display shows that the left pack is off.

(g) Push the R PACK switch.

(h) Make sure that the AUTO indicator is on and the OFF indicator light is off.

(i) Make sure that the air synoptic display shows that the right pack is on.

(j) Push the R PACK switch.

(k) Make sure that the OFF indicator light is on and the AUTO indicator is off.

(l) Make sure that the air synoptic display shows that the right pack is off.

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(m) Push the L PACK switch.

(n) Push the R PACK switch.

(o) Make sure that the air synoptic display shows that the packs are on.

SUBTASK 21-60-01-210-003

(8) Do these steps to make sure that the trim air switches operate:

(a) Push the L TRIM AIR switch.

(b) Make sure that the ON indicator is on.

(c) Make sure that the air synoptic display shows that the left trim air is on.

(d) Push the L TRIM AIR switch.

(e) Make sure that the ON indicator is off.

(f) Make sure that the L TRIM AIR fault indicator light is ON.

(g) Make sure that the air synoptic display shows that the left trim air is off.

(h) Make sure that the EICAS ADVISORY shows that the trim is off.

(i) Push the R TRIM AIR switch.

(j) Make sure that the ON indicator is on.

(k) Make sure that the air synoptic display shows that the right trim is on.

(l) Push the R TRIM AIR switch.

(m) Make sure that the ON indicator is off.

(n) Make sure that the R TRIM AIR fault indicator light is ON.

(o) Make sure that the air synoptic display shows that the right trim air is off.

(p) Make sure that the EICAS ADVISORY shows that the trim is off.

(q) Push the L TRIM AIR switch.

(r) Push the R TRIM AIR switch.

(s) Make sure that the air synoptic display shows the left and the right trim air is on.

SUBTASK 21-60-01-210-004

(9) Do these steps to make sure that the FLT DECK TEMP selector operates in the AUTO mode:

(a) Put the FLT DECK TEMP selector in the AUTO C position.

(b) Make sure that the target temperature for the F/D indication shows 65°F (18.3°C) on the air synoptic page.

NOTE: The target temperature is shown in magenta (left indication) and the actual temperature is shown in white (right indication).

(c) Put the FLT DECK TEMP selector in the AUTO W position.

(d) Make sure that the target temperature for the F/D indication shows 85°F (29.4°C) on the air synoptic page.

SUBTASK 21-60-01-210-005

(10) Do these steps to make sure that the FLT DECK TEMP selector operates in the MAN mode:

NOTE: The F/D target temperature will not show on the air synoptic page when the FLT DECK TEMP selector is put in MAN position.

(a) Put the FLT DECK TEMP selector in the MAN C position.

(b) Make sure the F/D TRIM indication on the air synoptic page moves to the C (Cold) position.

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(c) Put the FLT DECK TEMP selector in the MAN W position.

(d) Make sure the F/D TRIM indication on the air synoptic page moves to the W (Warm) position.

(e) Put the FLT DECK TEMP selector in the 12 o'clock AUTO position.

SUBTASK 21-60-01-210-006

(11) Do these steps to make sure that the CABIN TEMP selector operates:

(a) Put the CABIN TEMP selector in the C position.

(b) Make sure that the target temperature for the MASTER indication shows 65°F (18.3°C) on the air synoptic page.

(c) Put the CABIN TEMP selector in the W position.

(d) Make sure that the target temperature for the MASTER indication shows 85°F (29.4°C) on the air synoptic page.

(e) Put the CABIN TEMP selector in the 12 o'clock position.

SUBTASK 21-60-01-210-007

(12) Do these steps to make sure that the equipment cooling override switch operates:

(a) Push the EQUIPMENT COOLING switch.

(b) Make sure that the AUTO indicator is off and the OVRD indicator light is on.

(c) Make sure that this EICAS ADVISORY message shows on the upper center display:

1) EQUIP COOLING OVRD

(d) Push the EQUIPMENT COOLING switch.

(e) Make sure that the AUTO indicator is on and the OVRD indicator light is off.

(f) Make sure that this EICAS ADVISORY message does not show on the upper center display:

1) EQUIP COOLING OVRD

SUBTASK 21-60-01-860-006

(13) Push the MAINT INFO DISPLAY button on the left, center, or right control display unit (CDU).

NOTE: This shows the maintenance page display menu in place of the air synoptic page.

SUBTASK 21-60-01-860-007

(14) Use the left or the right cursor control device to select the ATA 21 AIR CONDITIONING real time maintenance page display.

SUBTASK 21-60-01-210-009

(15) Do these steps to make sure that the recirculation fan switches operate:

(a) Push the RECIRC FANS UPPER switch.

(b) Make sure that the ON indicator is on.

(c) Make sure that the air conditioning maintenance page shows that the upper recirculation fans are on.

(d) Push the RECIRC FANS UPPER switch.

(e) Make sure that the ON indicator is off.

(f) Make sure that the air conditioning maintenance page shows that the upper recirculation fans are off.

(g) Push the RECIRC FANS LOWER switch.

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(h) Make sure that the ON indicator is on.

(i) Make sure that the air conditioning maintenance page shows that the lower recirculation fans are on.

(j) Push the RECIRC FANS LOWER switch.

(k) Make sure that the ON indicator is off.

(l) Make sure that the air conditioning maintenance page shows that the lower recirculation fans are off.

SUBTASK 21-60-01-210-010

(16) Do these steps to make sure that the air conditioning reset switch operates:

(a) Push and hold the AIR COND RESET switch for 5 seconds.

(b) A maintenance access terminal (MAT) 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.

(c) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

(d) Look for ATA 23 Overhead Panel ARINC 629 System.

(e) If ATA 23 Overhead Panel ARINC 629 System does not show, then there are no maintenance messages in existing faults for the air conditioning module.

(f) If ATA 23 Overhead Panel ARINC 629 System does show, then do these steps:

1) Select ATA CHAPTER 23 Overhead Panel ARINC 629 System

2) Select CONTINUE.

3) Look at the maintenance messages that show and make sure that there are no maintenance messages for the air conditioning module switches.

SUBTASK 21-60-01-810-001

(17) If you find a fault in the air conditioning module, then do the procedures in the Fault Isolation Manual to correct the fault.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-60-01-860-008

(1) Do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-60-01-860-009

(2) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

END OF TASK

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ZONE TEMPERATURE CONTROL AND INDICATION - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) System Test - Zone Trim Air Modulating Valves

(2) Operational Test - Cabin Temperature Controller (CTC)

(3) Operational Test - Cabin System Control Panel (CSCP)

(4) Operational Test - (Zone Air, Zone Duct) Temperature Sensors

(5) Operational Test - Zone Temperature Selectors.

C. To do a complete system test of the zone temperature control and indication system, you must do each of the above tasks.

TASK 21-61-00-740-801

2. Zone Trim Air Modulating Valves - Operational Test

A. General

(1) This test makes sure that the (Left, Right) Cabin Temperature Controller (CTC) can control the trim air modulating valves of the (left, right) trim air system.

(2) The same sequence of steps is used to do the system test for the left and right trim air system.

(3) A maintenance access terminal (MAT) 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 21-61-00-860-001

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

SUBTASK 21-61-00-740-001

(2) Use a maintenance access terminal (MAT) to do the system test of the trim air system:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) GROUND TESTS

4) 21 Cabin Temperature Control System

5) SYSTEM TEST

6) (Left, Right) Trim Air System

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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 21-61-00-740-802

3. Cabin Temperature Controller (CTC) - Operational Test

A. General

(1) This test makes sure that the (Left, Right) Cabin Temperature Controller (CTC) can change control between channels 1 and 2. This test also does a continuous built-in-test.

(2) The same sequence of steps is used to do the operational test for the left and right cabin temperature controller (CTC).

(3) A maintenance access terminal (MAT) 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 21-61-00-860-003

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

SUBTASK 21-61-00-740-002

(2) Use a maintenance access terminal (MAT) to do the operational test of the left or right cabin temperature controller (CTC):

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) GROUND TESTS

4) 21 Cabin Temperature Control System

5) OPERATIONAL TEST

6) (Left, Right) cabin Temperature Controller

7) CONTINUE

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(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 21-61-00-740-803

4. Cabin System Control Panel (CSCP) - 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
221	Passenger Compartment, Left - Section 41
222	Passenger Compartment, Right - Section 41
231	Passenger Compartment, Left - Section 43
232	Passenger Compartment, Right - Section 43
261	Passenger Compartment, Left - Section 47
262	Passenger Compartment, Right - Section 47

C. Procedure

SUBTASK 21-61-00-860-005

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

SUBTASK 21-61-00-860-006

(2) Put the CABIN TEMP selector in the AUTO 12 o'clock position, on the AIR CONDITIONING module.

NOTE: The AIR CONDITIONING module can be found on the Pilot's Overhead Panel, P5.

SUBTASK 21-61-00-710-001

(3) Make sure the TRGT TEMP on the EICAS ECS Maintenance Page shows approximately 75 °F (24 °C) for these zones:

(a) Zone A

(b) Zone B

(c) Zone C

(d) Zone D

(e) Zone E

(f) Zone F

SUBTASK 21-61-00-860-007

(4) Touch the CABIN CONTROLS menu selection on the Cabin System Control Panel (CSCP).

NOTE: The CSCP can be found in the door 1 area, door 2 area, or door 4 area.

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SUBTASK 21-61-00-860-008

(5) Touch the CABIN TEMPERATURE menu selection on the CSCP.

SUBTASK 21-61-00-860-009

(6) Do these steps to reset each zone on the CSCP:

(a) Touch the left or right arrow until the indication for zone A shows.

(b) Select AREA RESET.

(c) Do the above steps again for each remaining zone.

SUBTASK 21-61-00-710-002

(7) Make sure the TRGT TEMP on the EICAS ECS Maintenance Page continues to show approximately 75 °F (24 °C) for these zones:

(a) Zone A

(b) Zone B

(c) Zone C

(d) Zone D

(e) Zone E

(f) Zone F

SUBTASK 21-61-00-860-010

(8) Do these steps to make sure the the CSCP can change the target temperature of each zone:

(a) Touch the left or right arrow on the CSCP until the indication for zone A shows.

(b) Touch the up arrow to increase the target temperature to 85 °F (29 °C).

(c) Make sure the TRGT TEMP for zone A on the EICAS ECS Maintenance Page shows 85 °F (29 °C).

(d) Do the above steps again for each remaining zone.

——— END OF TASK ———

TASK 21-61-00-740-804

5. (Zone Air, Zone Duct) Temperature Sensors - Operational Test

A. General

(1) This test makes sure that the zone air temperature sensors and the zone duct temperature sensors operate correctly.

(2) A maintenance access terminal (MAT) 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

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D. Procedure

SUBTASK 21-61-00-860-012

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

SUBTASK 21-61-00-740-003

(2) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the zone air temperature sensors or the zone duct temperature sensors:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the (zone air, zone duct) temperature sensors.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.

2) Select CONTINUE.

3) Look at the maintenance messages that show and make sure there are no maintenance messages for the zone air temperature sensors or zone duct temperature sensors.

4) If a maintenance message for the (zone air, zone duct) temperature sensors 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 21-61-00-740-805

6. Zone Temperature Selectors - Operational Test

A. General

(1) This test makes sure that the FLT DECK TEMP selector and the CABIN TEMP selector operate correctly.

B. References

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

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 21-61-00-860-014

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

SUBTASK 21-61-00-860-015

(2) Push the L INBD, LWR CTR, or the R INBD button on the Display Select Panel which is found on the Glareshield Panel, P55.

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SUBTASK 21-61-00-860-016

(3) Push the AIR button on the Display Select Panel.

NOTE: This shows the AIR synoptic page on the L INBD, LWR CTR, or the R INBD display unit (DU).

SUBTASK 21-61-00-210-001

(4) Do these steps to make sure the FLT DECK TEMP selector operates in the AUTO position:

(a) Put the FLT DECK TEMP selector on the AIR CONDITIONING module in the AUTO C position.

(b) Make sure the target temperature for the F/D shows 65 °F (18.3 °C) on the synoptic page.

NOTE: The actual temperature is shown in white and the target temperature is shown in magenta.

(c) Put the FLT DECK TEMP selector on the AIR CONDITIONING module in the AUTO W position.

(d) Make sure the target temperature for the F/D shows 85 °F (29.4 °C) on the synoptic page.

NOTE: The actual temperature is shown in white and the target temperature is shown in magenta.

SUBTASK 21-61-00-210-002

(5) Do these steps to make sure the FLT DECK TEMP selector operates in the MAN position:

(a) Put the FLT DECK TEMP selector on the AIR CONDITIONING module in the MAN C position.

(b) Make sure the F/D TRIM indication on the synoptic page shows the Flight Deck Trim Modulating Valve is in the C (Cold) position.

(c) Put the FLT DECK TEMP selector on the AIR CONDITIONING module in the MAN W position.

(d) Make sure the F/D TRIM indication on the synoptic page shows the Flight Deck Trim Modulating Valve is in the W (Warm) position.

SUBTASK 21-61-00-210-003

(6) Do the steps that follow to make sure the CABIN TEMP selector works correctly:

(a) Put the CABIN TEMP selector on the AIR CONDITIONING module in the C position.

(b) Make sure the MASTER temperature on the synoptic page shows 65 °F (18.3 °C).

(c) Put the CABIN TEMP selector on the AIR CONDITIONING module in the W position.

(d) Make sure the MASTER temperature on the synoptic page shows 85 °F (29.4 °C).

END OF TASK

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CABIN TEMPERATURE CONTROLLER (CTC) - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Software Configuration Check - Cabin Temperature Controller (CTC)

(2) Software Installation - Cabin Temperature Controller (CTC)

TASK 21-61-01-400-802

2. Cabin Temperature Controller (CTC) Software Configuration Check

A. General

(1) The configuration check makes sure that the left or right cabin temperature controller (CTC) has the correct software installed in the CTC.

(2) The configuration check will show a failure if the operational program software (OPS) is not installed.

(3) A maintenance access terminal (MAT) 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. Configuration Check

SUBTASK 21-61-01-860-009

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

SUBTASK 21-61-01-750-001

(2) Use a maintenance access terminal (MAT) to do a software configuration check of the left or right cabin temperature controller (CTC):

NOTE: Make sure you know the correct software part numbers for the left or right CTC when you look at the software part numbers on the display. For the left or right CTC to be an approved installation, the correct software part numbers must be installed in each channel.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) LINE MAINTENANCE

3) SYSTEM CONFIGURATION

4) 21 Cabin Temperature Control System

5) CONTINUE

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(b) Find Cabin Temperature Controller (L Chan1), (L Chan2), (R Chan1), (R Chan2) on the display and make sure that the software part number is correct.

NOTE: The configuration check will show a failure if the operational program software (OPS) is not installed. The CTC must also contain the operational program configuration (OPC).

(c) Select GO BACK to remove the configuration display.

(d) If the part numbers are incorrect, do this task: Cabin Temperature Controller (CTC) Software Installation, TASK 21-61-01-400-803

——— END OF TASK ———

TASK 21-61-01-400-803

3. Cabin Temperature Controller (CTC) Software Installation

A. General

(1) This procedure tells you how to install software in the left or right Cabin Temperature Controller (CTC). The CTC must contain these pieces of software in each channel:

(a) CTC Operational Program Software (OPS)

REF: AIPC 46-00-00-21F

(b) CTC Operational Program Configuration (OPC)

REF: AIPC 46-00-00-21D

(2) Install the OPS software before you install the OPC software.

NOTE: Stop for a minimum of 5 minutes before you start the installation of the OPC software.

(3) Each piece of software must be installed in each channel of the CTC.

(4) To read about the conditions and times necessary for software installation, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

(5) 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.

(6) 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.

(7) 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 CTC, the load process first erases the old software and then installs the new software. If you install software directly to the CTC 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 CTC.

(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.

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(8) 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

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (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)
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)
71-00-00-800-837-H00	Usual Engine Stop (P/B 201)
AIPC 46-00-00-21D	Aircraft Illustrated Parts Catalog
AIPC 46-00-00-21F	Aircraft Illustrated Parts Catalog

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. Prepare to Install the Software

SUBTASK 21-61-01-860-016

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

SUBTASK 21-61-01-860-017

(2) The airplane must be on the ground with engines stopped for a minimum of 5 minutes. To stop the engines, do this task: Usual Engine Stop, TASK 71-00-00-800-837-H00.

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SUBTASK 21-61-01-860-018

(3) Remove conditioned air supplied by the cooling packs from the airplane. To remove conditioned air, do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-61-01-860-019

(4) Supply the CTC with power for a minimum of 5 minutes before you install the software.

F. Procedure

SUBTASK 21-61-01-860-020

(1) Do the applicable step below to remove power from the opposite side CTC before you load the software:

(a) To install software for the left CTC:

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) To install software for the right CTC:

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-61-01-420-002

(2) Use a MAT to install software in the left or right CTC:

NOTE: Make sure you know the correct software part number for the left or right CTC before you select the software part number on the display. For the left or right CTC to be an approved installation, the correct software must be installed in each channel.

(a) If the software is on a disk, put the correct disk in the disk drive.

(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) 21 Cabin Temperature Control System
3) Cabin Temperature Controller (L Chan1), (L Chan2).
4) Cabin Temperature Controller (R Chan1), (R Chan2).
5) CONTINUE

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(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.

SUBTASK 21-61-01-750-002

(3) Install the software in the other channel.

SUBTASK 21-61-01-860-014

(4) If you installed software for the left CTC:

Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-61-01-860-015

(5) If you installed software for the right CTC:

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

END OF TASK

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CABIN TEMPERATURE CONTROLLER (CTC) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the cabin temperature controller (CTC).

(2) An installation of the cabin temperature controller (CTC).

TASK 21-61-01-000-801

2. Cabin Temperature Controller (CTC) Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
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

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Procedure

SUBTASK 21-61-01-010-001

(1) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-61-01-860-001

(2) To remove the left CTC;

Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-61-01-860-002

(3) To remove the right CTC;

Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)

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(Continued)

Right Power Management Panel, P210

Row	Col	Number	Name
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-61-01-010-002

(4) Remove the applicable CTC unit [1] (TASK 20-10-01-000-801).

——— END OF TASK ———

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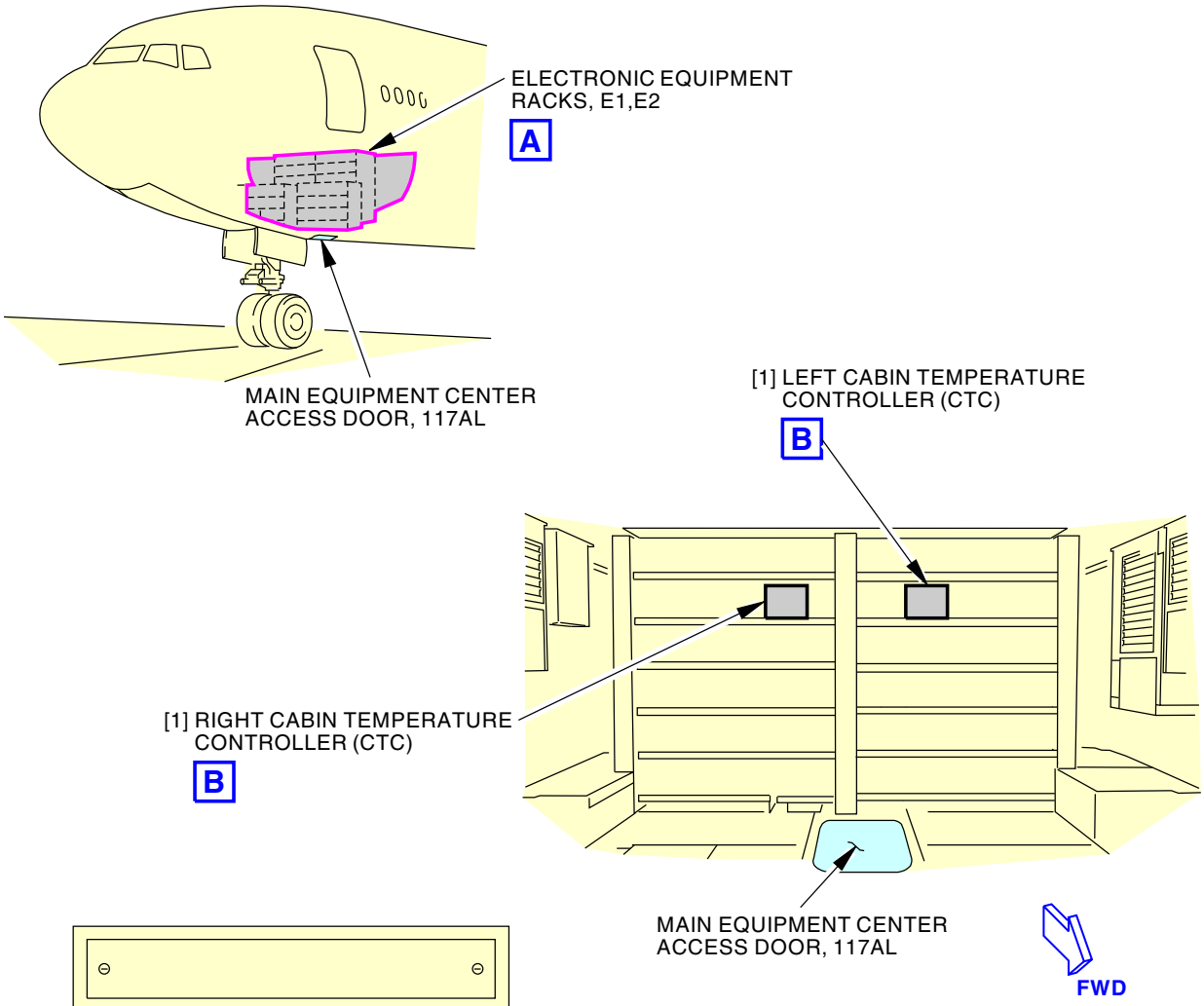

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Cabin Temperature Controller (CTC) Installation
Figure 401/21-61-01-990-801

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TASK 21-61-01-400-801

3. Cabin Temperature Controller (CTC) Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) After you install the cabin temperature controller (CTC), you must make sure that the (Left, Right) Cabin Temperature Controller can control the ram air inlet door, ram air exit door, turbine bypass valve, and low limit valve on the (left, right) air conditioning pack, and the (left, right) trim air system, upper recirculation fans and lower recirculation fans.

B. References

Reference	Title
20-10-01-400-801	E/E Box Installation (P/B 401)
21-61-01-400-802	Cabin Temperature Controller (CTC) Software Configuration Check (P/B 201)
21-61-01-400-803	Cabin Temperature Controller (CTC) Software Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Unit	21-61-01-01-025	ARO ALL
		25-17-01-32-100	ARO ALL

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Cabin Temperature Controller (CTC) Installation

SUBTASK 21-61-01-420-001

(1) Install the applicable CTC unit [1] (TASK 20-10-01-400-801).

SUBTASK 21-61-01-860-003

(2) If you installed the left CTC;

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-61-01-860-004

(3) If you installed the right CTC;

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Remove the safety tags and close these circuit breakers:

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-61-01-905-001

(4) If a new CTC was installed, do this task: Cabin Temperature Controller (CTC) Software Installation, TASK 21-61-01-400-803.

NOTE: A new CTC does not have the OPS and OPC software installed.

NOTE: If the ZONE TEMP, TRGT TEMP, DUCT TEMP, or TRIM VLV data does not show for one or more CTRL CH, then the OPC software for that CTC channel is not installed. If you do not see pack data for one or more PACK CTRL CH, then the OPS software for that channel is not installed.

G. Cabin Temperature Controller (CTC) Installation Test

SUBTASK 21-61-01-860-005

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-61-01-420-003

(2) If you did not install a new CTC, do this task: Cabin Temperature Controller (CTC) Software Configuration Check, TASK 21-61-01-400-802.

NOTE: To be an approved installation, the correct software part numbers must be installed.

NOTE: If the ZONE TEMP, TRGT TEMP, DUCT TEMP, or TRIM VLV data does not show for one or more CTRL CH, then the OPC software for that CTC channel is not installed. If you do not see pack data for one or more PACK CTRL CH, then the OPS software for that channel is not installed.

SUBTASK 21-61-01-740-001

(3) Use a maintenance access terminal (MAT) to do the system test of the cabin temperature controller:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) (Left, Right) System Air Off
7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE

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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 21-61-01-740-002

(4) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the (left, right) cabin temperature control system:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

(b) Look for 21 Cabin Temperature Control System.

NOTE: If 21 Cabin Temperature Control System does not show, then there are no maintenance messages in existing faults for the (left, right) cabin temperature control system.

(c) If 21 Cabin Temperature Control System shows, do these steps:

1) Select 21 Cabin Temperature Control System.

2) Select CONTINUE.

3) Look at the maintenance messages that show and make sure there are no maintenance messages for the (left, right) cabin temperature control system.

4) If a maintenance message for the (left, right) cabin temperature control system shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-01-010-003

(1) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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CABIN TEMPERATURE CONTROLLER (CTC) - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has this task:

(1) Operational Test - Cabin Temperature Controller (CTC)

TASK 21-61-01-740-801

2. Cabin Temperature Controller (CTC) - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This test makes sure that the (Left, Right) Cabin Temperature Controller can change control between channels 1 and 2. This test also does a continuous built-in-test.

(2) The same sequence of steps is used to do the operational test for the left and right cabin temperature controller (CTC).

(3) A maintenance access terminal (MAT) 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 21-61-01-860-007

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-61-01-740-003

(2) Use a maintenance access terminal (MAT) to do the operational test of the left or right cabin temperature controller (CTC).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) OPERATIONAL TEST
6) (Left, Right) Cabin Temperature Controller

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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 ———

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ZONE TRIM AIR MODULATING VALVES - MAINTENACE PRACTICES

1. General

A. This procedure has these tasks:

(1) Zone trim air modulating valves - deactivation

(2) Zone trim air modulating valves - activation.

TASK 21-61-02-040-801

2. Zone Trim Air Modulating Valves - Deactivation

(Figure 201)

A. General

(1) This task will deactivate the zone trim air modulating valves in these zones:

(a) Left Cooling Pack:

1) Flight Deck

2) Zone A

3) Zone C

4) Zone E

(b) Right Cooling Pack

1) Zone B

2) Zone D

3) Zone F

4) Forward Cargo Compartment

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)
36-00-00-860-801	Depressurize the Pneumatic System (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
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Procedure

SUBTASK 21-61-02-860-021

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

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SUBTASK 21-61-02-010-006

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-61-02-020-005

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	1	C21443	F/D TRIM MOD VLV
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	19	C21655	F/D TRIM MOD VLV CTRL
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

F. Zone Trim Air Modulating Valves - Tryout

NOTE: This tryout is to make sure that the zone trim air modulating valves are in a zero energy state.

SUBTASK 21-61-02-860-022

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

SUBTASK 21-61-02-860-023

(2) Use a Maintenance Access Terminal (MAT) to do the System Test of the Left Trim Air System (TASK 45-10-00-740-808).

NOTE: This test does an electrical check of the left trim air modulating valves. While the MAT test is in operation, the applicable valve will open and close.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Left Trim Air System

NOTE: Left Trim Air System does a test of the zone trim air modulating valves for the Flight Deck Zone, Zone A, Zone C and Zone E.

7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

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1) CONTINUE
2) START TEST

(c) At the applicable zones, make sure that the zone trim air modulating valve does not move.

NOTE: Look at the valve position indicator to see the position of the zone trim air modulating valve.

NOTE: An observer must be in voice contact with an operator in the flight deck at all times to complete this step.

(d) When the test is completed, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

SUBTASK 21-61-02-860-024

(3) Use a Maintenance Access Terminal (MAT) to do the System Test of the Right Trim Air System (TASK 45-10-00-740-808).

NOTE: This test does an electrical check of the right trim air modulating valves. While the MAT test is in operation, the applicable valve will open and close.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) Right Trim Air System

NOTE: Right Trim Air System does a test of the valves for Zone B, Zone D, Zone F, and the Forward Cargo Compartment.

7) CONTINUE

(b) Do the instructions that show on the MAT and then make these selections:

1) CONTINUE
2) START TEST

(c) At the applicable zone, make sure that the zone trim air modulating valve does not move.

NOTE: Look at the valve position indicator to see the position of the zone trim air modulating valve.

NOTE: An observer must be in voice contact with an operator in the flight deck at all times to complete this step.

(d) When the test is completed, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

SUBTASK 21-61-02-860-025

(4) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

——— END OF TASK ———

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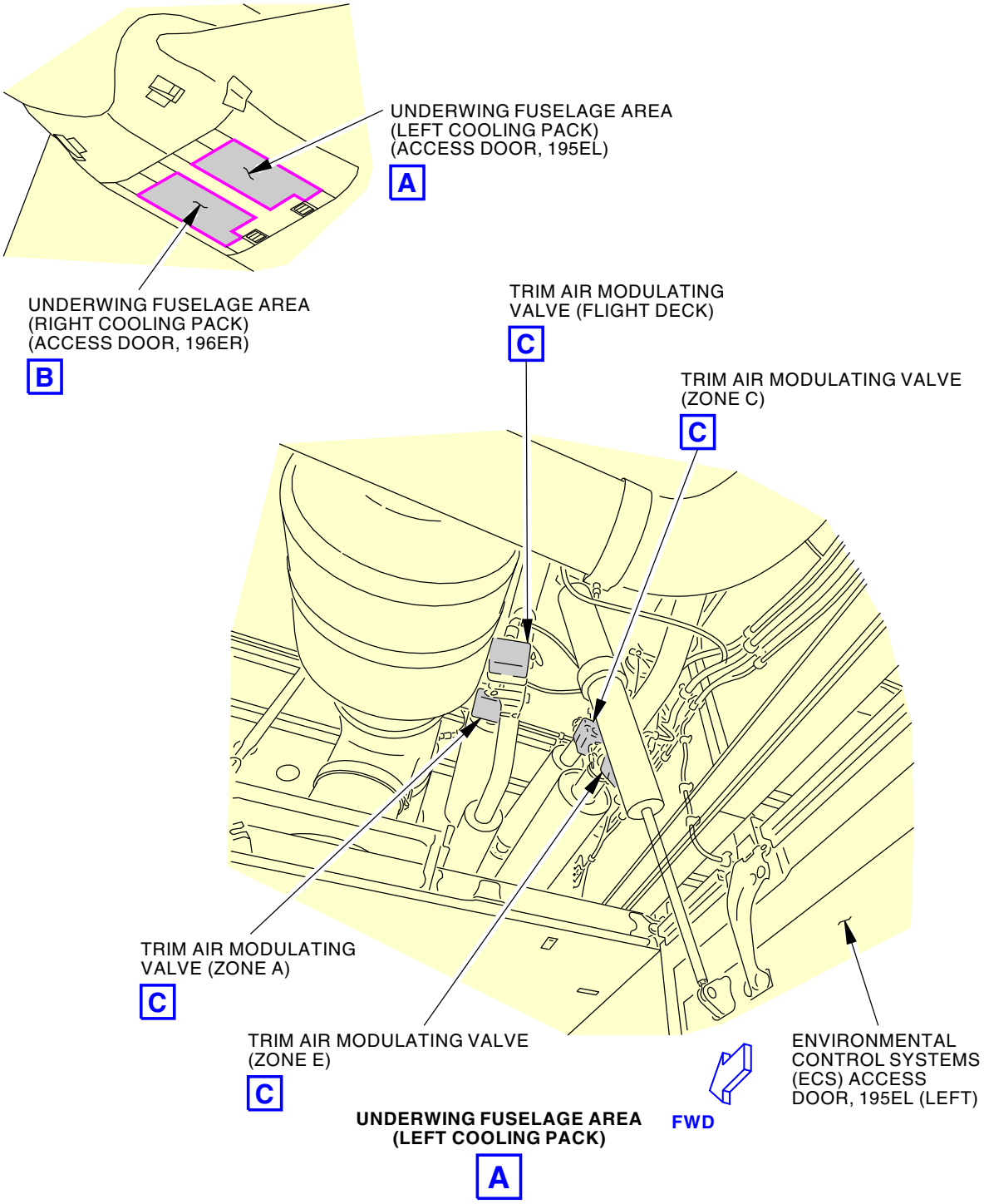

Zone Trim Air Modulating Valves
Figure 201/21-61-02-990-804 (Sheet 1 of 2)

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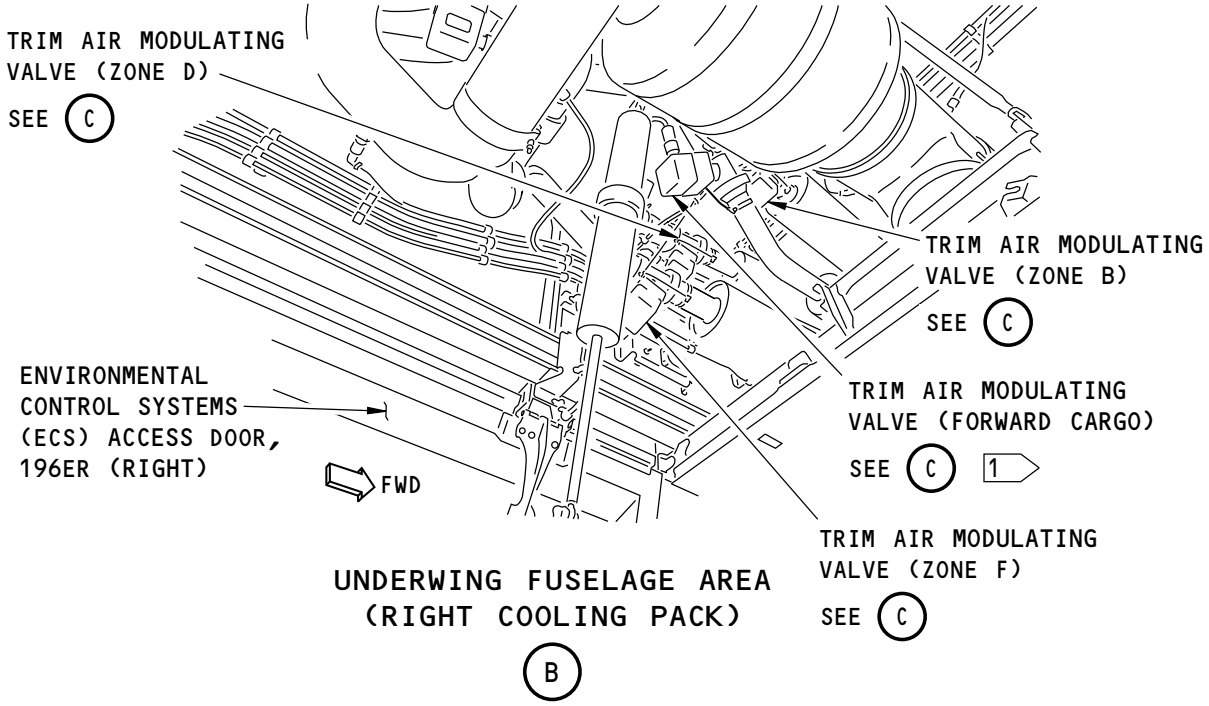
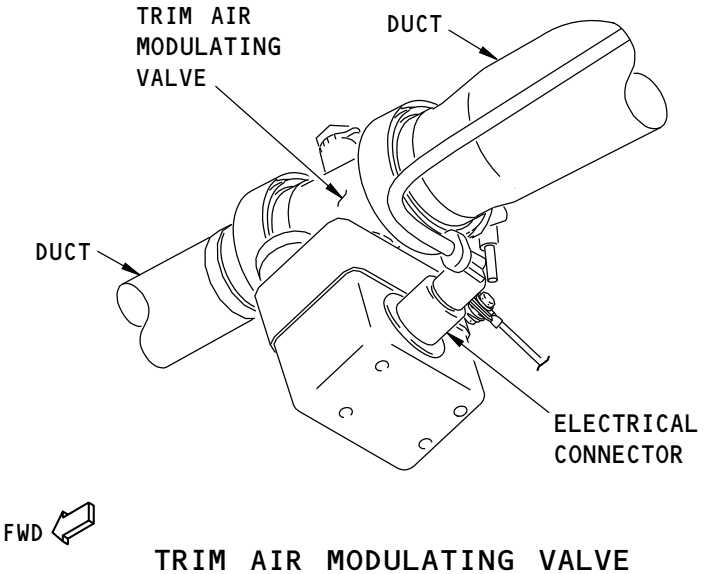


UNDERWING FUSELAGE AREA
(RIGHT COOLING PACK)

B



TRIM AIR MODULATING VALVE

C

1 AIRPLANES WITH FORWARD CARGO AIR CONDITIONING

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Zone Trim Air Modulating Valves
Figure 201/21-61-02-990-804 (Sheet 2 of 2)

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TASK 21-61-02-440-801

3. Zone Trim Air Modulating Valves - Activation

(Figure 201)

A. General

(1) This task will activate the zone trim air modulating valves in these zones:

(a) Left Cooling Pack:

1) Flight Deck
2) Zone A
3) Zone C
4) Zone E

(b) Right Cooling Pack

1) Zone B
2) Zone D
3) Zone F
4) Forward Cargo Compartment

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Procedure

SUBTASK 21-61-02-420-005

WARNING KEEP PERSONNEL, EQUIPMENT, AND OTHER ITEMS OUT OF THE HAZARDOUS ENERGY ZONES. INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING BE CAREFUL WHEN YOU DO WORK AROUND ENERGIZED PANELS. HIGH VOLTAGES CAN KILL YOU.

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	1	C21443	F/D TRIM MOD VLV
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
H	19	C21655	F/D TRIM MOD VLV CTRL
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

(2) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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ZONE TRIM AIR MODULATING VALVES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the zone trim air modulating valves

(2) An installation of the zone trim air modulating valves.

B. There is a zone trim air modulating valve for each of these temperature control zones:

(1) Flight Deck

(2) Zone A

(3) Zone B

(4) Zone C

(5) Zone D

(6) Zone E

(7) Zone F

(8) Forward Cargo Compartment

C. The valve for the flight deck controls the amount of warm trim air that is mixed with cool air from the left cooling pack.

D. The valves for the passenger compartment control the amount of warm trim air that is mixed with cool air from the mix manifold.

E. The valve for the lower forward cargo compartment controls the amount of warm trim air that is mixed with cool air from the mix manifold.

TASK 21-61-02-000-801

2. Zone Trim Air Modulating Valves Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) The valves for these zones are found forward of the left cooling pack:

(a) Flight Deck

(b) Zone A

(c) Zone C

(d) Zone E

(2) The valves for these zones are found forward of the right cooling pack:

(a) Zone B

(b) Zone D

(c) Zone F

(d) Forward Cargo Compartment

B. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

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C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Prepare for the Removal

SUBTASK 21-61-02-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-61-02-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-61-02-860-002

(3) To remove the valve for the flight deck:

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	1	C21443	F/D TRIM MOD VLV
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	19	C21655	F/D TRIM MOD VLV CTRL
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-61-02-860-003

(4) To remove the valve for zone A, zone C, or zone E:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-61-02-860-012

(5) To remove the valve for zone B, zone D, zone F, or forward cargo compartment:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)

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(Continued)

Right Power Management Panel, P210

Row	Col	Number	Name
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

SUBTASK 21-61-02-010-002

(6) Open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

to get access to the valves for these zones:

(a) Flight Deck

(b) Zone A

(c) Zone C

(d) Zone E

SUBTASK 21-61-02-010-003

(7) Open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

to get access to the valves for these zones:

(a) Zone B

(b) Zone D

(c) Zone F

(d) Forward Cargo Compartment

F. Zone Trim Air Modulating Valve Removal

SUBTASK 21-61-02-020-001

(1) Disconnect the electrical connector [4] from the applicable trim air modulating valve [1].

SUBTASK 21-61-02-020-002

(2) Do these steps to remove the two bonding jumpers [7]:

(a) Remove the nut [8], bolt [5], and three washers [6].

(b) Remove the two bonding jumpers [7] from the ground tab [9] on the trim air modulating valve [1].

SUBTASK 21-61-02-020-003

(3) Remove the coupling [2] and the coupling [3].

SUBTASK 21-61-02-020-004

(4) Remove the trim air modulating valve [1].

END OF TASK

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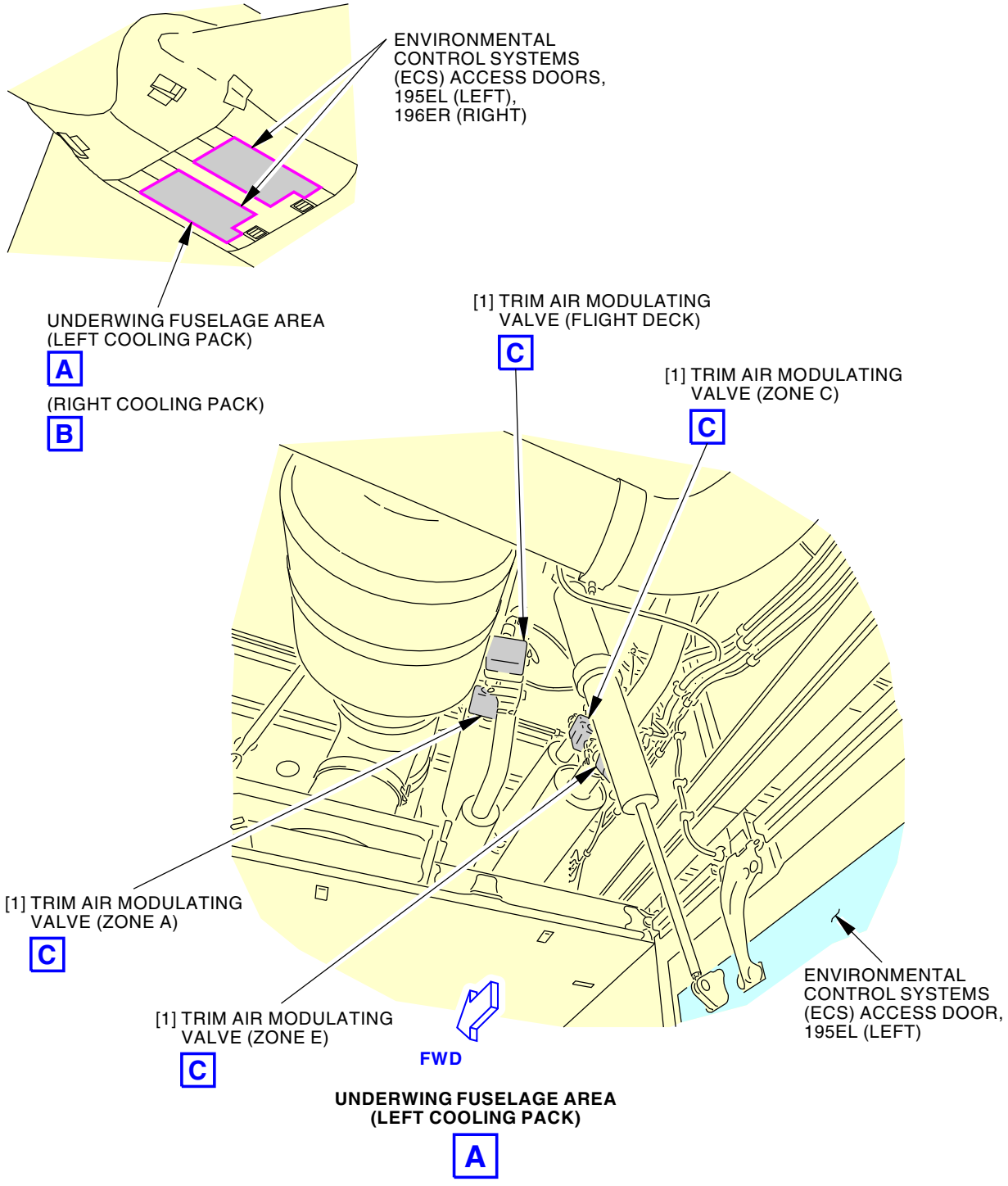

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Zone Trim Air Modulating Valves Installation
Figure 401/21-61-02-990-801 (Sheet 1 of 4)

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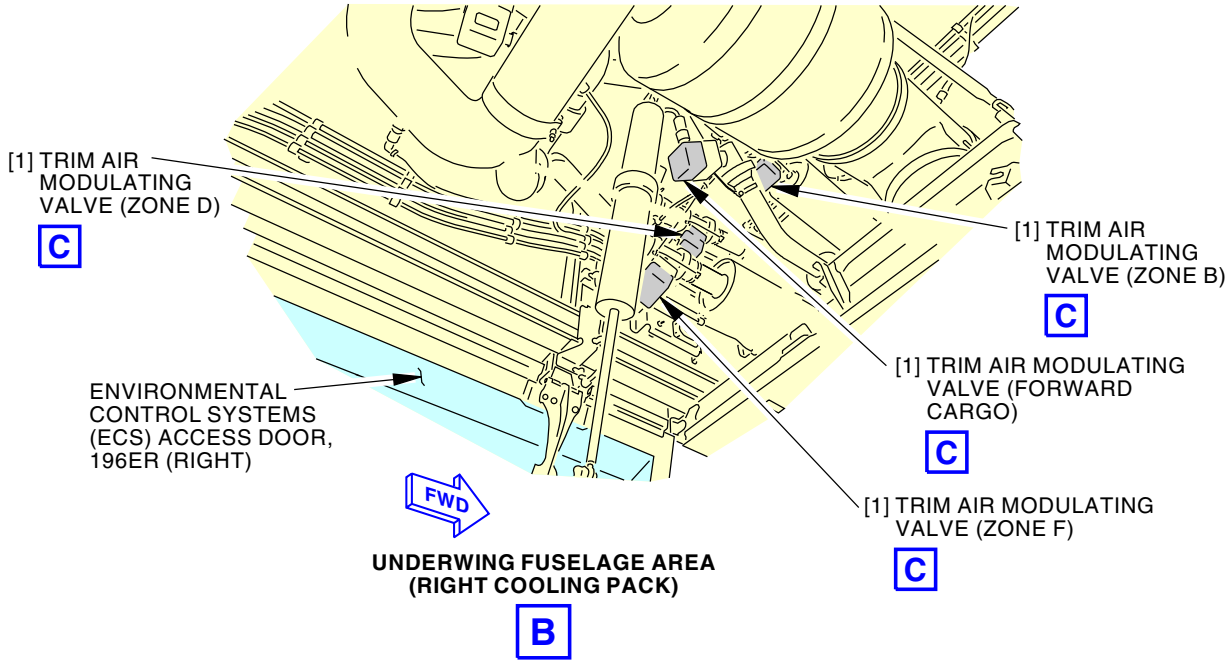

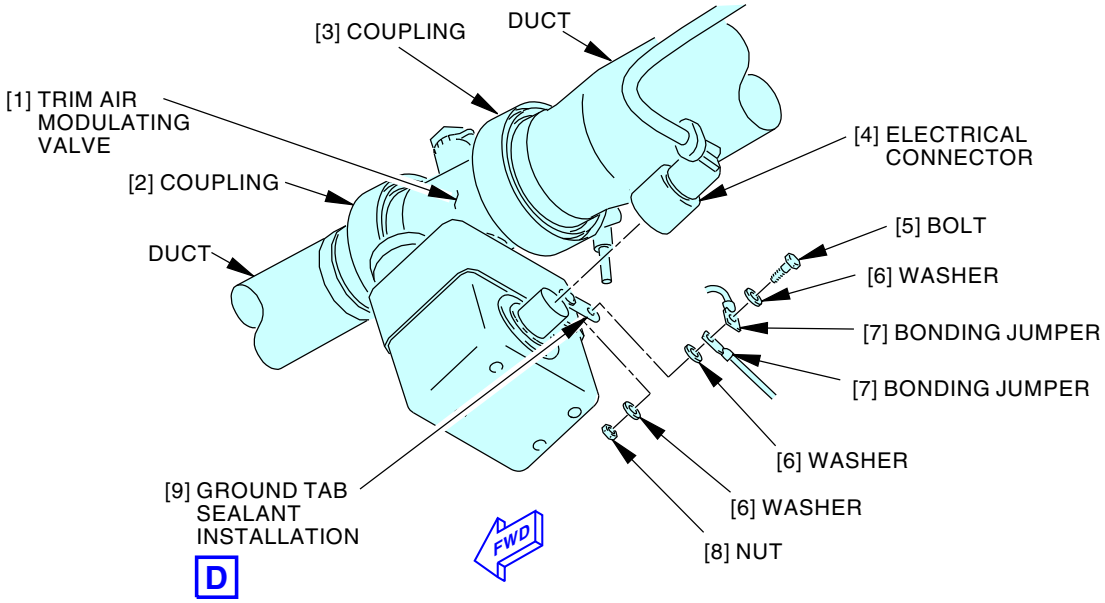

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Zone Trim Air Modulating Valves Installation
Figure 401/21-61-02-990-801 (Sheet 2 of 4)

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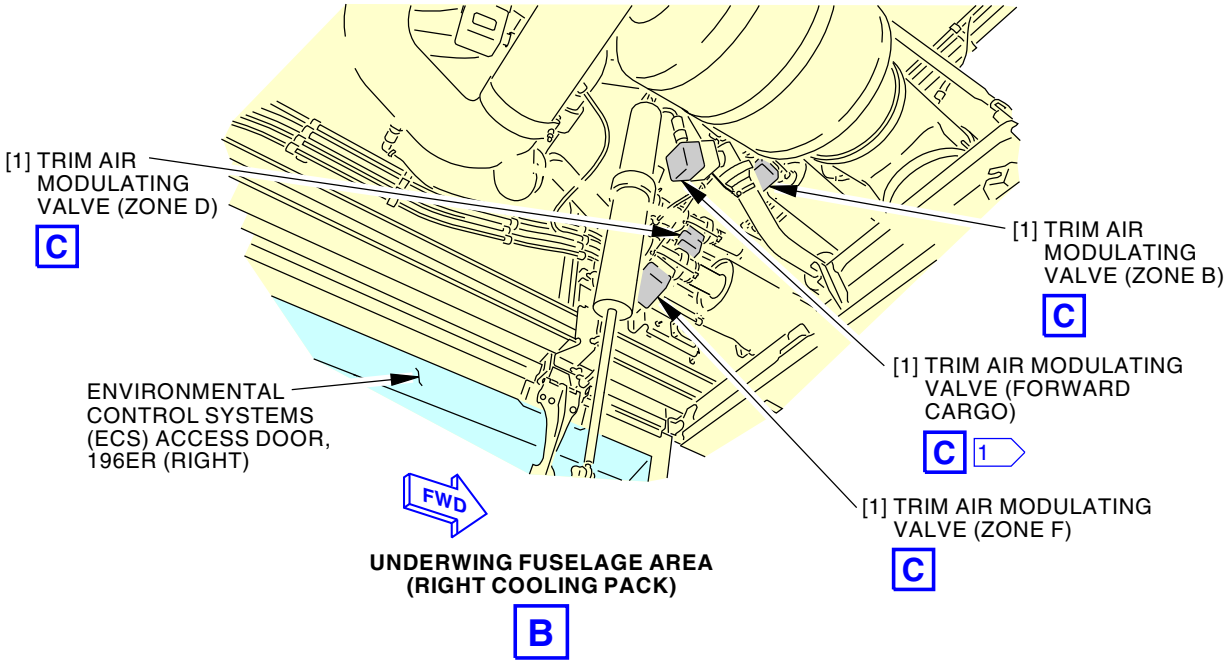

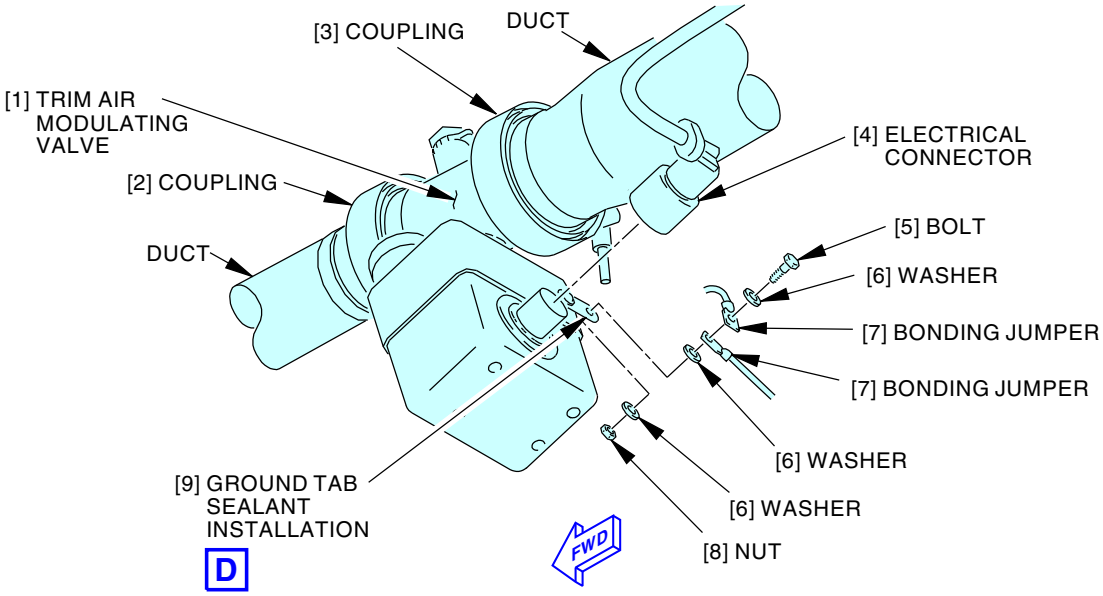

1 AIRPLANES WITH FORWARD CARGO AIR CONDITIONING

L64350 S0006404297_V2

Zone Trim Air Modulating Valves Installation
Figure 401/21-61-02-990-801 (Sheet 3 of 4)

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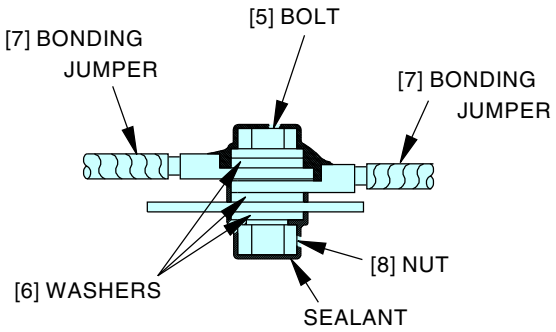

GROUND TAB SEALANT INSTALLATION

D

L19431 S0006404298_V2

Zone Trim Air Modulating Valves Installation
Figure 401/21-61-02-990-801 (Sheet 4 of 4)

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TASK 21-61-02-400-801

3. Zone Trim Air Modulating Valves Installation

(Figure 401)

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)
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (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)
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
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Trim air modulating valve	21-61-02-01-080	ARO ALL

E. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

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G. Zone Trim Air Modulating Valve Installation

SUBTASK 21-61-02-420-001

(1) Put the trim air modulating valve [1] between the two ducts.

SUBTASK 21-61-02-420-002

(2) Install the coupling [2] and the coupling [3].

(a) Tighten the nut on each coupling to 50 in-lb (5.65 N·m) - 60 in-lb (6.78 N·m).

SUBTASK 21-61-02-100-001

(3) To clean the bond surfaces of the ground tab [9], do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

SUBTASK 21-61-02-100-002

(4) To clean the bond surfaces of the bonding jumpers [7] and the washers [6], do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

SUBTASK 21-61-02-420-003

(5) Install the two bonding jumpers [7], bolt [5], three washers [6] and nut [8] onto the ground tab [9] of the valve.

(a) Tighten the nut [8] to a torque of 60 in-lb (6.78 N·m) - 65 in-lb (7.34 N·m).

(b) With the intrinsically safe approved bonding meter, COM-1550, make sure the resistance between the ground tab [9] of the valve and the airplane structure is less than 0.005 ohm (SWPM 20-20-00).

NOTE: Do not put the probe on the bracket to which the bonding jumper attaches.

(c) Apply a thin, continuous layer of sealant, A00247 on the bonding jumper [7] terminal connections (Figure 401, View D).

SUBTASK 21-61-02-420-004

(6) Re-connect the electrical connector [4].

SUBTASK 21-61-02-860-005

(7) If you replaced the valve for the flight deck:

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

Left Power Management Panel, P110

Row	Col	Number	Name
G	1	C21443	F/D TRIM MOD VLV
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	19	C21655	F/D TRIM MOD VLV CTRL
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-61-02-860-006

(8) If you replaced the valve for the zone A, zone C, or zone E:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
H	25	C21641	L CTC CHAN 1 (DC)

SUBTASK 21-61-02-860-013

(9) If you replaced the valve for the zone B, zone D, zone F, or forward cargo compartment:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

H. Zone Trim Air Modulating Valve Installation Test

SUBTASK 21-61-02-860-009

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

SUBTASK 21-61-02-740-001

(2) Use a Maintenance Access Terminal (MAT) to do the System Test of the Trim Air System (TASK 45-10-00-740-808).

NOTE: This test does an electrical check of the trim air modulating valves. While the MAT test is in operation, the applicable valve will open and close.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) (Left, Right) Trim Air System

NOTE: Left Trim Air System does a test of the zone trim air modulating valves for the Flight Deck Zone, Zone A, Zone C and Zone E. Right Trim Air System does a test of the valves for Zone B, Zone D, Zone F, and the Forward Cargo Compartment.

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 21-61-02-860-014

(3) To do a leakage check of the zone trim air modulating valve, do the following steps:

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(a) Do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

(b) Put the Temperature Selector for the applicable zone to the full warm position.

(c) Feel for air leakage around the applicable zone trim air modulating valve. If air leakage is felt, the valve and couplings must be adjusted until air leakage is not felt.

(d) Return the Temperature Selector to its normal position.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-02-860-015

(1) Do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-61-02-410-001

(2)

Close the applicable access panels shown below:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-61-02-410-002

(3) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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ZONE DUCT TEMPERATURE SENSORS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the zone duct temperature sensors

(2) An installation of the zone duct temperature sensors.

B. There are two duct temperature sensors for each of these temperature control zones:

(1) Flight Compartment

(2) Zone A

(3) Zone B

(4) Zone C

(5) Zone D

(6) Zone E

(7) Zone F

TASK 21-61-03-000-801

2. Zone Duct Temperature Sensor Removal

A. References

Reference	Title
25-21-06-000-801	Main Ceiling Panel - Removal (P/B 401)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
233	Area Above Passenger Compartment Ceiling, Left - Section 43
234	Area Above Passenger Compartment Ceiling, Right - Section 43
243	Area Above Passenger Compartment Ceiling, Left - Section 44
244	Area Above Passenger Compartment Ceiling, Right - Section 44

C. Flight Compartment Zone Duct Temperature Sensor Removal

(Figure 401)

SUBTASK 21-61-03-010-001

(1) To get access to the duct temperature sensors for the flight compartment, do the steps that follow:

(a) Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801.

(b) Determine the approximate location of the duct temperature sensors behind the left sidewall liners using the Figure 401.

(c) Remove the left sidewall liner in the forward cargo compartment (TASK 25-52-06-000-801).

SUBTASK 21-61-03-020-008

(2) Disconnect the electical connector [2] from the duct temperature sensor [1].

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SUBTASK 21-61-03-020-009

(3) Remove and discard the lockwire from the duct temperature sensor [1].

SUBTASK 21-61-03-020-001

CAUTION

USE TWO WRENCHES TO REMOVE THE DUCT TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE DUCT TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to remove the duct temperature sensor [1].

(a) Use one wrench to hold the boss and the other wrench to turn the duct temperature sensor [1].

D. Passenger Compartment Zone Duct Temperature Sensor Removal

(Figure 402)

SUBTASK 21-61-03-010-002

(1) Find the applicable duct temperature sensors in the passenger compartment as follows:

(a) Determine the approximate location of the applicable duct temperature sensor above the passenger compartment ceiling using the Figure 402.

(b) Remove the necessary main ceiling panels on the left or right side of the passenger compartment (TASK 25-21-06-000-801).

SUBTASK 21-61-03-020-010

(2) Disconnect the electical connector [2] from the duct temperature sensor [1].

SUBTASK 21-61-03-020-011

(3) Remove and discard the lockwire from the duct temperature sensor [1].

SUBTASK 21-61-03-020-002

CAUTION

USE TWO WRENCHES TO REMOVE THE DUCT TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE DUCT TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to remove the duct temperature sensor [1].

(a) Use one wrench to hold the boss and the other wrench to turn the duct temperature sensor [1].

END OF TASK

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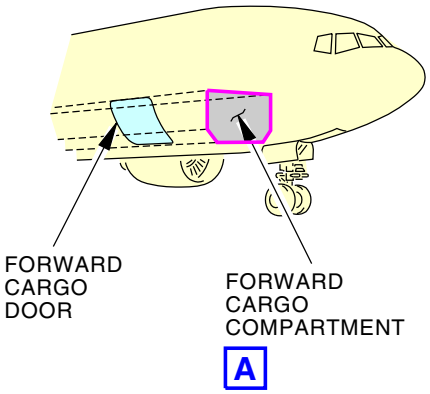

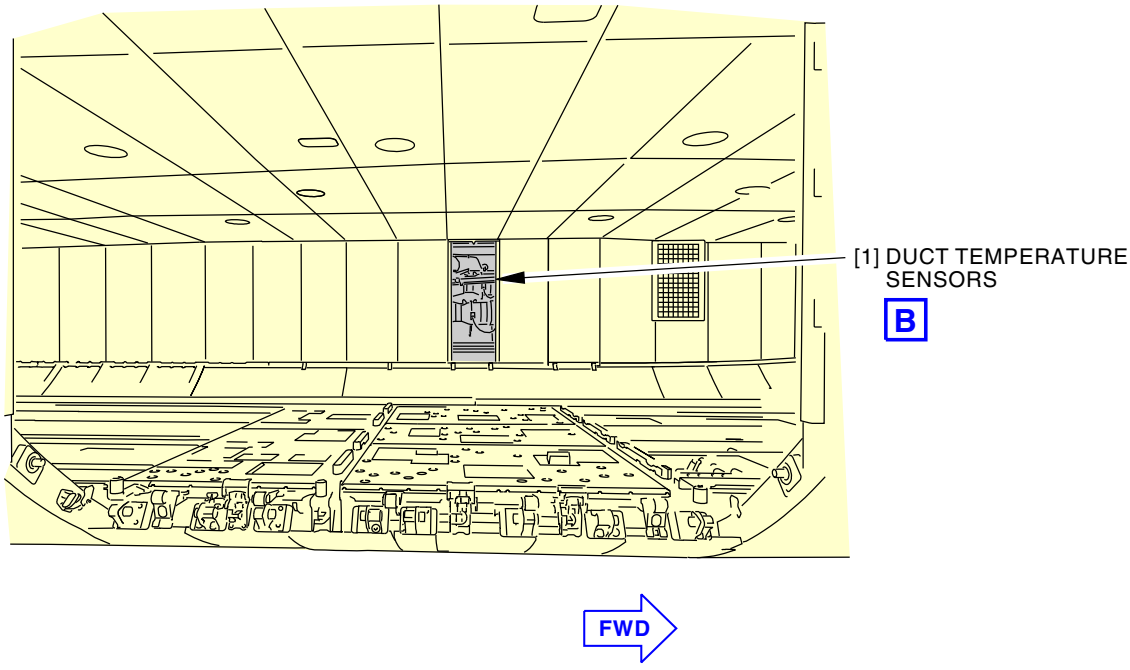

FORWARD CARGO COMPARTMENT

A

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Flight Compartment Zone Duct Temperature Sensors Installation
Figure 401/21-61-03-990-801 (Sheet 1 of 2)

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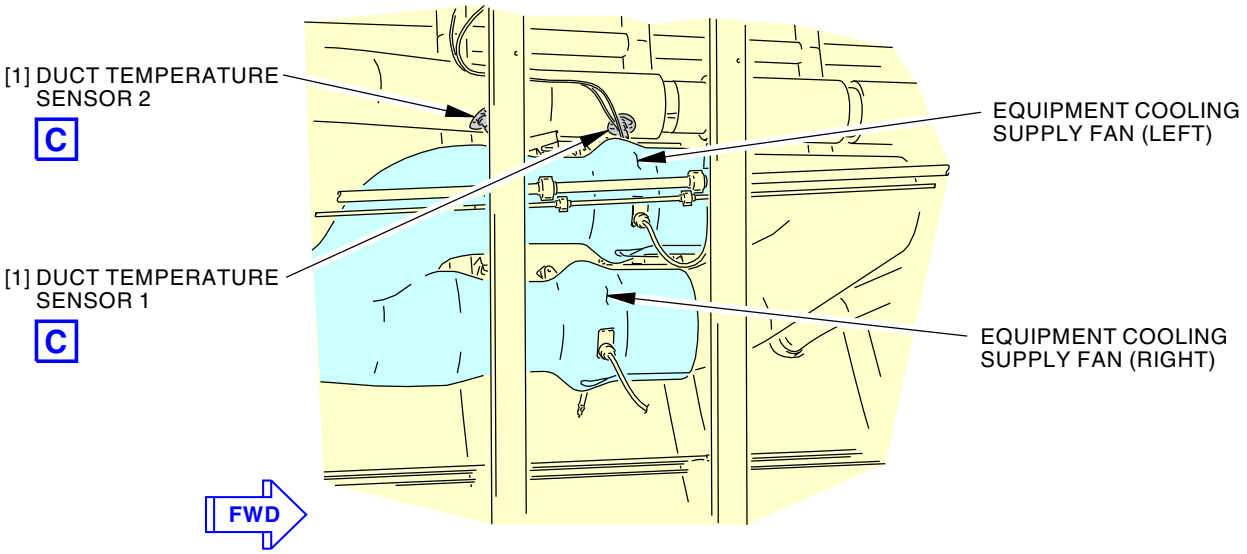
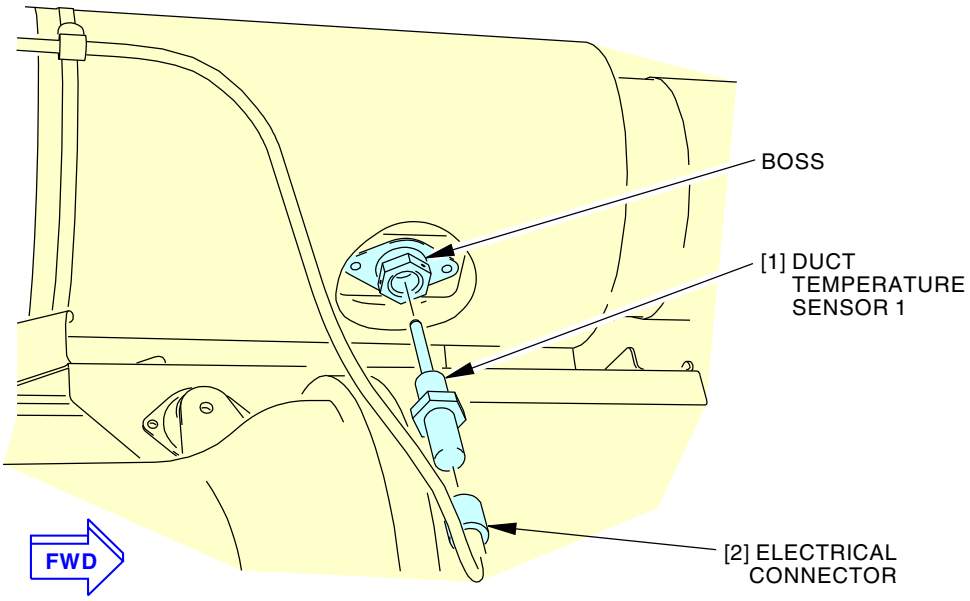


DUCT TEMPERATURE SENSORS

B



DUCT TEMPERATURE SENSOR (EXAMPLE)

C

NOTE: DUCT TEMPERATURE SENSOR 1 INSTALLATION IS SHOWN. DUCT TEMPERATURE SENSOR 2 INSTALLATION IS EQUIVALENT.

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Flight Compartment Zone Duct Temperature Sensors Installation
Figure 401/21-61-03-990-801 (Sheet 2 of 2)

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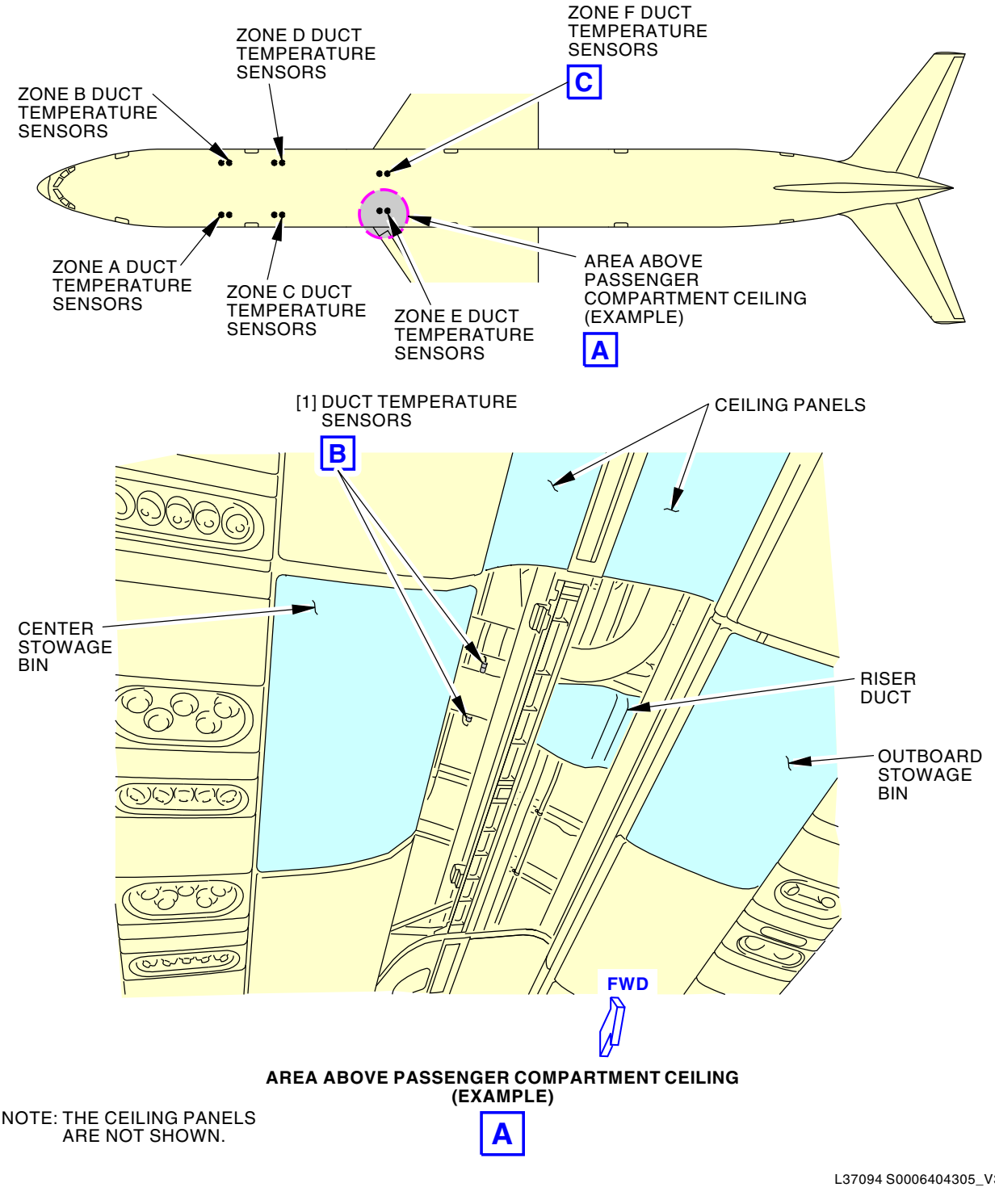

AREA ABOVE PASSENGER COMPARTMENT CEILING (EXAMPLE)

A

NOTE: THE CEILING PANELS ARE NOT SHOWN.

L37094 S0006404305_V3

Passenger Compartment Zone Duct Temperature Sensors Installation
Figure 402/21-61-03-990-802 (Sheet 1 of 3)

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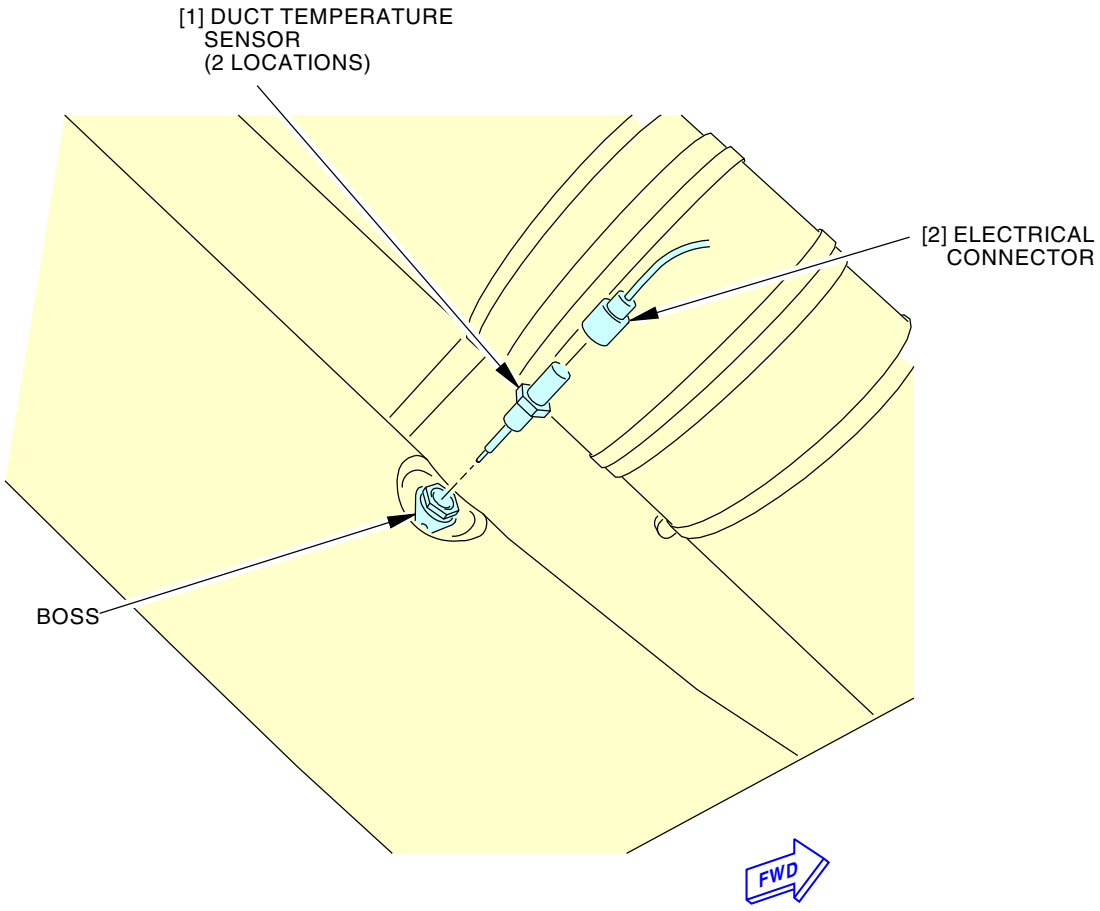

DUCT TEMPERATURE SENSORS (EXAMPLE)

B

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Passenger Compartment Zone Duct Temperature Sensors Installation
Figure 402/21-61-03-990-802 (Sheet 2 of 3)

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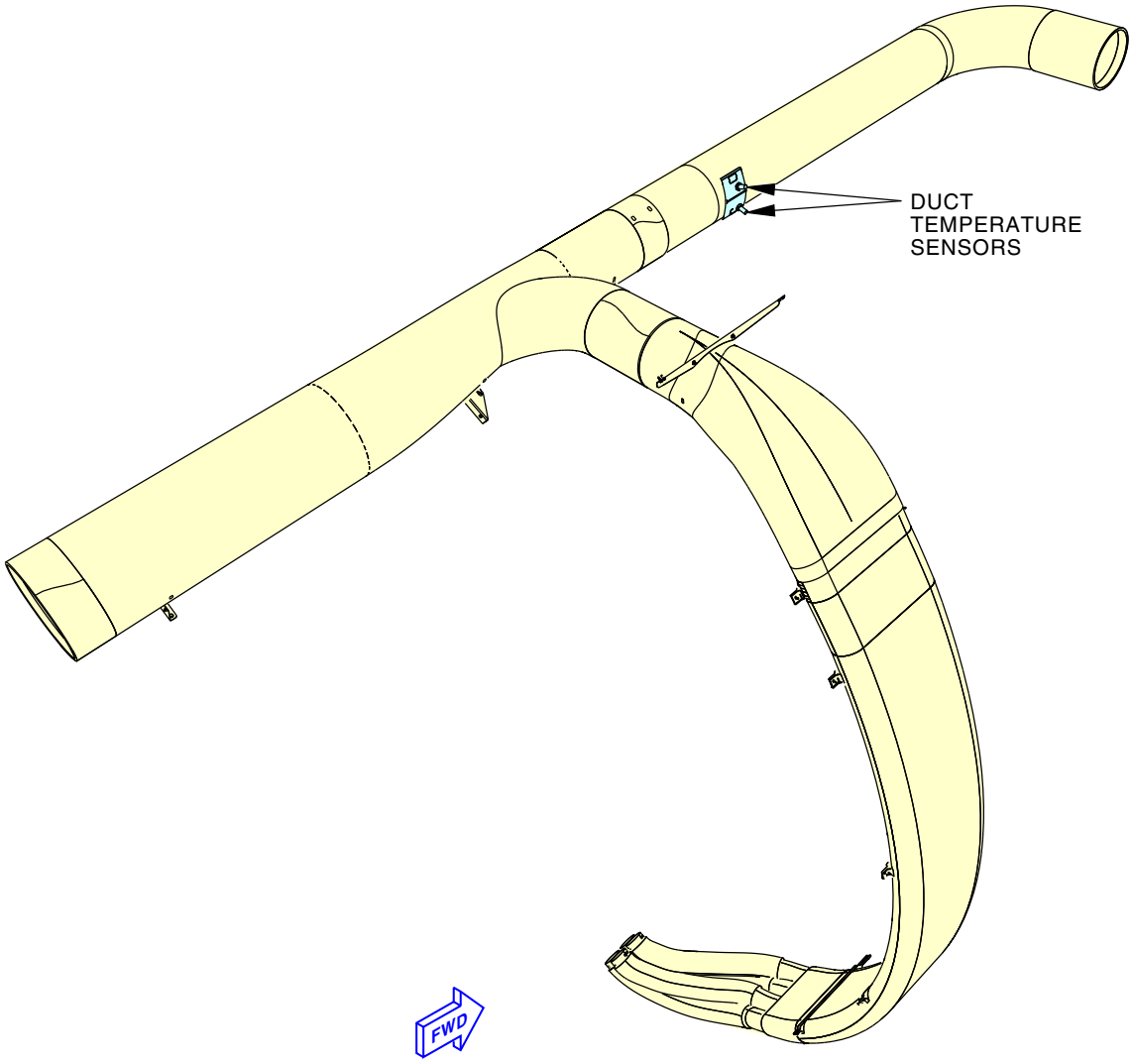

ZONE F DUCT TEMPERATURE SENSORS

C

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Passenger Compartment Zone Duct Temperature Sensors Installation
Figure 402/21-61-03-990-802 (Sheet 3 of 3)

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TASK 21-61-03-400-801

3. Zone Duct Temperature Sensor Installation

(Figure 401, Figure 402)

A. 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)
25-21-06-400-801	Main Ceiling Panel - Installation (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right
233	Area Above Passenger Compartment Ceiling, Left - Section 43
234	Area Above Passenger Compartment Ceiling, Right - Section 43
243	Area Above Passenger Compartment Ceiling, Left - Section 44
244	Area Above Passenger Compartment Ceiling, Right - Section 44

C. Zone Duct Temperature Sensor Installation

SUBTASK 21-61-03-420-001

CAUTION

USE TWO WRENCHES TO INSTALL THE DUCT TEMPERATURE SENSOR IN THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE DUCT TEMPERATURE SENSOR, YOU CAN CAUSE DAMAGE TO THE DUCT.

(1) Use two wrenches to install the duct temperature sensor [1].

(a) Use one wrench to hold the boss and the other wrench to turn the duct temperature sensor [1].

(b) Tighten the duct temperature sensor [1] to 18 in-lb (2 N·m)-24 in-lb (3 N·m).

SUBTASK 21-61-03-420-002

(2) Install a new lockwire to the duct temperature sensor [1].

SUBTASK 21-61-03-420-006

(3) Connect the electical connector [2] to the duct temperature sensor [1].

D. Zone Duct Temperature Sensor Installation Test

SUBTASK 21-61-03-860-001

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

SUBTASK 21-61-03-740-001

(2) Use a Maintenance Access Terminal (MAT) to make sure a maintenance message for the applicable duct temperature sensor does not show (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

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2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

4) 21 Cabin Temperature Control

5) CONTINUE.

(b) Look at the existing faults and make sure a maintenance message for the applicable duct temperature sensor does not show.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-03-410-001

(1) If you installed a duct temperature sensor for the flight compartment, do the steps that follow:

(a) To install the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

(b) Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803.

SUBTASK 21-61-03-410-002

(2) If you installed a duct temperature sensor for one of the passenger compartment zones, do the step that follows:

(a) To install the applicable main ceiling panels, do this task: Main Ceiling Panel - Installation, TASK 25-21-06-400-801.

SUBTASK 21-61-03-860-003-001

(3) If necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

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ZONE AIR TEMPERATURE SENSORS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Flight Compartment Zone Air Temperature Sensors Removal and Installation.

(2) Passenger Compartment Zone Air Temperature Sensors Removal and Installation.

TASK 21-61-04-000-801

2. Zone Air Temperature Sensor Removal

A. References

Reference	Title
25-15-06-000-801	Overhead Lining - Removal (P/B 401)

B. Location Zones

Zone	Area
212	Flight Compartment, Right
221	Passenger Compartment, Left - Section 41
231	Passenger Compartment, Left - Section 43
241	Passenger Compartment, Left - Section 44
251	Passenger Compartment, Left - Section 46
261	Passenger Compartment, Left - Section 47

C. Flight Compartment Zone Air Temperature Sensor Removal

SUBTASK 21-61-04-010-001

(1) Remove the overhead lining on the right side of the flight compartment to get access to the zone air temperature sensor. To remove the overhead lining, do this task: Overhead Lining - Removal, TASK 25-15-06-000-801.

SUBTASK 21-61-04-020-001

(2) Disconnect the electrical connector [1] from the zone air temperature sensor [2].

SUBTASK 21-61-04-020-002

(3) Remove the zone air temperature sensor [2].

D. Passenger Compartment Zone Air Temperature Sensor Removal

SUBTASK 21-61-04-010-002

(1) Find the applicable zone air temperature sensor [21] in the passenger compartment as follows:

(a) Use (Figure 402) to determine the approximate location of the applicable temperature control zone.

(b) Look for the zone air temperature sensor panel along the left sidewall in the passenger compartment of the applicable temperature control zone.

NOTE: You will find the zone air temperature sensor panel below the outboard stowage bins and adjacent to the Passenger Service Units (PSU's). The zone air temperature sensor panel will have an air inlet grille attached to it.

(c) Open the zone air temperature sensor panel as follows to get access to the zone air temperature sensor [21]:

1) Put an allen wrench in the notch at the edge of the zone air temperature sensor panel.

2) Use the allen wrench to push the latch outboard.

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3) Let the zone air temperature sensor panel hang from the opposite end.

4) Look for a placard on the temperature sensor panel to identify the applicable zone air temperature sensor.

SUBTASK 21-61-04-020-003

(2) Disconnect the electrical connector [23] from the zone air temperature sensor [21].

SUBTASK 21-61-04-020-004

(3) Remove the zone air temperature sensor [21].

——— END OF TASK ———

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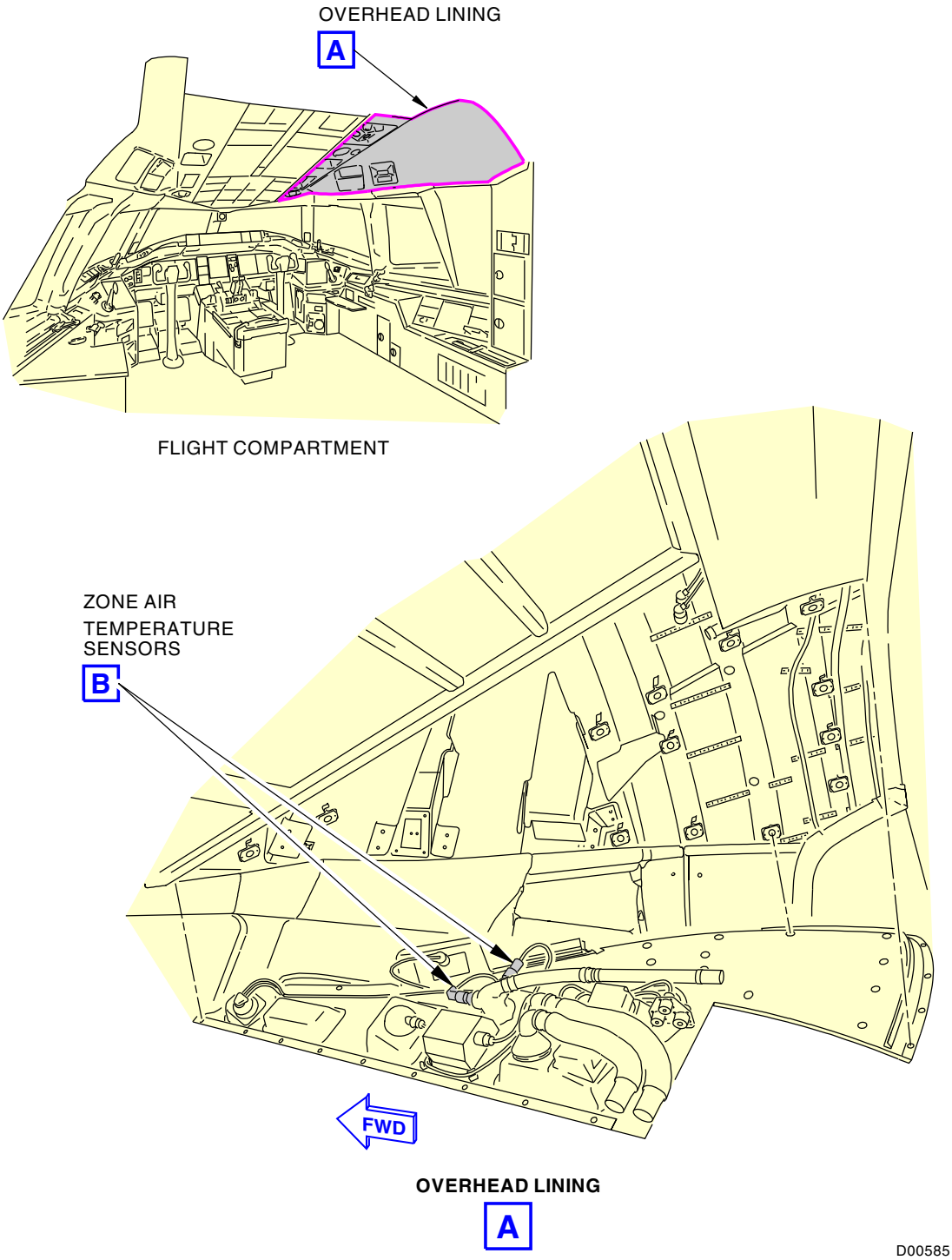

Flight Compartment Zone Air Temperature Sensors Installation
Figure 401/21-61-04-990-801 (Sheet 1 of 2)

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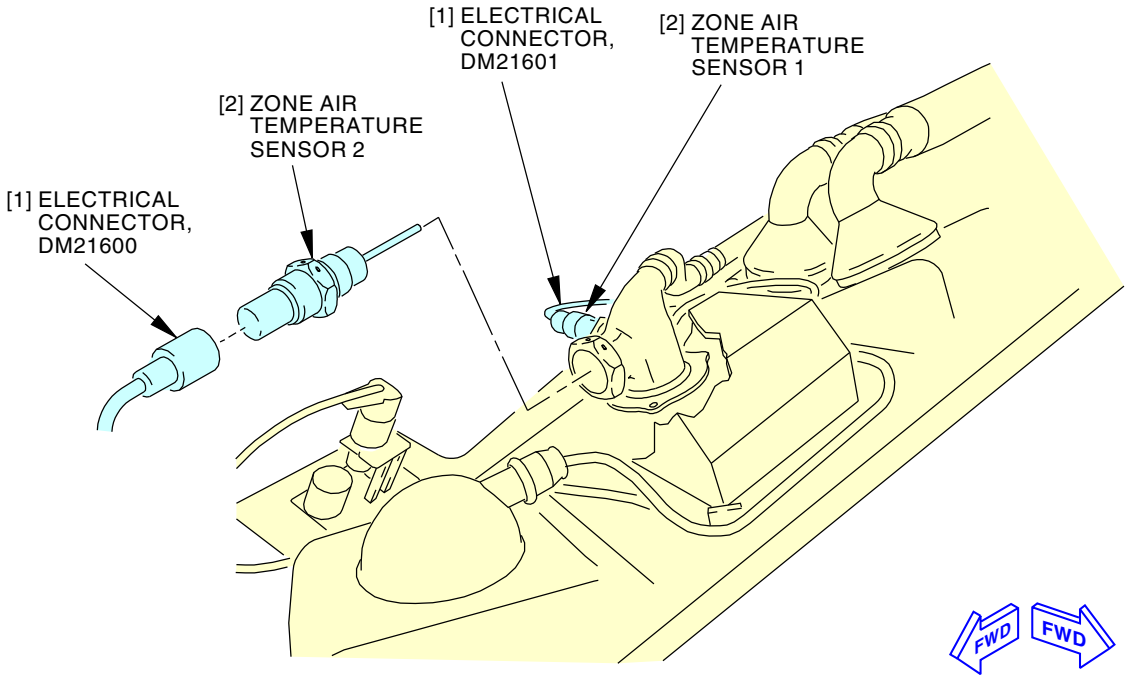

ZONE AIR TEMPERATURE SENSORS

B

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Flight Compartment Zone Air Temperature Sensors Installation
Figure 401/21-61-04-990-801 (Sheet 2 of 2)

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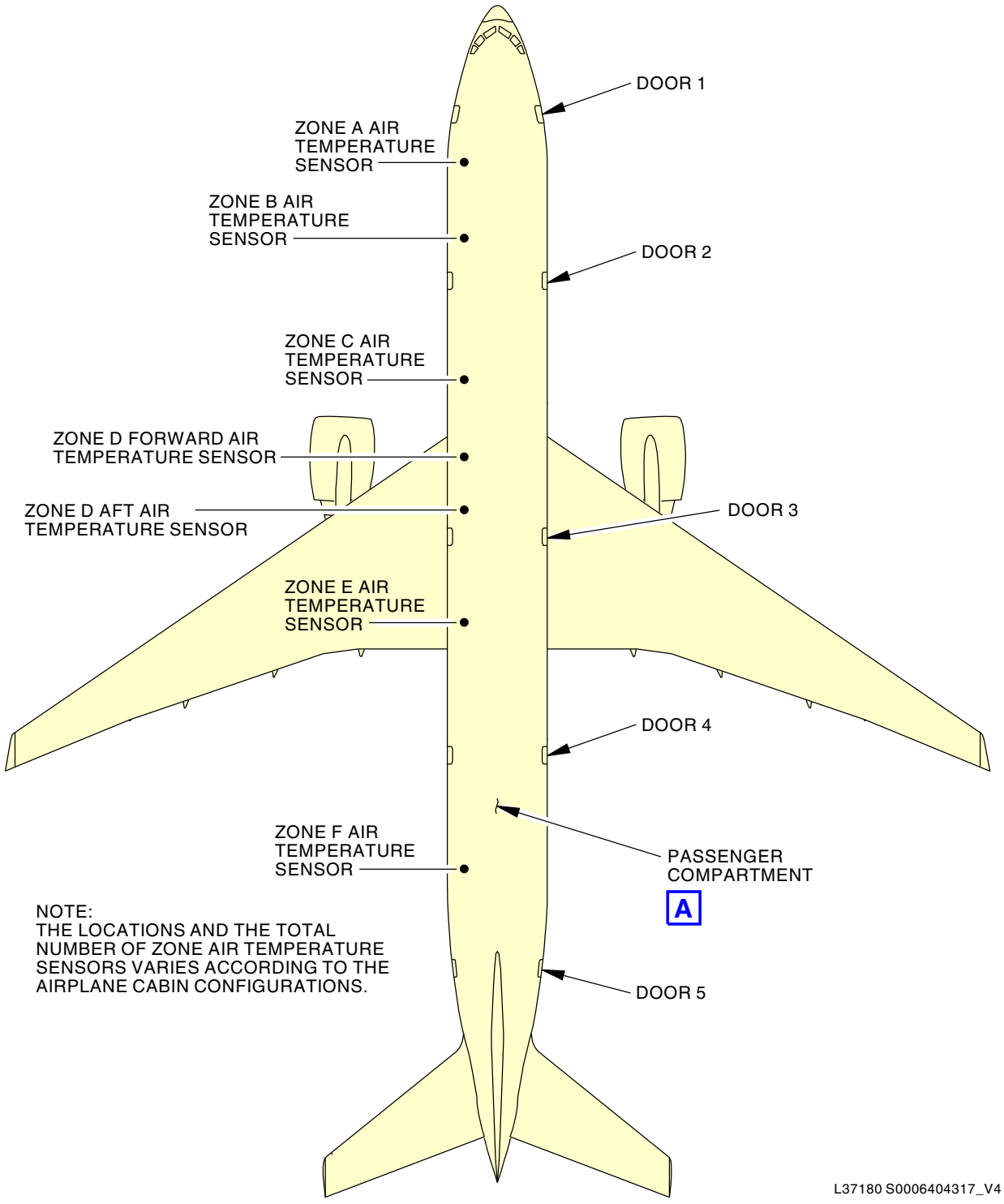

Passenger Compartment Zone Air Temperature Sensor Installation
Figure 402/21-61-04-990-802 (Sheet 1 of 2)

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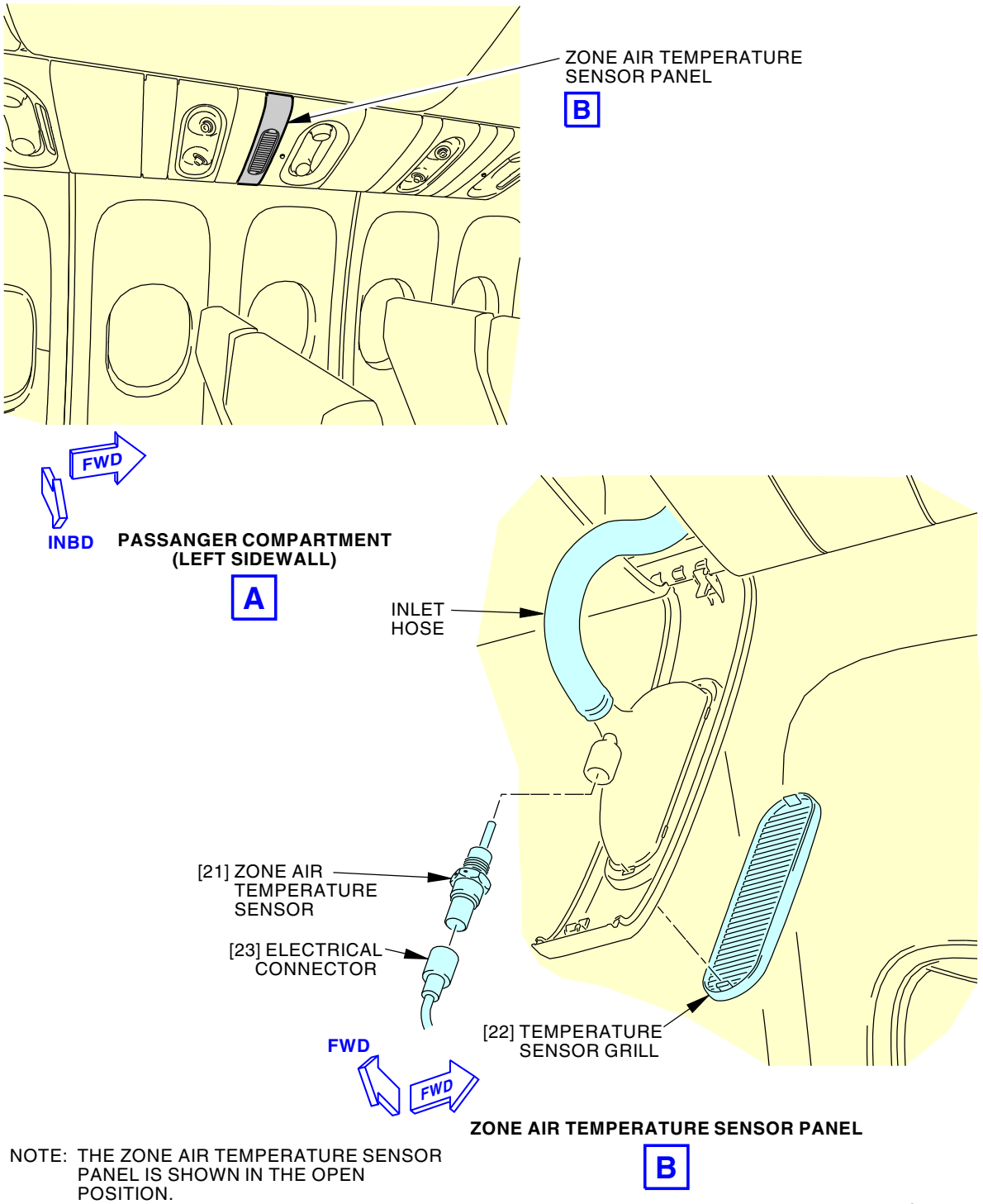

Passenger Compartment Zone Air Temperature Sensor Installation
Figure 402/21-61-04-990-802 (Sheet 2 of 2)

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TASK 21-61-04-400-801

3. Zone Air Temperature Sensor Installation

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-15-06-400-801	Overhead Lining - Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Sensor	21-61-04-01F-010	ARO ALL

C. Location Zones

Zone	Area
212	Flight Compartment, Right
221	Passenger Compartment, Left - Section 41
231	Passenger Compartment, Left - Section 43
241	Passenger Compartment, Left - Section 44
251	Passenger Compartment, Left - Section 46
261	Passenger Compartment, Left - Section 47

D. Flight Compartment Zone Air Temperature Sensor Installation

(Figure 401)

SUBTASK 21-61-04-420-001

(1) Install the zone air temperature sensor [2].

SUBTASK 21-61-04-420-002

(2) Connect the electrical connector [1] to the zone air temperature sensor [2].

SUBTASK 21-61-04-410-001

(3) To install the overhead lining, do this task: Overhead Lining - Installation, TASK 25-15-06-400-801.

E. Passenger Compartment Zone Air Temperature Sensor Installation

(Figure 402)

SUBTASK 21-61-04-420-003

(1) Install the zone air temperature sensor [21].

SUBTASK 21-61-04-420-004

(2) Connect the electrical connector [23] to the zone air temperature sensor [21].

SUBTASK 21-61-04-410-002

(3) Push the zone air temperature sensor panel up until you hear the latch engage.

F. Zone Air Temperature Sensor Installation Test

SUBTASK 21-61-04-860-001

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

SUBTASK 21-61-04-740-001

(2) Use a maintenance access terminal (MAT) to look for maintenance messages for the applicable Zone Air Temperature Sensor. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

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(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS
4) 21 Cabin Temperature Control
5) CONTINUE

(b) Make sure the MAT shows NOT ACTIVE for the applicable zone air temperature sensor maintenance message (or an applicable maintenance message does not show).

END OF TASK

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ZONE AIR TEMPERATURE SENSOR - CLEANING/PAINTING

1. General

A. This procedure is for cleaning the zone air temperature sensors in the flight compartment or in the passenger compartment.

B. The same temperature sensor is used for the flight compartment and the passenger compartment.

C. Two temperature sensors are installed in the flight compartment. The sensors are located in the same housing above the overhead lining assembly.

D. The passenger compartment temperature sensors are located in overhead panels on the left side of the airplane. Each temperature control zone has at least one temperature sensor panel. Each temperature sensor panel has one sensor installed in its own housing. The number of sensors installed in the airplane, and their location, can be different for each interior arrangement.

NOTE: Look for the air inlet grill to find the exact location of a passenger compartment temperature sensor.

E. Air is drawn past each temperature sensor by the lavatory/galley ventilation fan. An air inlet grill at each sensor location keeps unwanted material out of the ventilation duct.

TASK 21-61-04-000-802

2. Zone Air Temperature Sensor - Cleaning

(Figure 701, Figure 702)

A. References

Reference	Title
21-61-04-000-801	Zone Air Temperature Sensor Removal (P/B 401)
21-61-04-400-801	Zone Air Temperature Sensor Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
B00541	Cleaner - General Purpose Household Detergent	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Temperature sensor grill	21-61-17-01-020	ARO ALL
4	Zone air temperature sensor	21-61-17-01-050	ARO ALL
22	Temperature sensor grill	21-61-04-01F-005	ARO ALL

D. Location Zones

Zone	Area
212	Flight Compartment, Right
221	Passenger Compartment, Left - Section 41
231	Passenger Compartment, Left - Section 43
241	Passenger Compartment, Left - Section 44
251	Passenger Compartment, Left - Section 46
261	Passenger Compartment, Left - Section 47

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E. Prepare to Clean the Temperature Sensor

SUBTASK 21-61-04-010-003

(1) Do these steps to get access to the flight compartment zone air temperature sensor [4], housing, and temperature sensor grill [1]:

(a) Remove the screws [2] to remove the temperature sensor grill [1] from the overhead lining.

(b) Remove the zone air temperature sensor [4] (TASK 21-61-04-000-801).

SUBTASK 21-61-04-020-005

(2) Do these steps to get access to the passenger compartment zone air temperature sensor [21], housing, and temperature sensor grill [22]:

(a) Remove the temperature sensor grill [22] by twisting it and at the same time pulling it away from the temperature sensor panel.

(b) Remove the zone air temperature sensor [21] (TASK 21-61-04-000-801).

F. Clean the Temperature Sensor

SUBTASK 21-61-04-140-001

(1) Do these steps to clean the temperature sensor:

(a) Remove all dust and unwanted material from the housing, temperature sensor, and grill.

CAUTION

DO NOT GET WATER OR CLEANER ON THE CONNECTOR PINS OF THE TEMPERATURE SENSOR. THIS CAN CAUSE DAMAGE TO THE TEMPERATURE SENSOR.

(b) Wash the temperature sensor with a clean cloth that is moist with a mixture of general purpose household detergent cleaner, B00541, and water.

CAUTION

DO NOT GET WATER OR FLUSH THE CONNECTOR PINS OF THE TEMPERATURE SENSOR. THIS CAN CAUSE DAMAGE TO THE TEMPERATURE SENSOR.

(c) Flush the temperature sensor with a clean cloth that is moist with clean water.

(d) Wash the inside of the housing with a clean cloth that is moist with a mixture of general purpose household detergent cleaner, B00541, and water.

(e) Flush the inside of the housing with a clean cloth that is moist with clean water.

(f) Wash the grill with a mixture of general purpose household detergent cleaner, B00541, and water.

(g) Flush the grill with clean water.

(h) Dry the housing, temperature sensor, and grill with a dry cloth or compressed air.

G. Clean the Inlet Hose

SUBTASK 21-61-04-100-001

(1) Do these steps to inspect and clean the inlet hose:

(a) Remove the inlet hose section.

1) Make sure that the plastic tie attached to the Zone Air Temperature Sensor housing inlet hose is removed.

(b) Look into the inlet hose section for any obstruction or unwanted material.

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(c) Remove any obstruction or unwanted material.

(d) Install the inlet hose section.

1) Make sure to install the plastic tie to the Zone Air Temperature Sensor housing inlet hose.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-04-410-003

(1) Do these steps to install the flight compartment zone air temperature sensor [4]:

(a) Install the zone air temperature sensor [4] (TASK 21-61-04-400-801).

(b) Use the screws [2] to install the temperature sensor grill [1] on the overhead lining.

SUBTASK 21-61-04-410-004

(2) Do these steps to install the passenger compartment zone air temperature sensor [21]:

(a) Install the zone air temperature sensor [21] (TASK 21-61-04-400-801).

(b) Install the temperature sensor grill [22] by aligning the mounting prongs with the slots and pushing the temperature sensor grill [22] toward the temperature sensor panel until it is latched in position.

I. Temperature Sensor Installation Test

SUBTASK 21-61-04-860-003

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

SUBTASK 21-61-04-740-002

(2) Use a Maintenance Access Terminal (MAT) to look for maintenance messages for the applicable Zone Air Temperature Sensor (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

4) 21 Cabin Temperature Control

5) CONTINUE

(b) Make sure the MAT shows NOT ACTIVE for the applicable zone air temperature sensor maintenance message (or an applicable maintenance message does not show).

SUBTASK 21-61-04-860-006-001

(3) Remove electrical power if it is not necessary (TASK 24-22-00-860-806).

——— END OF TASK ———

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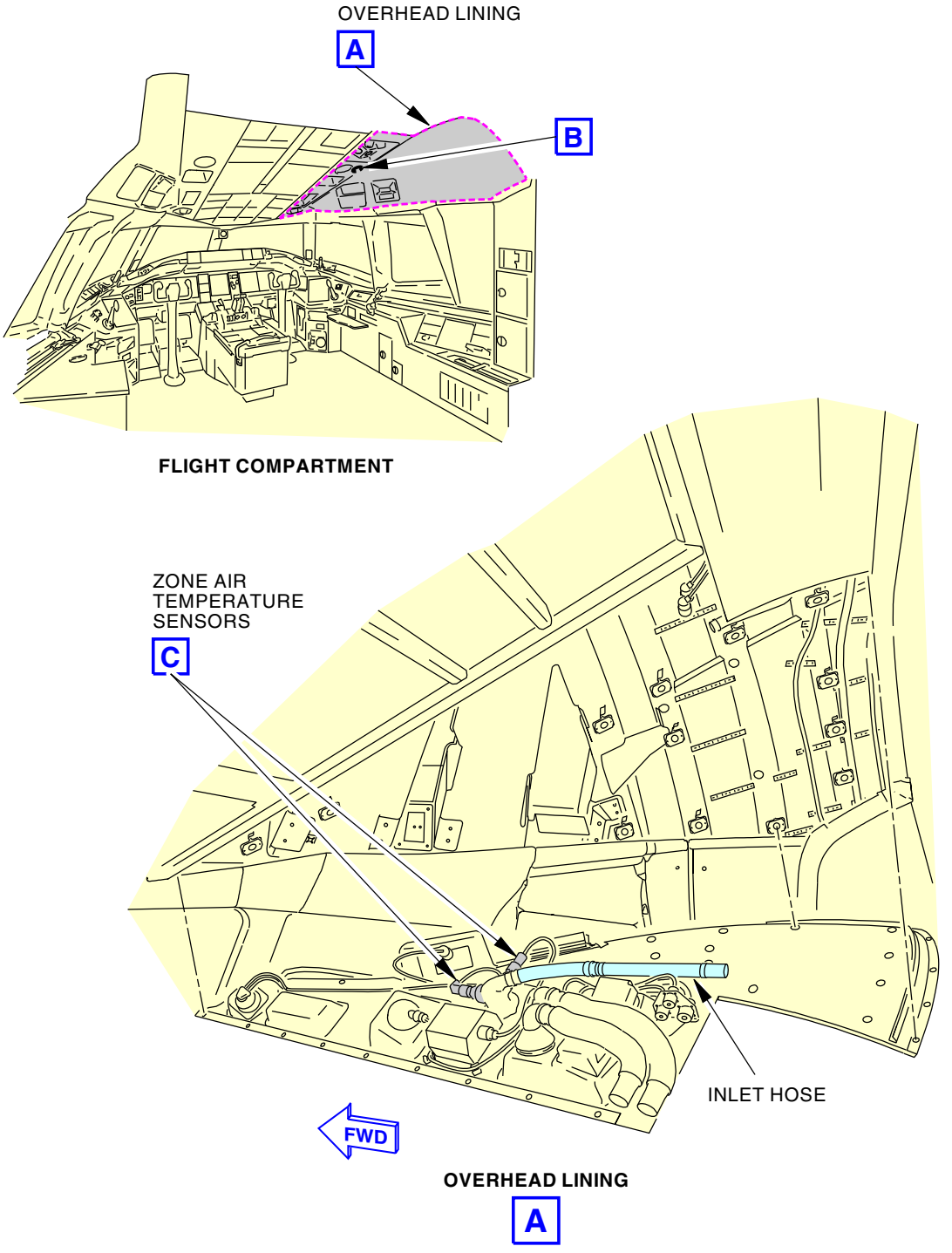

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Flight Compartment Zone Air Temperature Sensor Cleaning
Figure 701/21-61-04-990-803 (Sheet 1 of 2)

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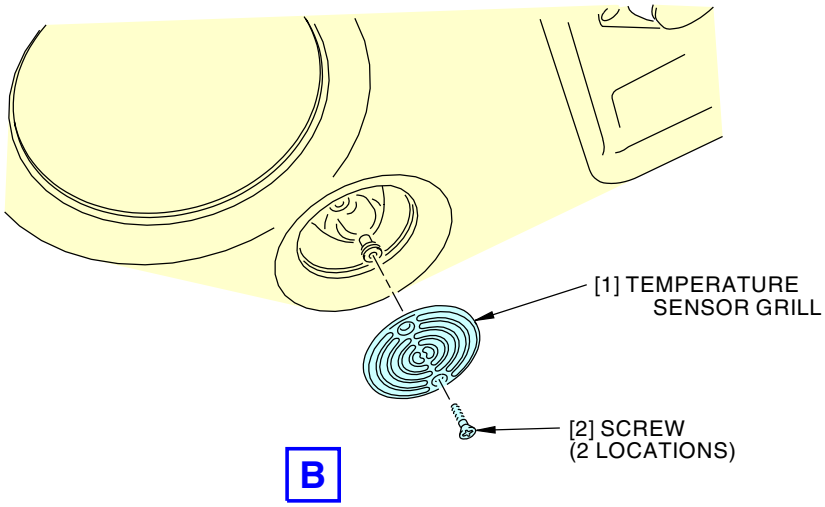

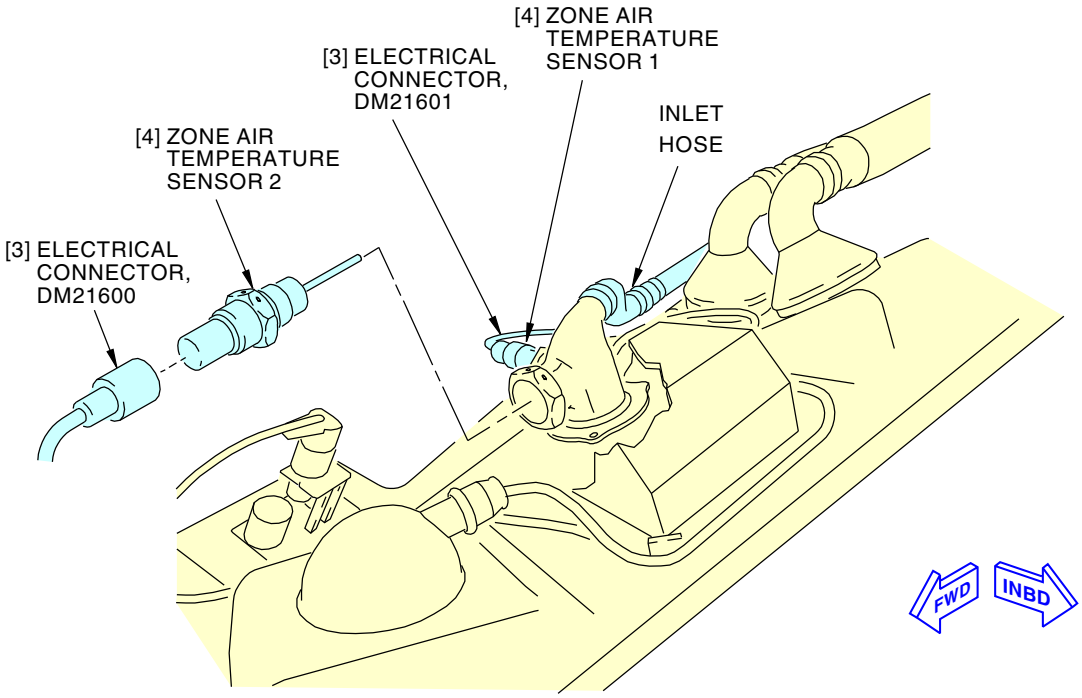

G10199 S0006404327_V2

Flight Compartment Zone Air Temperature Sensor Cleaning
Figure 701/21-61-04-990-803 (Sheet 2 of 2)

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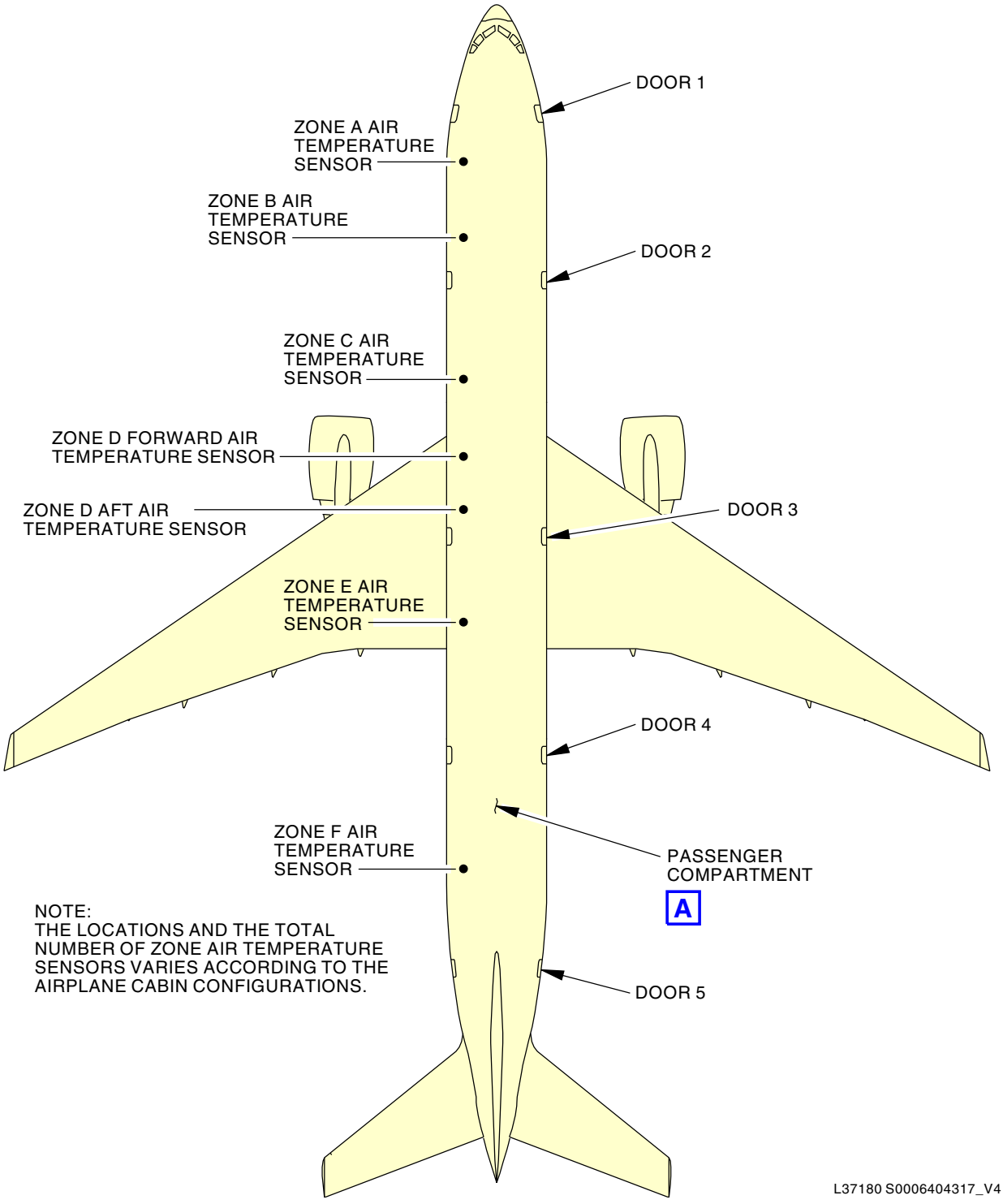

Passenger Compartment Zone Air Temperature Sensor Cleaning
Figure 702/21-61-04-990-808 (Sheet 1 of 2)

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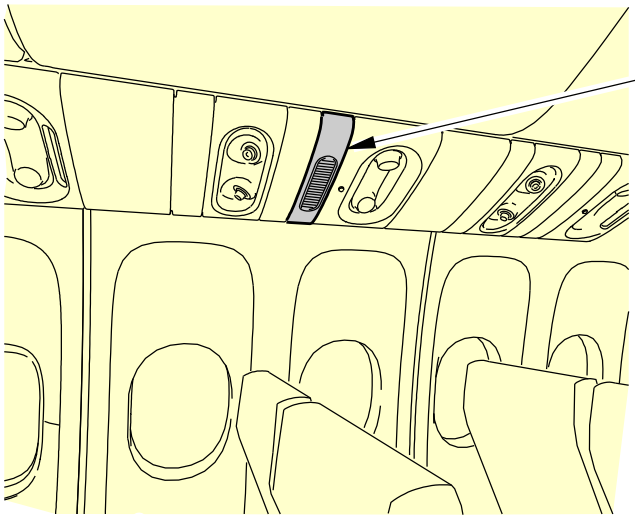

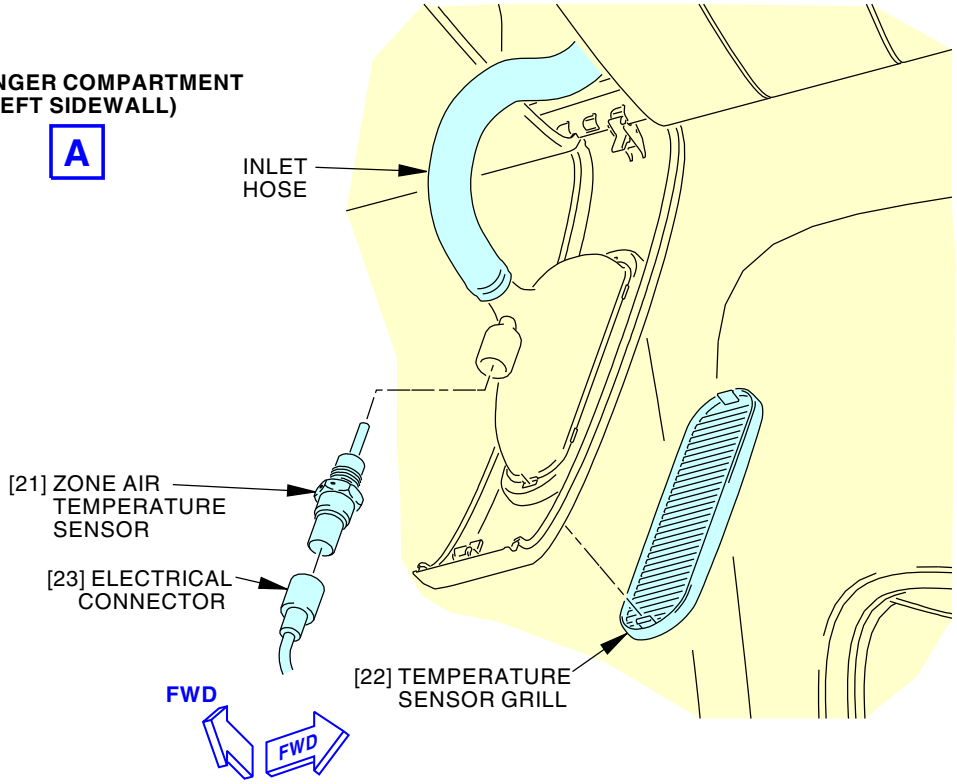

ZONE AIR TEMPERATURE SENSOR PANEL
B

NOTE: THE ZONE AIR TEMPERATURE SENSOR PANEL IS SHOWN IN THE OPEN POSITION.

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Passenger Compartment Zone Air Temperature Sensor Cleaning
Figure 702/21-61-04-990-808 (Sheet 2 of 2)

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ZONE TEMPERATURE SELECTORS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Zone Temperature Selector Removal

(2) Zone Temperature Selector Installation

B. There are two zone temperature selectors, the FLT DECK TEMP selector and the CABIN TEMP selector. The zone temperature selectors are on the AIR CONDITIONING module which is found on the Pilot's Overhead Panel, P5. The zone temperature selectors control the temperature in the flight deck and the passenger cabin.

C. The FLT DECK TEMP selector has two modes, the AUTO mode and the MAN mode. The AUTO mode lets the flight crew select a target temperature for the flight deck between the AUTO C position 65°F (18.3°C) and the AUTO W position 85°F (29.4°C). The MAN mode lets the flight crew manually set the Flight Deck Trim Modulating Valve between the fully closed position (MAN C) and the fully open position (MAN W).

D. The CABIN TEMP selector only has an automatic mode. The flight crew selects a master target temperature (between the AUTO C and AUTO W positions) for all of the temperature control zones in the passenger cabin. The master target temperature for the AUTO C position corresponds to 65°F (18.3°C). The master target temperature for the AUTO W position corresponds to 85°F (29.4°C). From the Cabin System Control Panel (CSCP) in the passenger cabin, the target temperature in each of the temperature control zones can be changed ±10 °F (±5.5 °C) from the master target temperature as long as the CSCP target temperature is within the limits of 65°F (18.3°C) and 85°F (29.4°C).

TASK 21-61-05-000-801

2. Zone Temperature Selector Removal

(Figure 401)

A. General

(1) The FLT DECK TEMP and CABIN TEMP zone temperature selectors are on the AIR CONDITIONING module which is found on the Pilot's Overhead Panel, P5.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 21-61-05-860-005

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-61-05-010-001

(2) Do the steps that follow to get access to the zone temperature selector switch [4] at the backside of the AIR CONDITIONING module which is on the Pilot's Overhead Panel, P5:

(a) Turn the six quater-turn fasteners [1] which hold the AIR CONDITIONING module to the Pilot's Overhead Panel, P5.

(b) Carefully lower the AIR CONDITIONING module out of the Pilot's Overhead Panel, P5 to get access to the zone temperature selector switch [4].

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SUBTASK 21-61-05-020-001

(3) Disconnect the electrical connector [3] from the zone temperature selector switch [4].

SUBTASK 21-61-05-020-002

(4) Loosen the setscrews [5] which hold the knob [6] on the zone temperature selector switch [4].

SUBTASK 21-61-05-020-003

(5) Remove the knob [6] from the zone temperature selector switch [4].

SUBTASK 21-61-05-020-004

(6) Remove the nut [7] which attaches the zone temperature selector switch [4] to the AIR CONDITIONING module.

SUBTASK 21-61-05-020-005

(7) Remove the washer [2] from the zone temperature selector switch [4].

SUBTASK 21-61-05-020-006

(8) Remove the zone temperature selector switch [4].

——— END OF TASK ———

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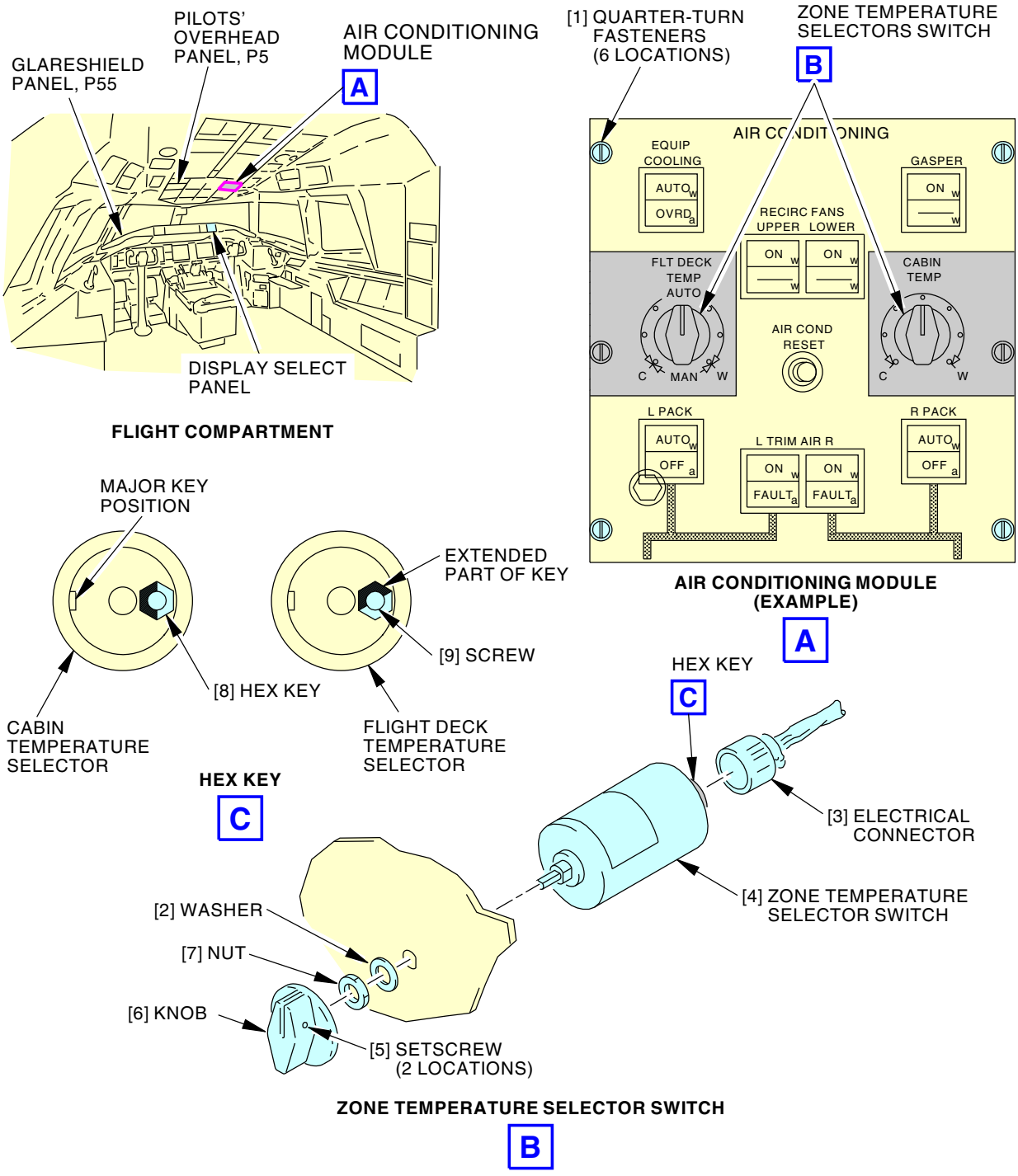

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Zone Temperature Selector Installation
Figure 401/21-61-05-990-801

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TASK 21-61-05-400-801

3. Zone Temperature Selector Installation

(Figure 401)

A. General

(1) The FLT DECK TEMP and CABIN TEMP zone temperature selectors are on the AIR CONDITIONING module which is found on the Pilot's Overhead Panel, P5.

B. References

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

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Zone temperature selector switch	21-61-05-01A-015	ARO ALL
		21-61-05-01A-020	ARO ALL

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Zone Temperature Selector Installation

SUBTASK 21-61-05-420-001

(1) Put the zone temperature selector switch [4] through the hole in the AIR CONDITIONING module.

SUBTASK 21-61-05-420-002

(2) Install the washer [2] on the zone temperature selector switch [4].

SUBTASK 21-61-05-420-003

(3) Install the nut [7] on the zone temperature selector switch [4].

(a) Carefully tighten the nut [7] until it touches the washer [2].

SUBTASK 21-61-05-420-006

(4) Install the knob [6] and tighten the setscrews [5].

SUBTASK 21-61-05-420-005

(5) Do these steps to put the hex key [8] on the zone temperature selector switch [4] in its correct position:

(a) Look at the back of the zone temperature selector switch [4] you installed.

1) If the hex key [8] is not in the correct position, do these steps:

a) Remove the screw [9] from the center of the hex key [8].

b) Remove the hex key [8] from the zone temperature selector switch [4].

c) Install the hex key [8] on the zone temperature selector switch [4] body so that it matches the illustration (View C, Figure 401).

NOTE: The darkened area on the illustration represents the extended part of the hex key.

d) Install the screw [9] in the hex key [8].

SUBTASK 21-61-05-420-004

(6) Connect the electrical connector [3] to the zone temperature selector switch [4].

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SUBTASK 21-61-05-410-001

(7) Do the steps that follow to install the AIR CONDITIONING module into the Pilot's Overhead Panel, P5:

(a) Put the AIR CONDITIONING module into the Forward Overhead Panel, P5.

(b) Turn the six quater-turn fasteners [1].

F. Zone Temperature Selector Installation Test

SUBTASK 21-61-05-860-001

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

SUBTASK 21-61-05-860-002

(2) Push the L INBD, LWR CTR, or the R INBD button on the Display Select Panel which is found on the Glareshield Panel, P55.

SUBTASK 21-61-05-860-003

(3) Push the AIR button on the Display Select Panel.

NOTE: This shows the AIR synoptic page on the L INBD, LWR CTR, or the R INBD display unit (DU).

SUBTASK 21-61-05-210-002

(4) If you installed the FLT DECK TEMP selector, do the steps that follow:

(a) Do these steps to make sure the FLT DECK TEMP selector operates in the AUTO mode:

1) Put the FLT DECK TEMP selector in the AUTO C position.

2) Make sure the target temperature for the F/D indication shows 65°F (18.3°C) on the synoptic page.

NOTE: The target temperature is shown in magenta (left indication) and the actual temperature is shown in white (right indication).

3) Put the FLT DECK TEMP selector in the AUTO W position.

4) Make sure the target temperature for the F/D indication shows 85°F (29.4°C) on the synoptic page.

(b) Do these steps to make sure the FLT DECK TEMP selector operates in the MAN mode:

1) Put the FLT DECK TEMP selector in the MAN C position.

2) Make sure the F/D TRIM indication on the synoptic page moves toward the C (Cold) position.

3) Put the FLT DECK TEMP selector in the MAN W position.

4) Make sure the F/D TRIM indication on the synoptic page moves toward the W (Warm) position.

5) Put the FLT DECK TEMP selector in the 12 o'clock AUTO position.

SUBTASK 21-61-05-210-003

(5) If you installed the CABIN TEMP selector, do the steps that follow to make sure the CABIN TEMP selector operates in the AUTO mode:

(a) Put the CABIN TEMP selector in the AUTO C position.

(b) Make sure the target temperature for the MASTER indication shows 65°F (18.3°C) on the synoptic page.

(c) Put the CABIN TEMP selector in the AUTO W position.

(d) Make sure the target temperature for the MASTER indication shows 85°F (29.4°C) on the synoptic page.

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(e) Put the CABIN TEMP selector in the 12 o'clock AUTO position.

——— END OF TASK ———

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FORWARD CARGO TEMPERATURE SELECTOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Forward Cargo Temperature Selector Removal

(2) Forward Cargo Temperature Selector Installation

B. The FWD CARGO A/C temperature selector is located on the miscellaneous switching module, M21315.

NOTE: The miscellaneous switching module is found on the forward overhead panel, P5.

C. The FWD CARGO A/C temperature selector controls the temperature in the forward cargo compartment.

D. The FWD CARGO A/C temperature selector has two modes. The AUTO mode is for the transport of live animals or perishable goods. The OFF mode is for the transport of standard cargo. When the AUTO mode is selected, the forward cargo compartment receives a mixture of cool air from the mix manifold and warm trim air. When the OFF mode is selected, the forward cargo compartment receives a more economical supply of warm air from the main equipment center exhaust.

E. In the AUTO mode the flight crew selects a target temperature for the forward cargo compartment between the AUTO C position (40 °F/4.4 °C) and the AUTO W position (80 °F/26.7 °C).

F. In the OFF mode warm air from the main equipment center flows into the forward cargo compartment when the total air temperature falls below 50 °F (10.0 °C).

TASK 21-61-07-000-801

2. Forward Cargo Temperature Selector Removal

(Figure 401)

A. General

(1) The FWD CARGO A/C temperature selector is located on the miscellaneous switching module, M21315.

NOTE: The miscellaneous switching module is located on the Forward Overhead Panel, P5.

B. References

Reference	Title
24-22-00-860-806	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 21-61-07-860-001

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

SUBTASK 21-61-07-020-001

(2) Loosen the set screws [6] which hold the knob [7] on the shaft of the rotary switch [4].

SUBTASK 21-61-07-020-002

(3) Remove the knob [7] from the rotary switch [4].

SUBTASK 21-61-07-010-001

(4) Do these steps to get access to the rear of the forward cargo temperature selector:

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(a) Loosen the four quarter-turn fasteners [1] which hold the miscellaneous switching module, M21315 to the Forward Overhead Panel, P5.

(b) Carefully lower the module out of the Forward Overhead Panel, P5.

SUBTASK 21-61-07-020-003

(5) Disconnect the electrical connector [3] from the rotary switch [4].

SUBTASK 21-61-07-020-004

(6) Remove the nut [8] which holds the rotary switch [4] to the miscellaneous switching module, M21315.

SUBTASK 21-61-07-020-005

(7) Remove the washer [2] from the rotary switch [4].

SUBTASK 21-61-07-020-006

(8) Remove the rotary switch [4].

SUBTASK 21-61-07-210-001

(9) Examine the O-ring [5] for damage or deterioration.

(a) Discard the O-ring [5] if it has damage or deterioration.

——— END OF TASK ———

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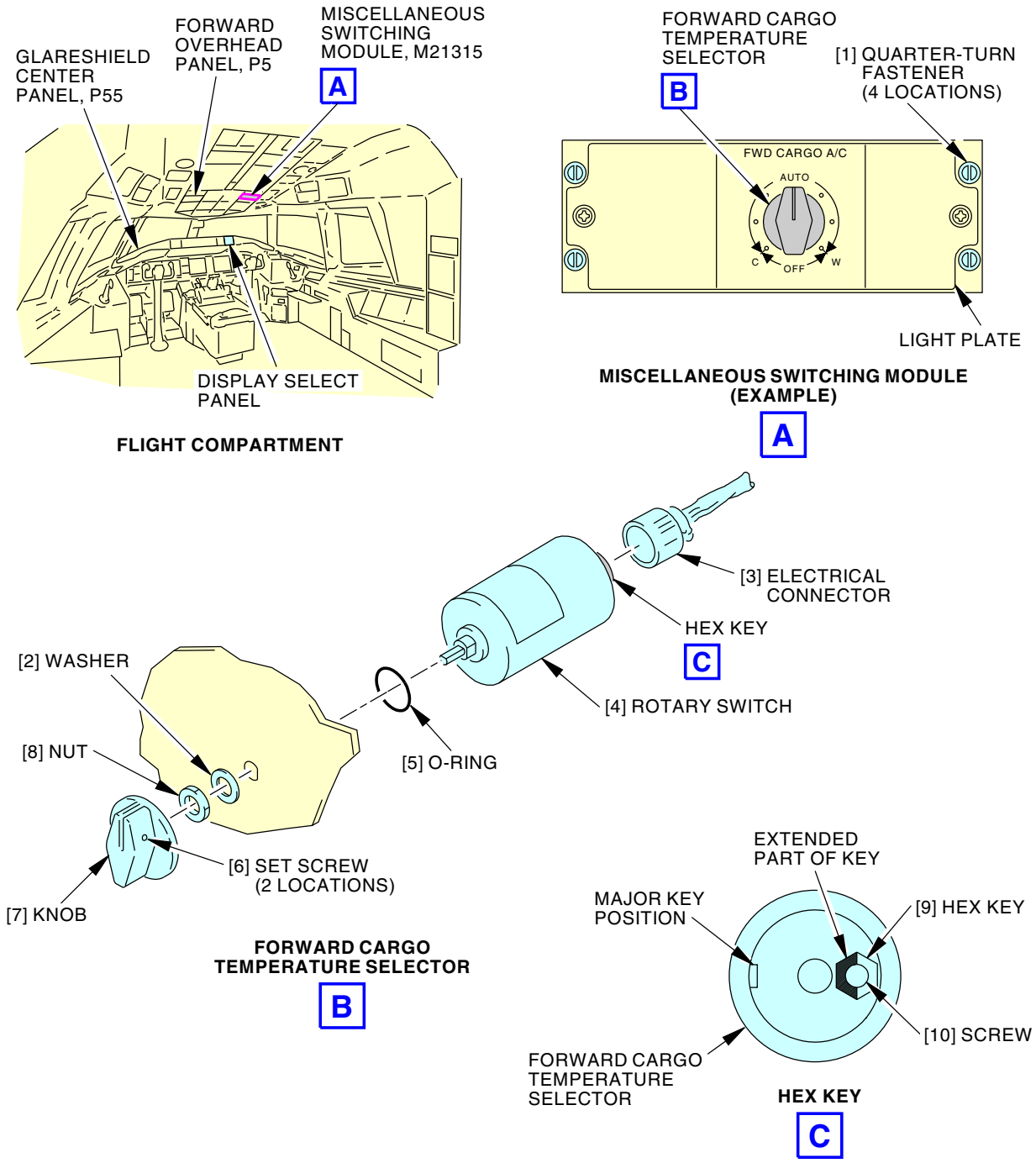

Forward Cargo Temperature Selector Installation
Figure 401/21-61-07-990-801

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TASK 21-61-07-400-801

3. Forward Cargo Temperature Selector Installation

(Figure 401)

A. General

(1) The FWD CARGO A/C temperature selector is located on the miscellaneous switching module, M21315.

NOTE: The miscellaneous switching module is located on the Forward Overhead Panel, P5.

B. References

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

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Switch	21-61-07-02-020	ARO ALL
7	Knob	21-61-07-02-010	ARO ALL

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Forward Cargo Temperature Selector Installation

SUBTASK 21-61-07-420-001

(1) Install the O-ring [5] onto the rotary switch [4].

SUBTASK 21-61-07-420-002

(2) Put the shaft of the rotary switch [4] through the hole in the miscellaneous switching module, M21315.

SUBTASK 21-61-07-420-003

(3) Install the washer [2] onto the rotary switch [4].

SUBTASK 21-61-07-420-004

(4) Install the nut [8] onto the rotary switch [4].

(a) Carefully tighten the nut [8] until it touches the washer [2].

SUBTASK 21-61-07-420-008

(5) Do these steps to put the key on the rotary switch [4] in its correct position:

(a) Look at the back of the rotary switch [4] you installed.

1) If the hex key [9] is not in the correct position, do these steps:

a) Remove the screw [10] from the center of the hex key [9].

b) Remove the hex key [9] from the rotary switch [4].

c) Install the hex key [9] in the rotary switch [4] body so that it matches the illustration, (View C, Figure 401).

NOTE: The darkened area on the illustration represents the extended part of the hex key.

d) Install the screw [10] in the hex key [9].

SUBTASK 21-61-07-420-005

(6) Reconnect the electrical connector [3] to the rotary switch [4].

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SUBTASK 21-61-07-410-001

(7) Do these steps to reinstall the miscellaneous switching module, M21315, into the Forward Overhead Panel, P5:

(a) Carefully lift the module into the forward overhead panel.

(b) Tighten the four quarter-turn fasteners [1] that hold the module to the forward overhead panel.

SUBTASK 21-61-07-420-006

(8) Install the knob [7] onto the shaft of the rotary switch [4].

SUBTASK 21-61-07-420-007

(9) Tighten the set screws [6].

F. Forward Cargo Temperature Selector Installation Test

SUBTASK 21-61-07-860-002

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

SUBTASK 21-61-07-860-003

(2) Push the L INBD, LWR CTR, or the R INBD button on the display select panel.

NOTE: The display select panel is located on the Glareshield Center Panel, P55.

SUBTASK 21-61-07-860-004

(3) Push the AIR button on the Display Select Panel.

NOTE: This shows the AIR synoptic page on the L INBD, LWR CTR, or the R INBD display unit.

SUBTASK 21-61-07-710-001

(4) Do these steps to test the FWD CARGO A/C temperature selector:

(a) Put the FWD CARGO A/C temperature selector in the AUTO C position.

(b) Make sure the target temperature for the FWD indication shows 40°F (4.4°C) on the synoptic page.

NOTE: The target temperature is shown in magenta (left indication) and the actual temperature is shown in white (right indication).

(c) Put the FWD CARGO A/C temperature selector in the AUTO W position.

(d) Make sure the target temperature for the FWD indication shows 80°F (26.7°C) on the synoptic page.

(e) Put the FWD CARGO A/C temperature selector in the OFF position.

(f) Make sure the target temperature indication is blank.

SUBTASK 21-61-07-810-001

(5) If you find a fault in the forward cargo temperature selector, then do the steps in the FIM to correct the fault.

——— END OF TASK ———

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FORWARD CARGO COMPARTMENT TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the forward cargo compartment temperature sensor

(2) An installation of the forward cargo compartment temperature sensor.

B. There are two temperature sensors in the forward cargo compartment. The removal and installation is similar for the two sensors.

C. The forward cargo compartment temperature sensors are single element thermistors. The resistance across each temperature sensor changes as the temperature of the thermistor changes. The right CTC monitors the resistance of the two temperature sensors to determine the temperature of the forward cargo compartment.

TASK 21-61-08-000-801

2. Forward Cargo Compartment Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left

C. Prepare for the Removal

SUBTASK 21-61-08-860-001

(1) Make sure that the FWD CARGO A/C switch, on the miscellaneous switching module, M21315, is in the OFF position.

NOTE: The miscellaneous switching module is located on the P5 overhead panel.

(a) Attach a DO-NOT-OPERATE tag to the switch.

SUBTASK 21-61-08-010-001

(2) Do these steps to get access to the forward cargo compartment temperature sensors:

(a) 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.

(b) For temperature sensor 1, M21637:

1) To remove the left sidewall liner at Station 482, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

(c) For temperature sensor 2, M21636:

1) To remove the left sidewall liner at Station 904, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

D. Forward Cargo Compartment Temperature Sensor Removal

SUBTASK 21-61-08-020-001

(1) Disconnect the electrical connector [2] from the forward cargo compartment temperature sensor [1].

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SUBTASK 21-61-08-020-002

(2) Remove the lockwire which holds the forward cargo compartment temperature sensor [1] to the boss on the box assembly.

SUBTASK 21-61-08-020-003

(3) Turn the forward cargo compartment temperature sensor [1] counterclockwise until you can remove it from the boss.

——— END OF TASK ———

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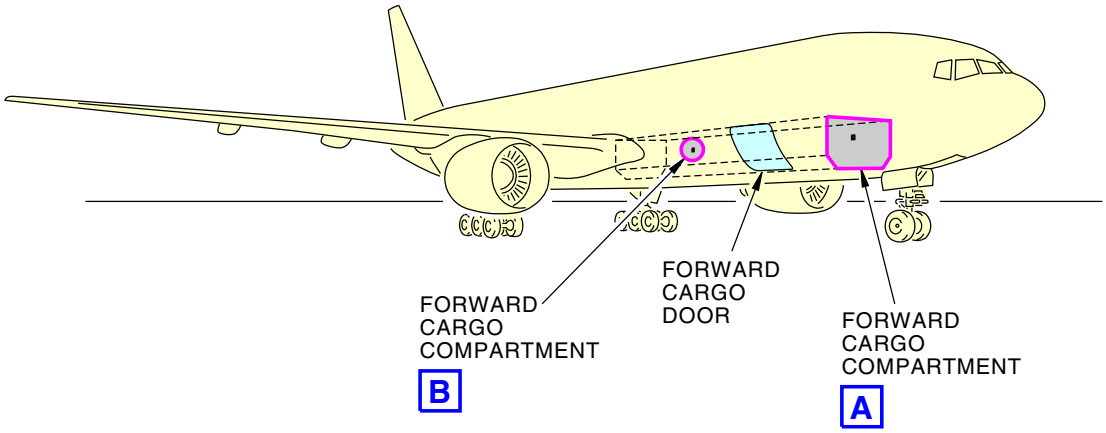

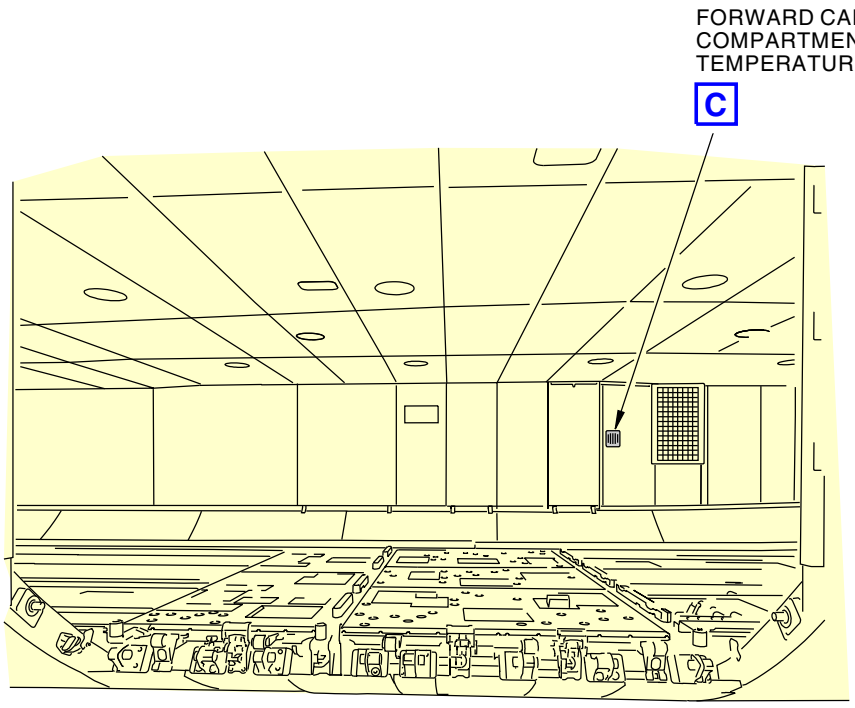

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Forward Cargo Compartment Temperature Sensor Installation
Figure 401/21-61-08-990-801 (Sheet 1 of 3)

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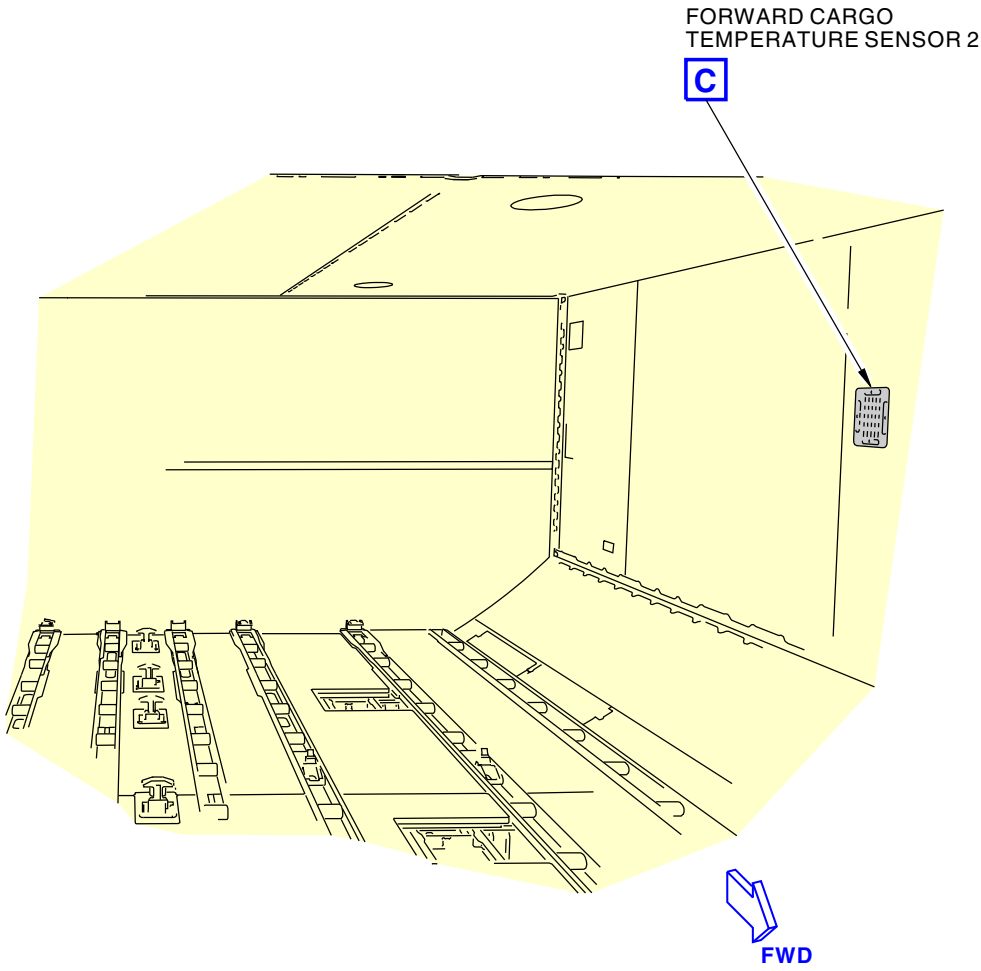

FORWARD CARGO COMPARTMENT

B

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Forward Cargo Compartment Temperature Sensor Installation
Figure 401/21-61-08-990-801 (Sheet 2 of 3)

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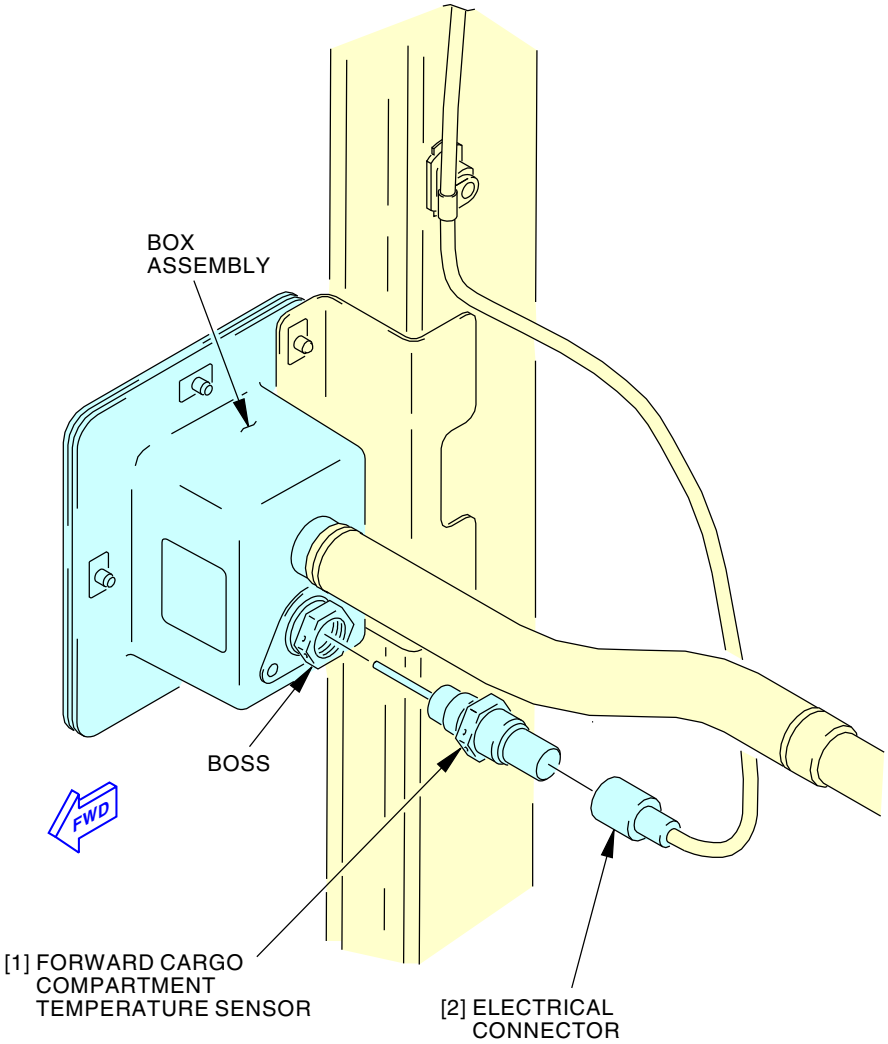

**FORWARD CARGO COMPARTMENT
TEMPERATURE SENSOR
(EXAMPLE)**

C

NOTE: THE SIDEWALL LINER IS NOT SHOWN.

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**Forward Cargo Compartment Temperature Sensor Installation
Figure 401/21-61-08-990-801 (Sheet 3 of 3)**

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TASK 21-61-08-400-801

3. Forward Cargo Compartment Temperature Sensor Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Forward cargo compartment temperature sensor	21-43-02-01-030	ARO ALL
		21-43-02-02-045	ARO ALL

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
212	Flight Compartment, Right

D. Forward Cargo Compartment Temperature Sensor Installation

SUBTASK 21-61-08-420-001

(1) Put the forward cargo compartment temperature sensor [1] into the boss on the box assembly.

SUBTASK 21-61-08-420-002

(2) Turn the forward cargo compartment temperature sensor [1] clockwise until it is fully in the boss.

SUBTASK 21-61-08-420-003

(3) Tighten the forward cargo compartment temperature sensor [1] to 10 in-lb (1.13 N·m) - 20 in-lb (2.26 N·m).

SUBTASK 21-61-08-420-004

(4) Install a new lockwire to hold the forward cargo compartment temperature sensor [1] to the boss.

SUBTASK 21-61-08-420-005

(5) Connect the electrical connector [2] to the forward cargo compartment temperature sensor [1].

E. Forward Cargo Compartment Temperature Sensor Installation Test

SUBTASK 21-61-08-860-002

(1) Remove the DO-NOT-OPERATE tag from the FWD CARGO A/C switch, on the miscellaneous switching module, M21315.

NOTE: The miscellaneous switching module is on the P5 overhead panel.

SUBTASK 21-61-08-860-003

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

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SUBTASK 21-61-08-740-001

(3) Use a Maintenance Access Terminal (MAT) to make sure a maintenance message for the forward cargo compartment temperature sensor does not show.

(a) Do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(b) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

4) 21 Cabin Temperature Control

5) CONTINUE

(c) Look at the existing faults and make sure a maintenance message for the forward cargo temperature sensor does not show.

(d) If a maintenance message for the forward cargo temperature sensor does show, then do the steps in the FIM to correct the fault.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-08-410-001

(1) Reinstall the left sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 21-61-08-410-002

(2) 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.

——— END OF TASK ———

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FORWARD CARGO AIR CONDITIONING (FCAC) ZONE DUCT TEMPERATURE SENSORS - REMOVAL/ INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the FCAC duct temperature sensors

(2) An installation of the FCAC duct temperature sensors.

TASK 21-61-09-000-801

2. Forward Cargo Air Conditioning (FCAC) Duct Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft End Wall Removal (P/B 401)
52-34-00-860-801	Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-61-09-01A-030	ARO ALL
3	O-ring	21-61-09-01A-020	ARO ALL

C. Location Zones

Zone	Area
126	Area Aft of Forward Cargo Compartment, Right

D. FCAC Duct Temperature Sensor Removal

SUBTASK 21-61-09-010-001

(1) Do these steps to get access to the duct temperature sensors [1] for the forward cargo compartment:

(a) 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.

(b) Remove the aft end wall in the forward cargo compartment, do this task: Forward Cargo Compartment Aft End Wall Removal, TASK 25-52-17-000-801.

SUBTASK 21-61-09-020-001

(2) Disconnect the electrical connector [2] from the duct temperature sensor [1].

SUBTASK 21-61-09-020-002

(3) Remove and discard the lockwire from the duct temperature sensor [1].

SUBTASK 21-61-09-020-003

CAUTION

USE TWO WRENCHES TO REMOVE THE DUCT TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE DUCT TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(4) Remove the duct temperature sensor [1].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the duct temperature sensor [1].

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SUBTASK 21-61-09-020-005

(5) Remove and discard the o-ring [3] from the duct temperature sensor [1].

——— END OF TASK ———

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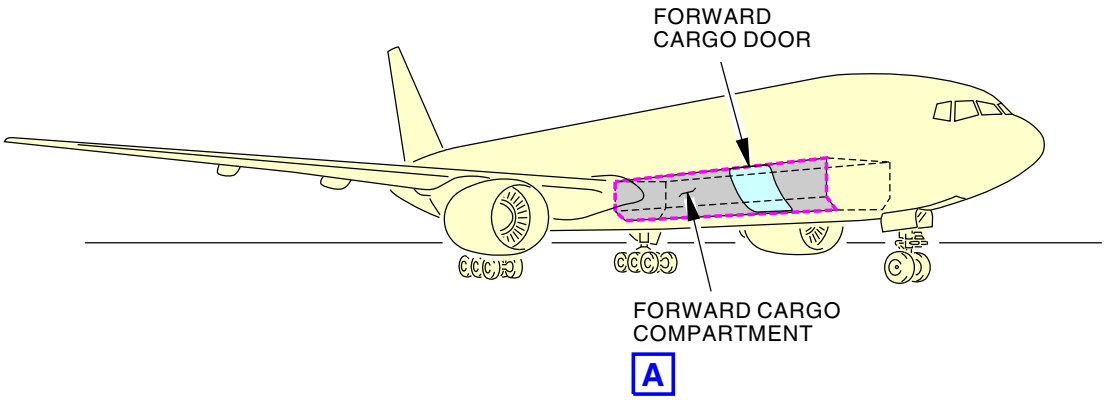

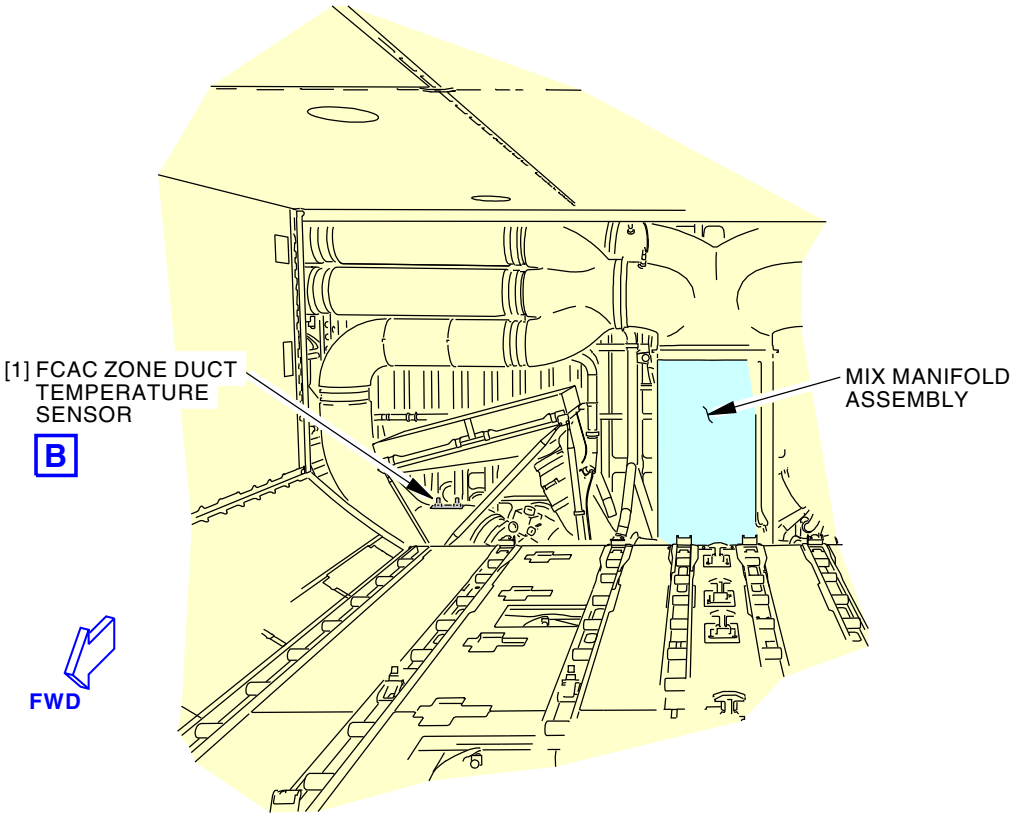

NOTE: THE STATION 998 END WALL LINER IS NOT SHOWN IN THIS VIEW.

FORWARD CARGO COMPARTMENT

A

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FCAC Zone Duct Temperature Sensor Installation
Figure 401/21-61-09-990-801 (Sheet 1 of 2)

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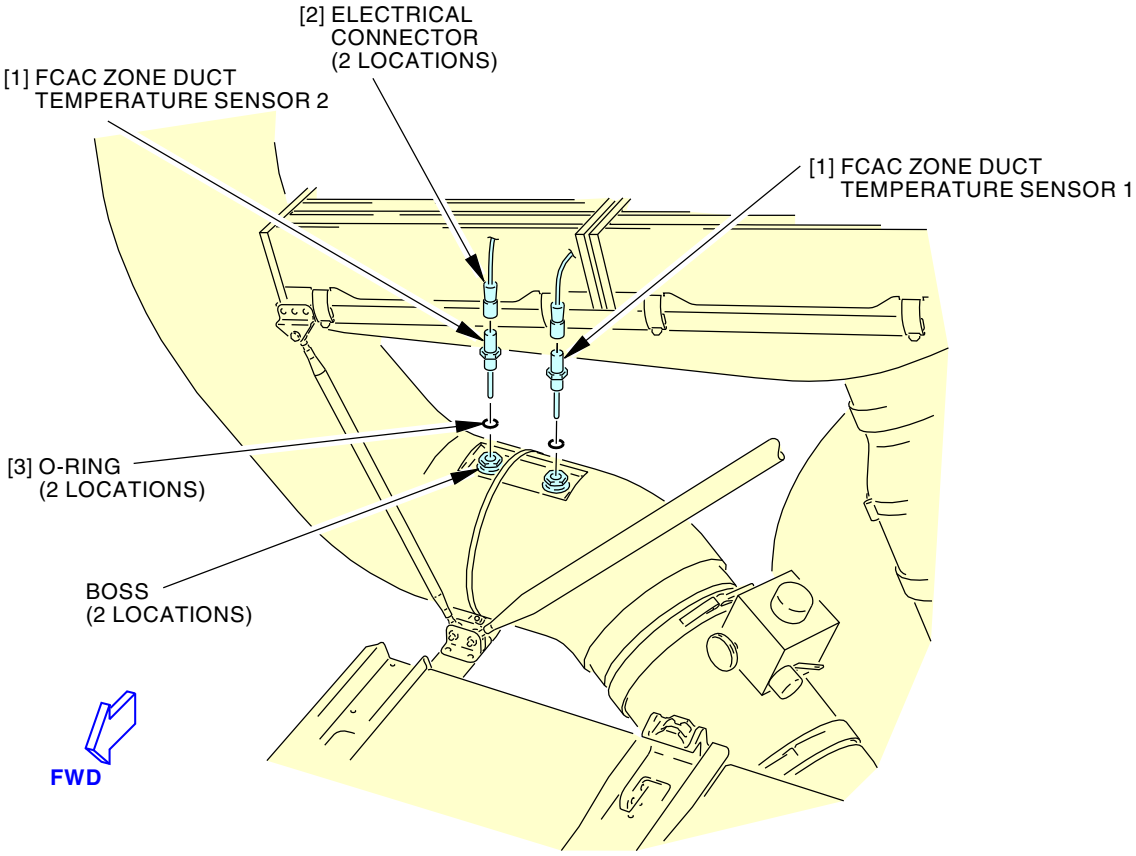

FCAC ZONE DUCT TEMPERATURE SENSORS

B

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FCAC Zone Duct Temperature Sensor Installation
Figure 401/21-61-09-990-801 (Sheet 2 of 2)

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TASK 21-61-09-400-801

3. Forward Cargo Air Conditioning (FCAC) Duct Temperature Sensor Installation

(Figure 401)

A. 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)
25-52-17-400-801	Forward Cargo Compartment Aft End Wall Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
52-34-00-860-803	Close the Door Electrically with the External Cargo Door Control Switch (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-61-09-01A-030	ARO ALL
3	O-ring	21-61-09-01A-020	ARO ALL

C. Location Zones

Zone	Area
126	Area Aft of Forward Cargo Compartment, Right
212	Flight Compartment, Right

D. FCAC Duct Temperature Sensor Installation

SUBTASK 21-61-09-420-003

(1) Install a new o-ring [3] on the duct temperature sensor [1].

SUBTASK 21-61-09-420-001

CAUTION

USE TWO WRENCHES TO INSTALL THE DUCT TEMPERATURE SENSOR IN THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE DUCT TEMPERATURE SENSOR, YOU CAN CAUSE DAMAGE TO THE DUCT.

(2) Install the duct temperature sensor [1].

(a) Use one wrench to hold the boss.

(b) Use the other wrench to turn the duct temperature sensor [1].

(c) Tighten the duct temperature sensor [1] to 18 in-lb (2.03 N·m) - 24 in-lb (2.71 N·m).

SUBTASK 21-61-09-420-002

(3) Install a new lockwire to the duct temperature sensor [1].

SUBTASK 21-61-09-020-004

(4) Reconnect the electrical connector [2] to the duct temperature sensor [1].

E. FCAC Duct Temperature Sensor Installation Test

SUBTASK 21-61-09-860-001

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

SUBTASK 21-61-09-740-001

(2) Use a Maintenance Access Terminal (MAT) to make sure a maintenance message for the forward cargo duct temperature sensor does not show (TASK 45-10-00-740-808).

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(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) EXTENDED MAINTENANCE
3) EXISTING FAULTS
4) 21 Cabin Temperature Control
5) CONTINUE

(b) Look at the existing faults and make sure a maintenance message for the forward cargo duct temperature sensor does not show.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-09-410-001

(1) Reinstall the aft end wall in the forward cargo compartment, do this task: Forward Cargo Compartment Aft End Wall Installation, TASK 25-52-17-400-801.

SUBTASK 21-61-09-410-002

(2) 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.

SUBTASK 21-61-09-860-002

(3) If necessary, remove electrical power (TASK 24-22-00-860-806).

——— END OF TASK ———

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TRIM AIR PRESSURE REGULATION AND SHUTOFF CONTROL - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) System Test - Trim Air Pressure Regulation and Shutoff Control

(2) Operational Test - Trim Air Switches

B. To do a complete system test of the trim air pressure regulation and shutoff control system you must do each of the above tasks.

TASK 21-62-00-740-801

2. Trim Air Pressure Regulation and Shutoff Control - System Test

A. General

(1) This test makes sure that the (left, right) trim air pressure regulation and shutoff control system operates correctly.

(2) The same sequence of steps is used to do the system test for the left and right trim air pressure regulation and shutoff control systems.

(3) A maintenance access terminal (MAT) 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
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (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)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Prepare for the Test

SUBTASK 21-62-00-860-013

WARNING MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET, OUTLET, LINKAGES, AND ACTUATORS. COMPONENTS CAN MOVE DURING THE PROCEDURE. INJURY TO PERSONNEL CAN OCCUR.

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

SUBTASK 21-62-00-860-002

(2) To do a test of the left trim air pressure regulation and shutoff control system, do these steps:

(a) Operate the left air conditioning pack (TASK 21-00-00-800-803).

(b) Set the L TRIM AIR switch to the ON position.

NOTE: The L TRIM AIR switch is on the Pilot's Overhead Panel, P5.

SUBTASK 21-62-00-860-003

(3) To do a test of the right trim air pressure regulation and shutoff control system, do these steps:

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(a) Operate the right air conditioning pack (TASK 21-00-00-800-803).

(b) Set the R TRIM AIR switch to the ON position.

NOTE: The R TRIM AIR switch is on the Pilot's Overhead Panel, P5.

SUBTASK 21-62-00-860-004

(4) Set the UPPER RECIRC FAN switch and LOWER RECIRC FAN switch to the ON position.

NOTE: The UPPER RECIRC FAN switch and LOWER RECIRC FAN switch are on the Pilot's Overhead Panel, P5.

E. System Test - Trim Air Pressure Regulation and Shutoff Control

SUBTASK 21-62-00-740-001

(1) Use a maintenance access terminal (MAT) to do the system test of the trim air pressure regulation and shutoff control system.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE
2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) SYSTEM TEST
6) (Left, Right) System Air On
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.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-62-00-860-005

(1) Stop the operation of the air conditioning pack(s) (TASK 21-00-00-800-804).

SUBTASK 21-62-00-860-006

(2) Set the L TRIM AIR switch and R TRIM AIR switch to the OFF position.

SUBTASK 21-62-00-860-007

(3) Set the UPPER RECIRC FAN switch and LOWER RECIRC FAN switch to the OFF position.

——— END OF TASK ———

TASK 21-62-00-740-802

3. Trim Air Switches - Operational Test

A. General

(1) This test makes sure that the L TRIM AIR switch and the R TRIM AIR switch operates correctly.

(2) A maintenance access terminal (MAT) 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.

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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. Prepare for the Test

SUBTASK 21-62-00-860-009

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

SUBTASK 21-62-00-860-010

(2) Make sure the L TRIM AIR switch and the R TRIM AIR switch are set to the OFF position.

NOTE: The L TRIM AIR switch and the R TRIM AIR switch are on the pilot's overhead panel, P5.

E. Operational Test - Trim Air Switches

SUBTASK 21-62-00-740-002

(1) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the left or right trim air switches:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

3) EXISTING FAULTS

(b) Look for 23 Overhead panel ARINC 629 System.

NOTE: If 23 Overhead panel ARINC 629 System does not show, then there are no maintenance messages in existing faults for the left or right trim air switches.

(c) If 23 Overhead panel ARINC 629 System shows do these steps:

1) Select 23 Overhead panel ARINC 629 System

2) Select CONTINUE.

3) Look at the maintenance messages that show and make sure there are no maintenance messages for the left or right trim air switches.

4) If a maintenance message for the left or right trim air switch shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 21-62-00-860-011

(2) Push the L TRIM AIR switch and the R TRIM AIR switch to the ON position.

SUBTASK 21-62-00-740-003

(3) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the left or right trim air switches:

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

2) EXTENDED MAINTENANCE

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3) EXISTING FAULTS

(b) Look for 23 Overhead panel ARINC 629 System.

NOTE: If 23 Overhead panel ARINC 629 System does not show, then there are no maintenance messages in existing faults for the left or right trim air switches.

(c) If 23 Overhead panel ARINC 629 System shows do these steps:

1) Select 23 Overhead panel ARINC 629 System

2) Select CONTINUE.

3) Look at the maintenance messages that show and make sure there are no maintenance messages for the left or right trim air switches.

4) If a maintenance message for the left or right trim air switch shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-62-00-860-012

(1) Set the L TRIM AIR switch and R TRIM AIR switch to the OFF position.

——— END OF TASK ———

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TRIM AIR PRESSURE REGULATING AND SHUTOFF VALVE (PRSOV) AND FILTER - REMOVAL/ INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the trim air pressure regulating and shutoff valve

(2) An installation of the trim air pressure regulating and shutoff valve.

(3) A removal of the trim air pressure regulating and shutoff valve (PRSOV) filter

(4) An installation of the trim air pressure regulating and shutoff valve (PRSOV) filter.

B. The trim air PRSOV controls the amount of warm air that is added to the conditioned air from the cooling pack. It is a pneumatically operated valve. The valve filter prevents unwanted material from entering the control side of the valve.

C. The trim air pressure regulating and shutoff valves will be called the trim air PRSOVs. There is a left trim air PRSOV and a right trim air PRSOV. The trim air PRSOVs control the flow of hot bleed air that goes to the zone trim air modulating valves for the left and right cooling packs.

TASK 21-62-01-000-801

2. Trim Air Pressure Regulating and Shutoff Valve Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-62-01-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-62-01-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-62-01-860-002

(3) To remove the left trim air PRSOV, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

SUBTASK 21-62-01-860-003

(4) To remove the right trim air PRSOV, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
P	12	C36612	AIR SPLY R PRI

SUBTASK 21-62-01-860-004

(5) To get access to the left trim air PRSOV, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-62-01-860-005

(6) To get access to the right trim air PRSOV, open this door:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Trim Air Pressure Regulating and Shutoff Valve Removal

SUBTASK 21-62-01-020-001

(1) Disconnect the electrical connector [6] from the trim air PRSOV [1].

SUBTASK 21-62-01-020-002

(2) Disconnect the electrical connector [7] from the trim air PRSOV [1].

SUBTASK 21-62-01-020-003

(3) Do these steps to remove the two bonding jumpers [9]:

(a) Remove the nut [4], bolt [8], and the three washers [3].

(b) Remove the bonding jumpers [9] from the ground tab [10] on the trim air PRSOV [1].

SUBTASK 21-62-01-020-004

(4) Remove the coupling [2] and the coupling [5].

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SUBTASK 21-62-01-020-005

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(5) Remove the trim air PRSOV [1].

END OF TASK

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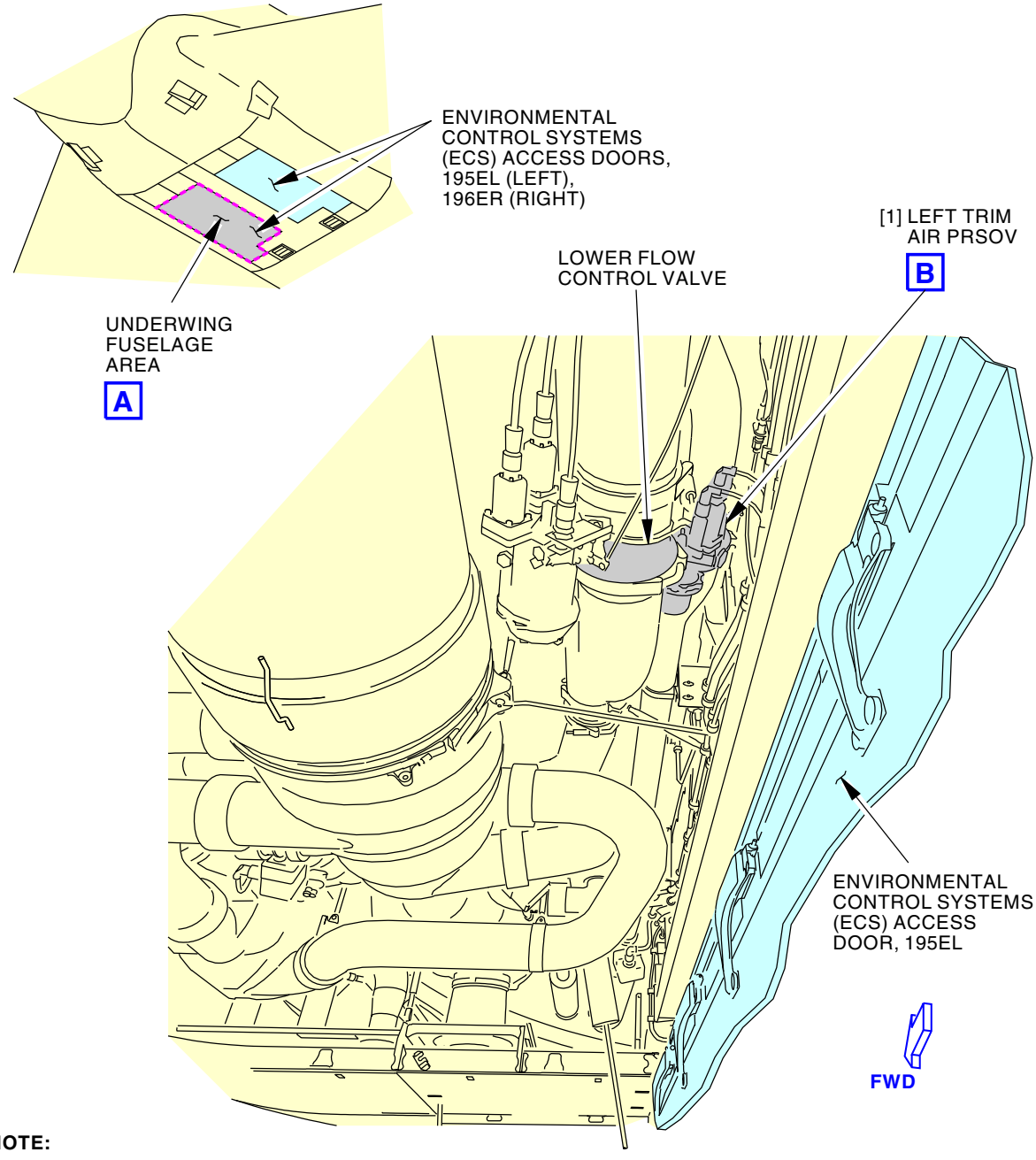

NOTE:

THE LEFT TRIM AIR PRSOV IS SHOWN. THE RIGHT TRIM AIR PRSOV IS EQUIVALENT.

UNDERWING FUSELAGE AREA

A

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Trim Air Pressure Regulating and Shutoff Valve Installation
Figure 401/21-62-01-990-801 (Sheet 1 of 2)

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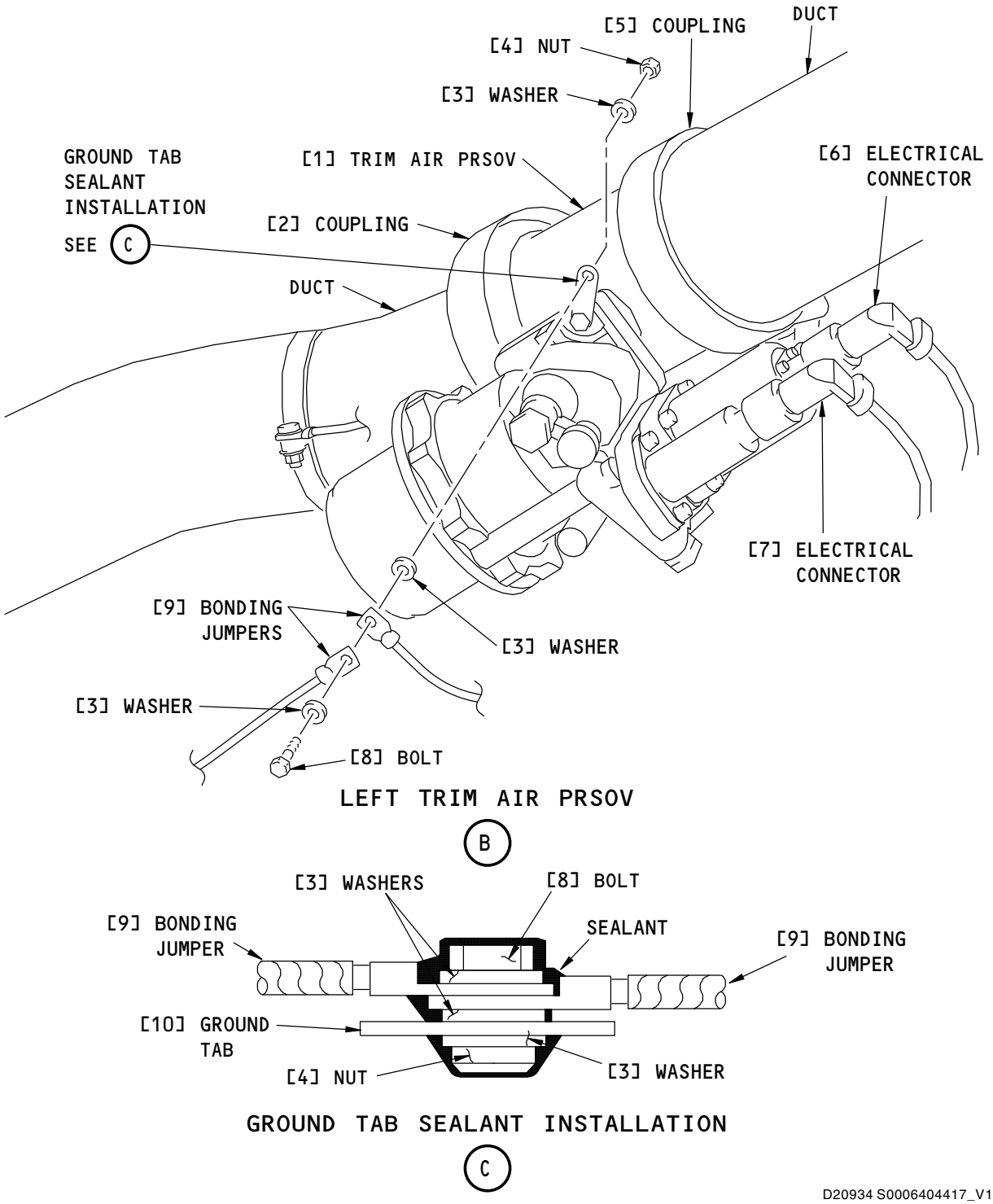

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Trim Air Pressure Regulating and Shutoff Valve Installation
Figure 401/21-62-01-990-801 (Sheet 2 of 2)

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TASK 21-62-01-400-801

3. Trim Air Pressure Regulating and Shutoff Valve Installation

(Figure 401)

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)
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
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
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	PRSOV	21-62-01-01-050	ARO ALL

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door

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(Continued)

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

G. Trim Air Pressure Regulating and Shutoff Valve Installation

SUBTASK 21-62-01-420-001

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(1) Put the trim air PRSOV [1] between the two ducts.

NOTE: Make sure the flow arrow on the trim air PRSOV [1] points forward.

SUBTASK 21-62-01-420-002

(2) Install the coupling [2] and the coupling [5].

(a) Tighten the nut on each coupling to 55 ±5 in-lb (6.2 ±0.6 N·m).

SUBTASK 21-62-01-100-002

(3) To clean the bond surfaces of the ground tab [10], do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

SUBTASK 21-62-01-100-003

(4) To clean the bond surfaces of the bonding jumpers [9] and the washers [3], do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

SUBTASK 21-62-01-420-008

(5) To install the bonding jumpers [9], do the steps that follow:

(a) Put a washer [3] on the ground tab [10].

(b) Put the bonding jumpers [9] on the washer [3].

(c) Install the bolt [8] and washer [3] on the bonding jumper terminals.

(d) Install the washer [3] and nut [4] on the bolt [8].

1) Tighten the nut [4] to 30 ±5 in-lb (3 ±1 N·m).

(e) With the intrinsically safe approved bonding meter, COM-1550, make sure the resistance between the ground tab [10] and the airplane structure is less than 0.005 ohm (SWPM 20-20-00).

NOTE: Do not put the probe on the bracket to which the bonding jumper attaches.

SUBTASK 21-62-01-390-002

(6) Apply a thin, continuous layer of sealant, A00247 on the bonding jumper terminal connections as shown on (View C, Figure 401).

SUBTASK 21-62-01-420-004

(7) Re-connect the electrical connector [6] to the trim air PRSOV [1].

SUBTASK 21-62-01-420-005

(8) Re-connect the electrical connector [7] to the trim air PRSOV [1].

SUBTASK 21-62-01-860-006

(9) If you replaced the left trim air PRSOV, do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

Standby Power Management Panel, P310

Row	Col	Number	Name
C	1	C36611	AIR SPLY L PRI

SUBTASK 21-62-01-860-007

(10) If you replaced the right trim air PRSOV, do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)
P	12	C36612	AIR SPLY R PRI

H. Trim Air Pressure Regulating and Shutoff Valve Installation Test

SUBTASK 21-62-01-860-008

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

SUBTASK 21-62-01-860-009

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-62-01-860-010

(3) Push the applicable L TRIM AIR or R TRIM AIR switch-light to the ON position.

NOTE: The L TRIM AIR and R TRIM AIR switch-lights are found on the Air Conditioning Module, which is on the Pilot's Overhead Panel, P5.

SUBTASK 21-62-01-860-011

(4) Push the UPPER RECIRC FANS and LOWER RECIRC FANS switch-light to the ON position.

NOTE: The UPPER RECIRC FANS and LOWER RECIRC FANS switch-lights are found on the Air Conditioning Module, which is on the Pilot's Overhead Panel, P5.

SUBTASK 21-62-01-860-012

(5) Push the applicable L PACK or R PACK switch-light to the AUTO position.

NOTE: The L PACK and R PACK switch-lights are found on the Air Conditioning Module, which is on the Pilot's Overhead Panel, P5.

SUBTASK 21-62-01-740-001

(6) Use a maintenance access terminal (MAT) to do an LRU Replacement Test of the applicable trim air PRSOV. To use the MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

(a) Make these selections on the MAT:

1) ONBOARD MAINTENANCE

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2) LINE MAINTENANCE
3) GROUND TESTS
4) 21 Cabin Temperature Control System
5) LRU Replacement Test
6) (Left, Right) System Air On
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.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-62-01-860-013

(1) Push the applicable L TRIM AIR or R TRIM AIR switch-light to shut off the trim air.

SUBTASK 21-62-01-860-014

(2) Push the UPPER RECIRC FANS and LOWER RECIRC FANS switch-light to shut off the fans.

SUBTASK 21-62-01-860-015

(3) Push the applicable L PACK or R PACK switch-light to shut down the cooling pack.

SUBTASK 21-62-01-860-016

(4) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-62-01-860-018

(5) If you replaced the left trim air PRSOV, close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-62-01-860-019

(6) If you replaced the right trim air PRSOV, close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-62-01-410-001

(7) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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TASK 21-62-01-000-802

4. Trim Air Pressure Regulating and Shutoff Valve (PRSOV) Filter Removal

(Figure 402)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-62-01-840-001

WARNING REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE DOING ANY MAINTENANCE ON THE AIR DUCTS. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-62-01-010-002

(2) To remove the left trim air PRSOV filter, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-62-01-010-003

(3) To remove the right trim air PRSOV filter, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-62-01-010-004

CAUTION DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(4) If you cannot get access to the valve filter, then do these steps:

(a) Make a note of the position of the valve.

(b) Loosen the two couplings that hold the valve to the duct.

CAUTION DO NOT DAMAGE THE O-RING PACKING WHEN YOU ROTATE THE VALVE. THE DAMAGE CAN CAUSE LEAKAGE OF THE DUCT CONNECTIONS.

(c) Carefully rotate the valve until you can get access to the filter.

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E. Remove the Filter

SUBTASK 21-62-01-020-006

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Do these steps to remove the trim air PRSOV filter:

(a) Remove the threaded plug [4].

(b) Remove the compression spring [2].

(c) Remove the air filter [1].

——— END OF TASK ———

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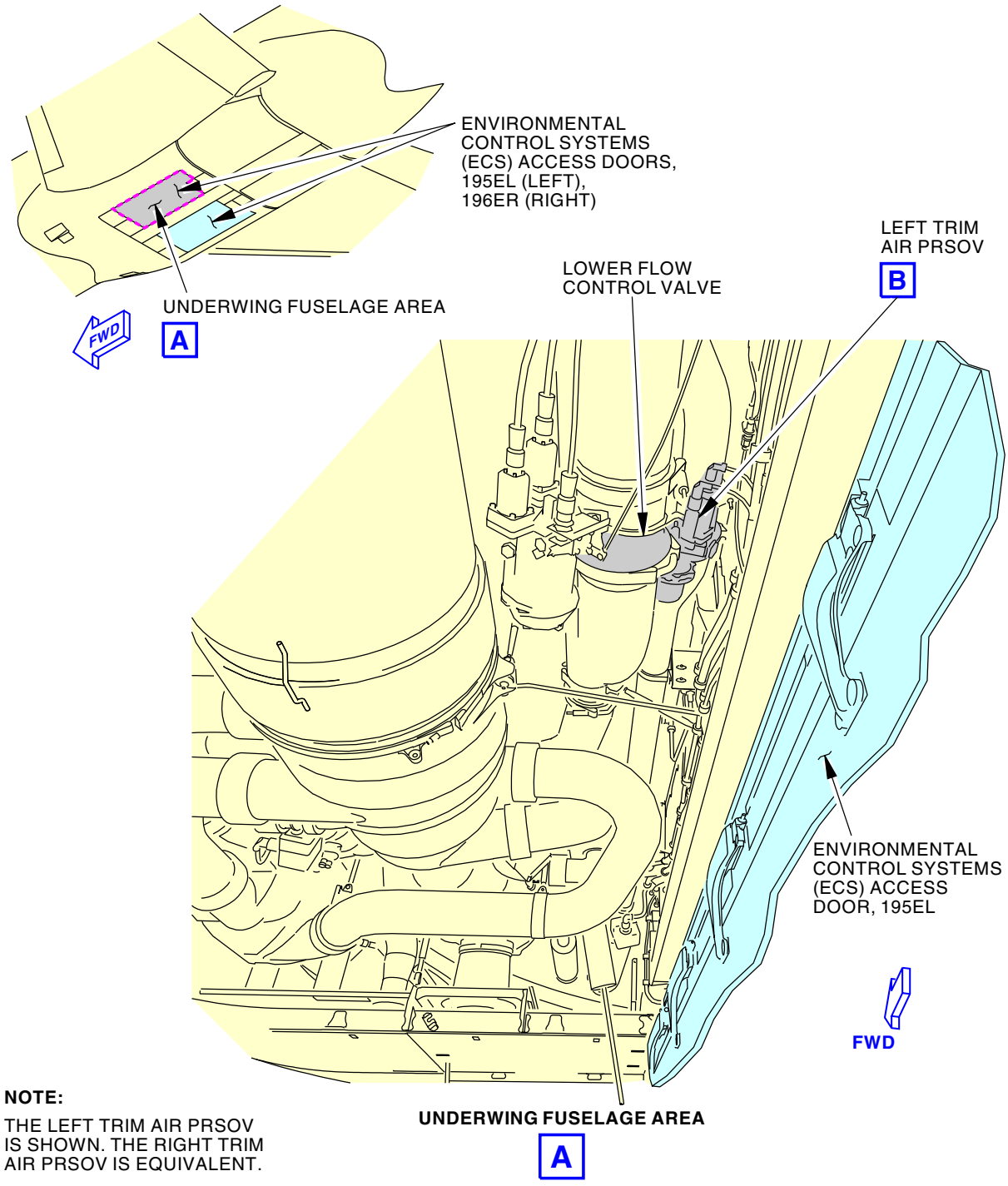

NOTE:

THE LEFT TRIM AIR PRSOV IS SHOWN. THE RIGHT TRIM AIR PRSOV IS EQUIVALENT.

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Trim Air Pressure Regulating and Shutoff Valve Filter Installation
Figure 402/21-62-01-990-802 (Sheet 1 of 2)

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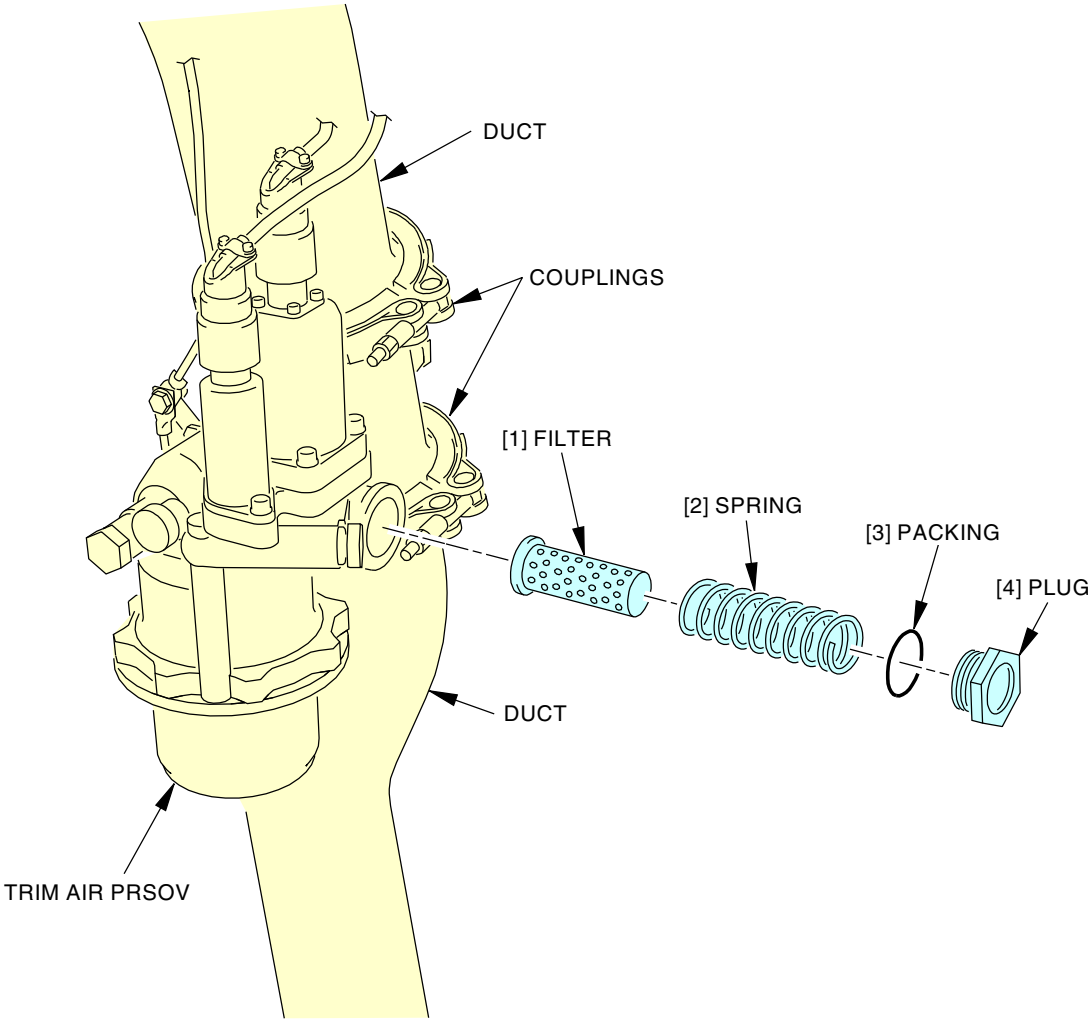

TRIM AIR PRSOV (EXAMPLE)

B

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Trim Air Pressure Regulating and Shutoff Valve Filter Installation
Figure 402/21-62-01-990-802 (Sheet 2 of 2)

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TASK 21-62-01-400-802

5. Trim Air Pressure Regulating and Shutoff Valve (PRSOV) Filter Installation

(Figure 402)

A. Consumable Materials

Reference	Description	Specification
D00669	Multi-Purpose, Moly-Lithium Type, Lubriplate Mo-Lith No. 2	
D50104	Grease - Molykote 44 High Temperature Bearing Grease (Medium) (Formerly Dow Corning DC-44)	

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Filter	21-62-03-01-370	ARO ALL
3	Packing	21-62-03-01-360	ARO ALL

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Install the Filter

SUBTASK 21-62-01-420-006

(1) Do these steps to install the trim air PRSOV filter:

(a) Inspect the air filter [1] for a damaged screen.

(b) If the screen is damaged, then discard the filter and get a new air filter [1].

(c) Install the air filter [1].

(d) Reinstall the compression spring [2].

(e) Inspect the preformed packing [3] for damage or deterioration.

(f) If you find any damage or deterioration, then discard the packing and get a new preformed packing [3].

1) Put a thin layer of grease, Molykote 44 grease, medium, D50104, on the packing [3].

2) Install the packing [3] onto the plug [4].

(g) Put a thin layer of lubricant, Lubriplate Mo-Lith No. 2 Lubricant, D00669, on the threads of the plug [4].

(h) Reinstall the threaded plug [4].

(i) Tighten the plug [4] to 40 ±5 in-lb (4.5 ±0.6 N·m).

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SUBTASK 21-62-01-010-005

CAUTION

DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(2) If you loosened the two valve couplings to get access to the valve filter, then do these steps:

CAUTION

DO NOT DAMAGE THE O-RING PACKING WHEN YOU ROTATE THE VALVE. THE DAMAGE CAN CAUSE LEAKAGE OF THE DUCT CONNECTIONS.

(a) Carefully rotate the valve back to its original position.

(b) Tighten the nut on each of the two valve couplings 55 ±5 in-lb (6.2 ±0.6 N·m).

F. Restore the Airplane to Its Usual Condition

SUBTASK 21-62-01-010-006

(1) If you installed the left trim air PRSOV filter, then close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-62-01-010-007

(2) If you installed the right trim air PRSOV filter, then close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

END OF TASK

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TRIM AIR PRESSURE REGULATING AND SHUTOFF VALVE (PRSOV) AND FILTER - CLEANING/ PAINTING

1. General

A. This procedure contains one task:

(1) Cleaning the trim air pressure regulating and shutoff valve (PRSOV) filter.

B. The trim air PRSOV is a pneumatically operated valve. The trim air PRSOV filter prevents unwanted material from entering the control side of the valve.

TASK 21-62-01-000-803

2. Trim Air Pressure Regulating and Shut Off Valve (PRSOV) Filter Cleaning

(Figure 701)

A. References

Reference	Title
21-62-01-000-802	Trim Air Pressure Regulating and Shutoff Valve (PRSOV) Filter Removal (P/B 401)
21-62-01-400-802	Trim Air Pressure Regulating and Shutoff Valve (PRSOV) Filter Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-182	Cleaner - Ultrasonic

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

D. Prepare for Cleaning the Filter

SUBTASK 21-62-01-020-007

CAUTION DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(1) To remove the filter from the trim air PRSOV, do this task: Trim Air Pressure Regulating and Shutoff Valve (PRSOV) Filter Removal, TASK 21-62-01-000-802.

E. Clean the Filter

SUBTASK 21-62-01-100-001

(1) Do these steps to clean the filter:

WARNING USE GOGGLES AND RUBBER GLOVES WHEN YOU CLEAN THE FILTER. CLEAN THE FILTER IN AN AREA WITH A GOOD FLOW OF AIR. THE CLEANER CAN IRRITATE YOUR EYES, SKIN, THROAT, AND LUNGS.

(a) Clean the filter in an ultrasonic cleaner, STD-182, or equivalent, as follows:

1) Ultrasonic clean with a mild alkaline cleaner such as Blue Gold FO 2085M heated to a temperature of 140°F (60°C) to 150°F (66°C) at an agitation frequency of 40 KHz for a maximum of 15 to 20 minutes.

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2) If you use an equivalent mild alkaline aqueous cleaner recommended by the manufacturer of your ultrasonic cleaner, use these guidelines:

a) Use the recommended cleaner for the substrate you are cleaning.

b) Use the recommended cleaning temperature from the manufacturer of the ultrasonic cleaner, STD-182.

c) Clean at an agitation frequency of 40 KHz for a maximum of 15 to 20 minutes.

WARNING USE AIR PRESSURE OF 25 PSIG OR LESS TO CLEAN AND DRY THE FILTER. DO NOT POINT THE AIRFLOW TOWARD YOURSELF OR OTHER PERSONS. YOU CAN BE INJURED BY FLYING PARTICLES.

(b) Blow dry, filtered, compressed air through the air filter to remove any contamination.

(c) Dry the filter with the compressed air.

F. Restore the Airplane to Its Usual Condition

SUBTASK 21-62-01-420-007

CAUTION DO NOT OPERATE THE VALVE BY HAND. MANUAL OPERATION OF THE VALVE CAN CAUSE INTERNAL DAMAGE TO THE VALVE

(1) Re-install the filter into the trim air PRSOV. To install the filter, do this task: Trim Air Pressure Regulating and Shutoff Valve (PRSOV) Filter Installation, TASK 21-62-01-400-802.

——— END OF TASK ———

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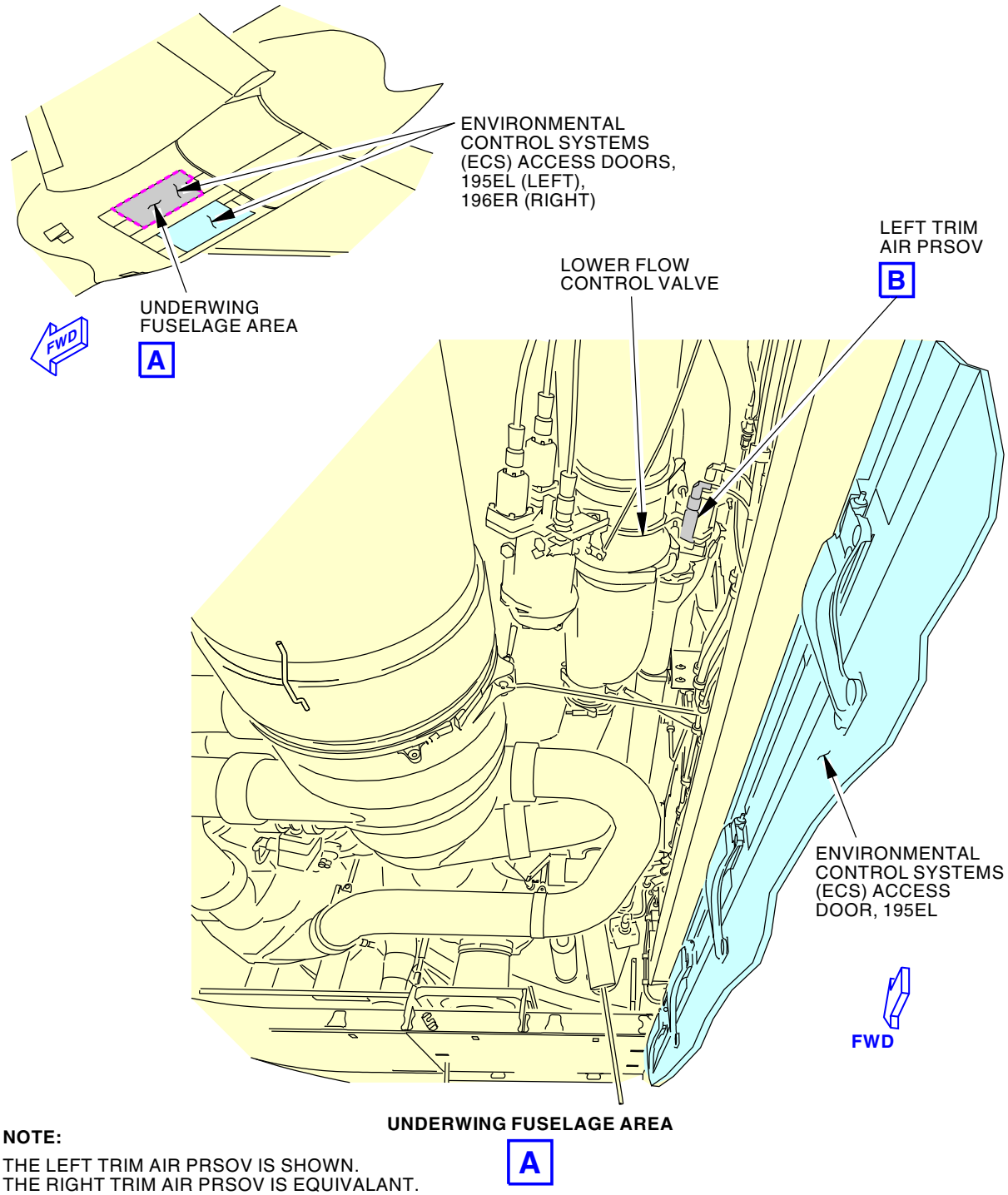

NOTE:

THE LEFT TRIM AIR PRSOV IS SHOWN.
THE RIGHT TRIM AIR PRSOV IS EQUIVALANT.

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Trim Air Pressure Regulating and Shutoff Valve Filter Installation
Figure 701/21-62-01-990-803 (Sheet 1 of 2)

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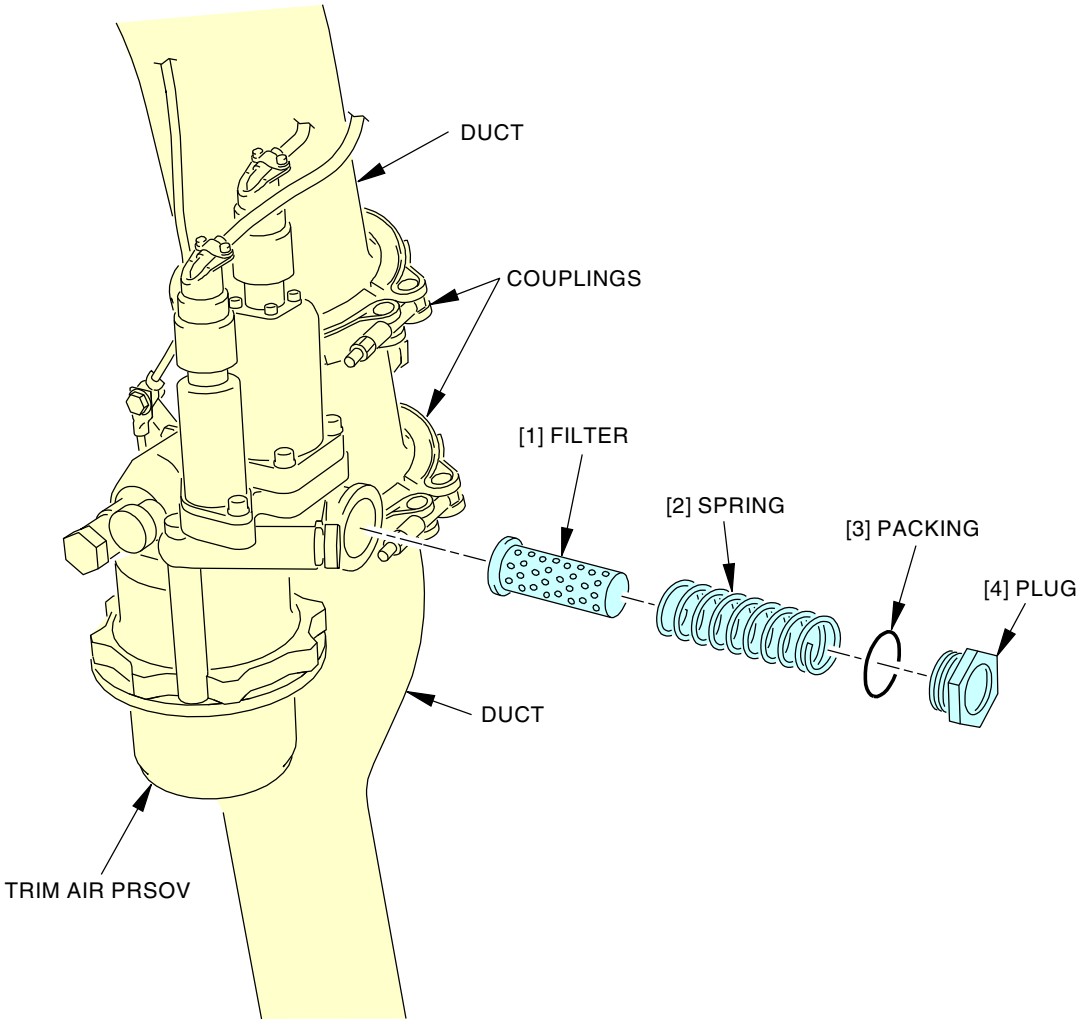

TRIM AIR PRSOV (EXAMPLE)

B

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Trim Air Pressure Regulating and Shutoff Valve Filter Installation
Figure 701/21-62-01-990-803 (Sheet 2 of 2)

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TRIM AIR PRESSURE SENSORS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the trim air pressure sensors

(2) An installation of the trim air pressure sensors.

B. There is a left trim air pressure sensor and a right trim air pressure installed in the cabin temperature control system. The trim air pressure sensors supply the cabin temperature controller with the trim air pressure that is upstream of the zone trim air modulating valves.

TASK 21-62-02-000-801

2. Trim Air Pressure Sensor Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-62-02-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-62-02-010-001

(2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

SUBTASK 21-62-02-860-002

(3) For the left trim air pressure sensor [1], do these steps:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)

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(Continued)

Left Power Management Panel, P110

Row	Col	Number	Name
H	28	C21627	L PACK & TRIM PRESS SNSR

(b) Open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-62-02-860-003

(4) For the right trim air pressure sensor [1], do these steps:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	6	C21628	R PACK & TRIM PRESS SNSR
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

(b) Open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Trim Air Pressure Sensor Removal

SUBTASK 21-62-02-020-001

(1) Disconnect the electrical connector [2] from the trim air pressure sensor [1].

SUBTASK 21-62-02-020-002

CAUTION

USE TWO WRENCHES TO DISCONNECT THE TUBE ASSEMBLY FROM THE TRIM AIR PRESSURE SENSOR. IF YOU ONLY USE ONE WRENCH TO DISCONNECT THE TUBE ASSEMBLY, YOU CAN CAUSE DAMAGE TO THE TUBE ASSEMBLY.

(2) Use two wrenches to disconnect the tube assembly [6] from the trim air pressure sensor [1].

NOTE: Use one wrench to hold the nut on the trim air pressure sensor [1]. Use the other wrench to turn the nut on the tube assembly [6].

SUBTASK 21-62-02-020-003

(3) Remove the four bolts [3], four washers [4], and two clamps [5] from the bracket.

SUBTASK 21-62-02-020-004

(4) Remove the trim air pressure sensor [1].

END OF TASK

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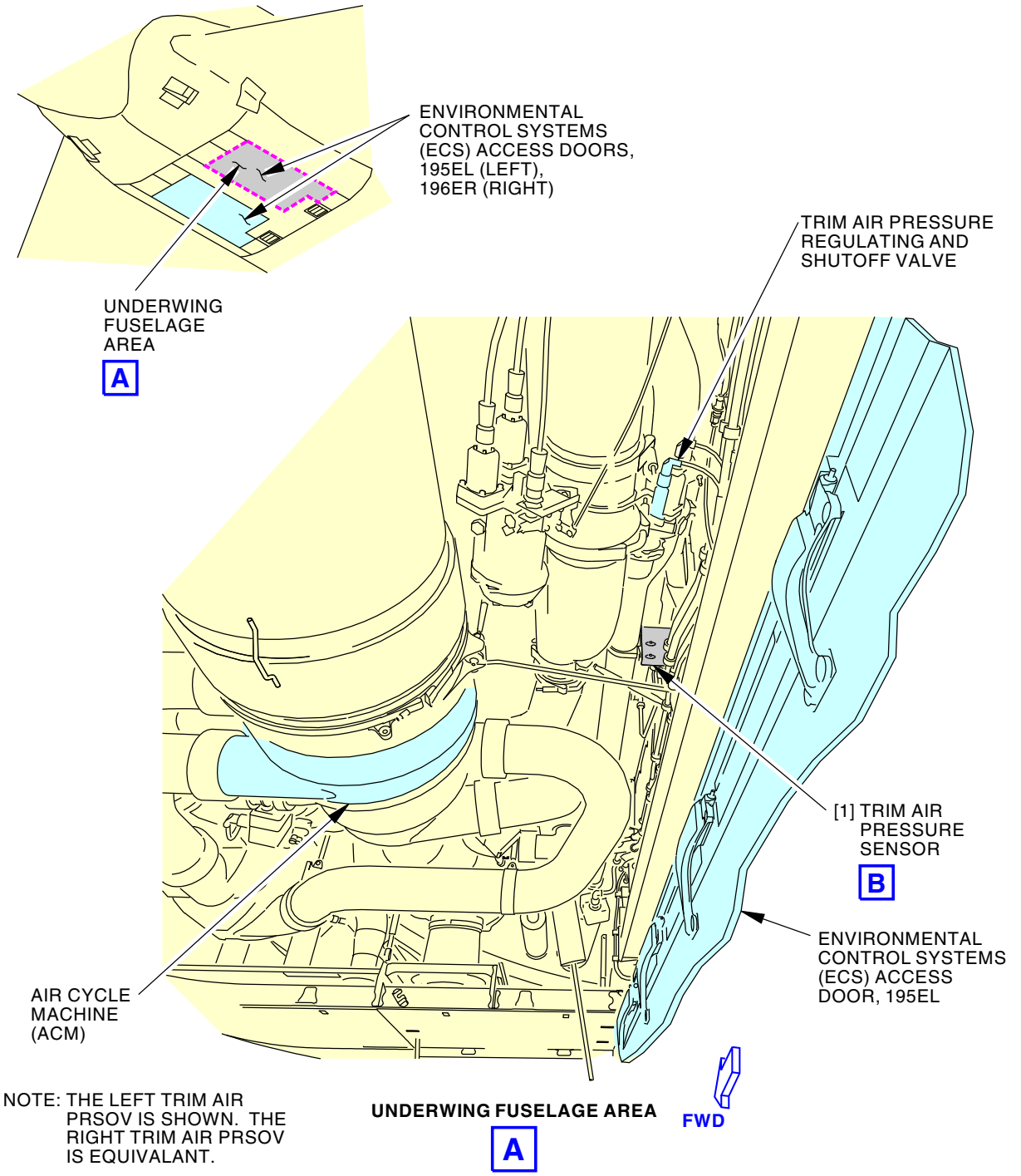

Trim Air Pressure Sensors Installation
Figure 401/21-62-02-990-801 (Sheet 1 of 2)

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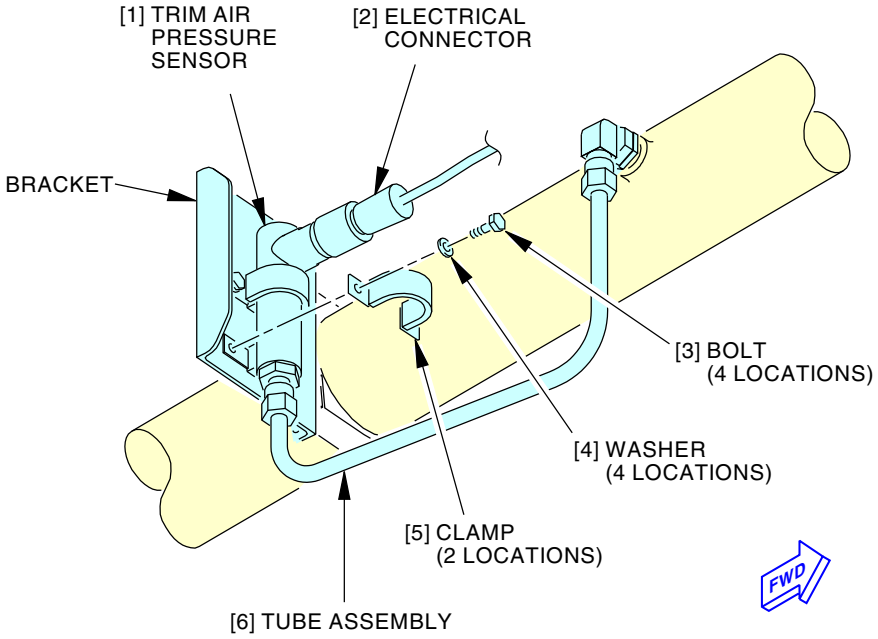

TRIM AIR PRESSURE SENSOR

B

E94415 S0006404431_V2

Trim Air Pressure Sensors Installation
Figure 401/21-62-02-990-801 (Sheet 2 of 2)

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TASK 21-62-02-400-801

3. Trim Air Pressure Sensor Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Trim air pressure sensor	21-62-02-01-035	ARO ALL
		21-62-02-05-055	ARO ALL

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Trim Air Pressure Sensor Installation

SUBTASK 21-62-02-420-001

(1) Install the trim air pressure sensor [1] to the bracket with the two clamps [5], four bolts [3], and four washers [4].

SUBTASK 21-62-02-420-002

CAUTION USE TWO WRENCHES TO CONNECT THE TUBE ASSEMBLY TO THE TRIM AIR PRESSURE SENSOR. IF YOU ONLY USE ONE WRENCH TO CONNECT THE TUBE ASSEMBLY, YOU CAN CAUSE DAMAGE TO THE TUBE ASSEMBLY.

(2) Use two wrenches to connect the tube assembly [6] to the trim air pressure sensor [1].

NOTE: Use one wrench to hold the nut on the trim air pressure sensor [1]. Use the other wrench to turn the nut on the tube assembly [6].

(a) Tighten the nut on the tube assembly [6] to 170 in-lb (19 N·m).

SUBTASK 21-62-02-420-003

(3) Connect the electrical connector [2] to the trim air pressure sensor [1].

SUBTASK 21-62-02-860-004

(4) For the left trim air pressure sensor [1], do this step:

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

Left Power Management Panel, P110

Row	Col	Number	Name
H	2	C21431	L CTC CHAN 1 (AC)
H	3	C21433	L CTC CHAN 2 (AC)
H	24	C21647	L CTC CHAN 2 (DC)
H	25	C21641	L CTC CHAN 1 (DC)
H	28	C21627	L PACK & TRIM PRESS SNSR

SUBTASK 21-62-02-860-005

(5) For the right trim air pressure sensor [1], do this step:

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

Right Power Management Panel, P210

Row	Col	Number	Name
G	6	C21628	R PACK & TRIM PRESS SNSR
G	27	C21434	R CTC CHAN 2 (AC)
G	28	C21432	R CTC CHAN 1 (AC)
H	2	C21642	R CTC CHAN 1 (DC)
H	3	C21648	R CTC CHAN 2 (DC)

F. Trim Air Pressure Sensors Installation Test

SUBTASK 21-62-02-860-006

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

SUBTASK 21-62-02-860-007

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-62-02-860-016

(3) Push the applicable L PACK switch or the R PACK switch on the P5 overhead panel until the AUTO light comes on.

SUBTASK 21-62-02-210-002

WARNING MAKE SURE THAT THERE IS AN EXIT IN THE AIRPLANE FUSELAGE FOR THE CONDITIONED AIR. IF THERE IS NO EXIT FOR THE AIR, THE PRESSURE IN THE CABIN WILL INCREASE. THIS CAN CAUSE INJURIES TO PERSONNEL.

(4) Do one of these steps to make sure there is an exit for the conditioned air:

(a) Make sure the forward and aft outflow valves are open.

(b) Make sure at least one passenger entry door is open.

SUBTASK 21-62-02-860-008

(5) Push the applicable L TRIM AIR or R TRIM AIR switch-light to the ON position.

NOTE: The L TRIM AIR and R TRIM AIR switch-lights are found on the Air Conditioning Module, which is on the P5 overhead panel.

SUBTASK 21-62-02-210-001

(6) Use your hand to feel for air leakage at the applicable trim air pressure sensor.

(a) If you feel air leakage, tighten the nut on the tube assembly [6] until there is no air leakage.

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SUBTASK 21-62-02-860-009

(7) Push the applicable L TRIM AIR or R TRIM AIR switch-light to the OFF position.

SUBTASK 21-62-02-740-001

(8) Use a Maintenance Access Terminal (MAT) to make sure that a maintenance message for applicable trim air pressure sensor does not show (TASK 45-10-00-740-808).

(a) Make these selections on the MAT:

1) Onboard Maintenance
2) Extended Maintenance
3) Existing Faults
4) 21 Cabin Temperature Control System

(b) If the MAT shows NOT ACTIVE for the applicable trim air pressure sensor maintenance message (or if the message does not show), you correctly installed the sensor.

(c) If the MAT shows ACTIVE for the applicable trim air pressure sensor maintenance message, refer to the applicable Maintenance Message Index in the FIM.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-62-02-860-010

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-62-02-860-012

(2) If you replaced the left trim air pressure trim air pressure sensor [1], do this step:

(a) Close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-62-02-860-013

(3) If you replaced the right trim air pressure trim air pressure sensor [1], do this step:

(a) Close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

SUBTASK 21-62-02-010-002

(4) Close this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

——— END OF TASK ———

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OZONE CONVERTER - REMOVAL/INSTALLATION

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) A removal of the ozone converter

(2) An installation of the ozone converter.

TASK 21-73-01-000-801

2. Ozone Converter Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

D. Prepare for the Removal

SUBTASK 21-73-01-860-001

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-73-01-010-001

(2) To get access to the ozone converter [1]

for the left cooling pack, open this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-73-01-010-002

(3) To get access to the ozone converter [1]

for the right cooling pack, open this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

E. Ozone Converter Removal

SUBTASK 21-73-01-020-006

(1) Remove the nut [7] with the washer [10] to separate the wiring bundle [9] and wiring bundle clamp [8] from the hose clamp [4].

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SUBTASK 21-73-01-020-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(2) Remove the coupling [2] from the aft end of the converter [1].

SUBTASK 21-73-01-020-002

(3) Remove the coupling [3] from the forward end of the ozone converter [1].

SUBTASK 21-73-01-020-003

(4) Remove the ozone converter [1].

SUBTASK 21-73-01-420-004

(5) Put covers on the duct openings to keep out unwanted materials.

END OF TASK

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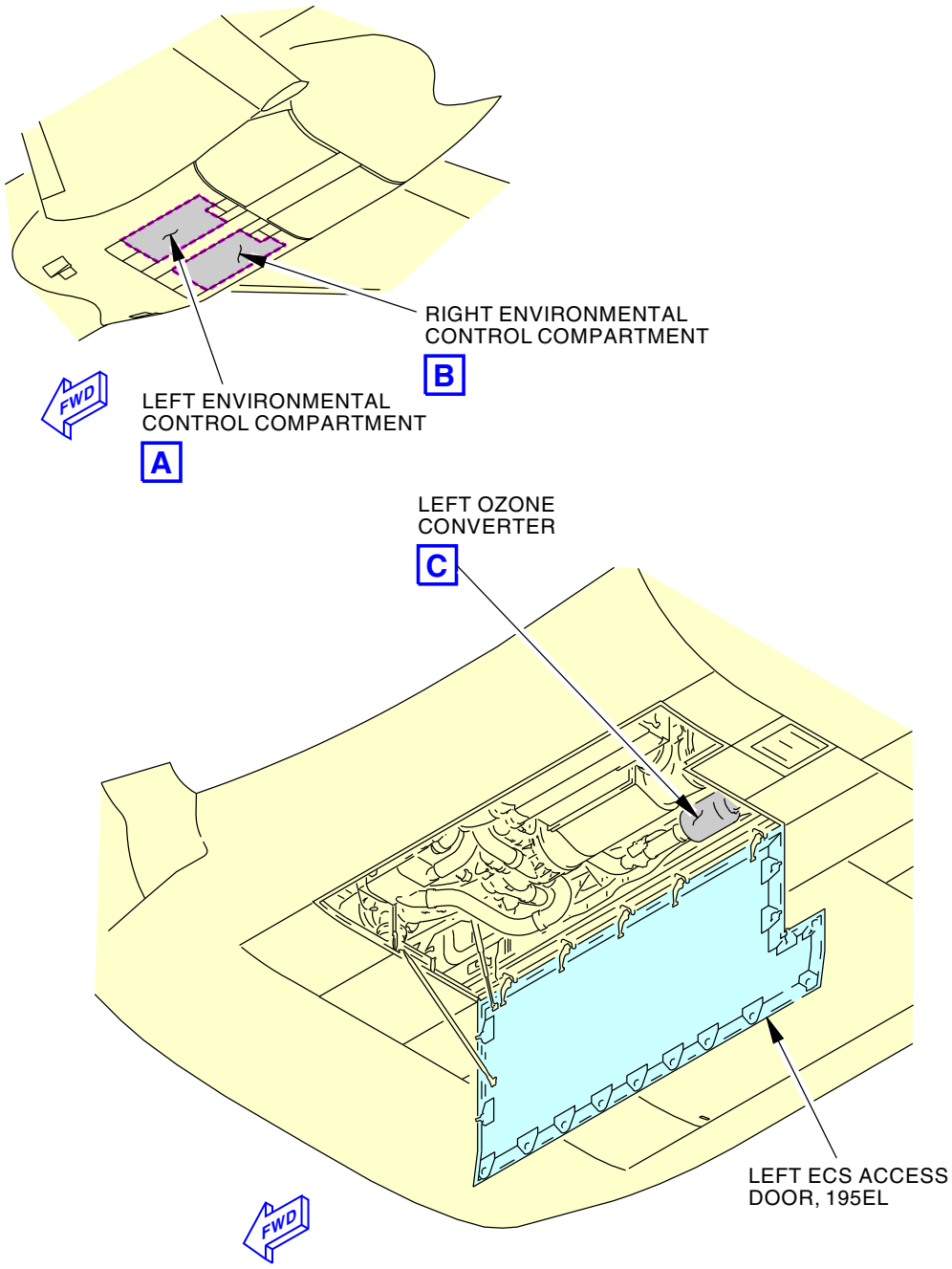

LEFT ENVIRONMENTAL CONTROL COMPARTMENT

A

D21999 S0006404485_V3

Ozone Converter Installation
Figure 401/21-73-01-990-801 (Sheet 1 of 4)

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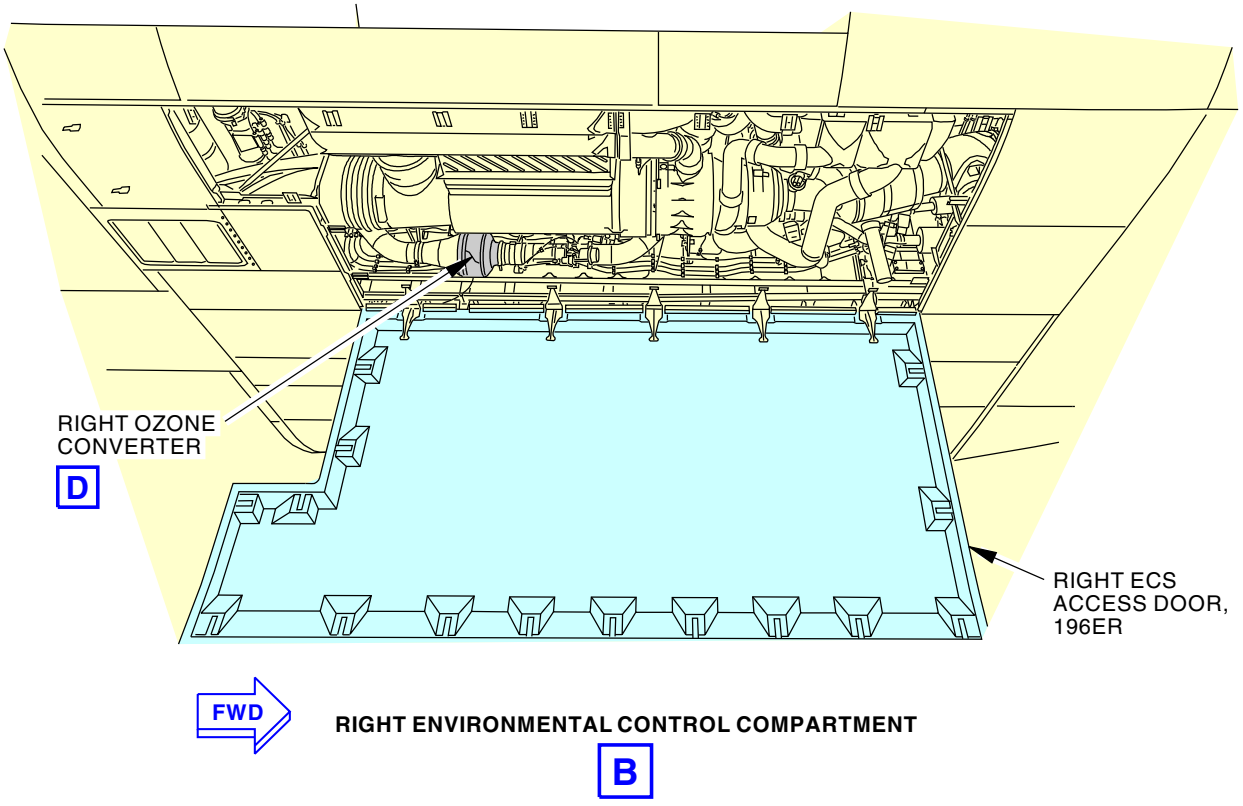

2337353 S0000532696_V2

Ozone Converter Installation
Figure 401/21-73-01-990-801 (Sheet 2 of 4)

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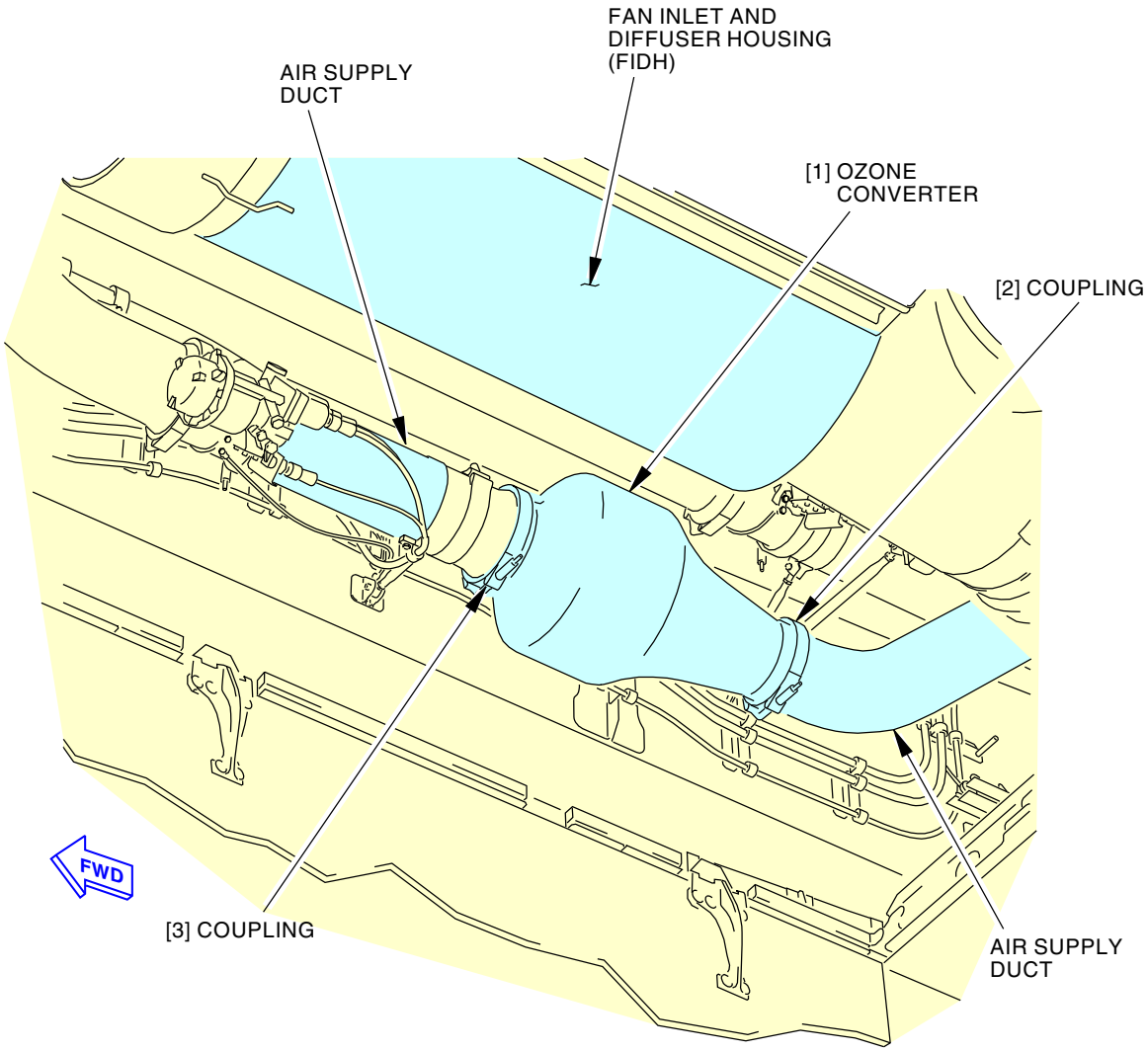

LEFT OZONE CONVERTER

C

D22002 S0006404486_V3

Ozone Converter Installation
Figure 401/21-73-01-990-801 (Sheet 3 of 4)

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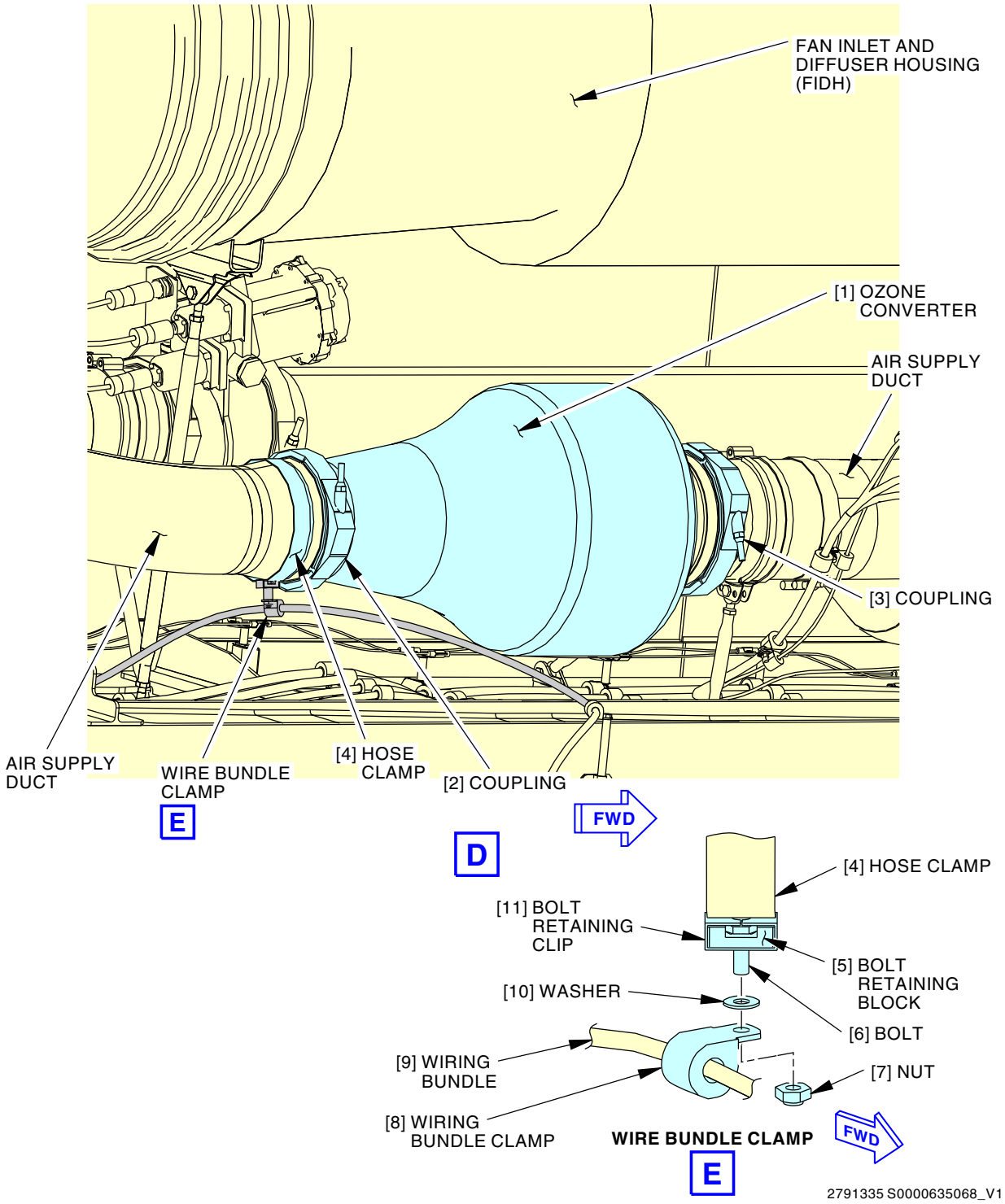

Ozone Converter Installation
Figure 401/21-73-01-990-801 (Sheet 4 of 4)

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TASK 21-73-01-400-801

3. Ozone Converter Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
36-00-00-860-801	Depressurize the Pneumatic System (P/B 201)
36-00-00-860-802	Pressurize the Pneumatic System (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Converter	21-73-01-01-015	ARO ALL
		21-73-01-01-019	ARO ALL

C. Location Zones

Zone	Area
135	Environmental Control Systems Bay, Left
136	Environmental Control Systems Bay, Right
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door
196ER	Environmental Control Systems (ECS) Access Door

E. Ozone Converter Installation

SUBTASK 21-73-01-020-004

(1) Remove the covers from the duct openings.

SUBTASK 21-73-01-420-009

(2) Slide the hose clamp [4] in position at the end of the converter [1] with the bolt retaining clip [11], bolt retaining block [5] and bolt [6].

SUBTASK 21-73-01-420-001

(3) Put the ozone converter [1] between the air supply ducts.

SUBTASK 21-73-01-420-002

(4) Install the coupling [3] to connect the forward end of the ozone converter [1] to the air supply duct.

(a) Tighten the nut on the coupling [3] to 55 ±5 in-lb (6.21 ±0.57 N·m).

SUBTASK 21-73-01-420-003

(5) Install the coupling [2] to connect the aft end of the ozone converter [1] to the air supply duct.

(a) Tighten the nut on the coupling [2] to 55 ±5 in-lb (6.21 ±0.57 N·m).

SUBTASK 21-73-01-420-010

(6) Attach the wiring bundle clamp [8] with the washer [10] to the bolt [6] and install the nut [7] to secure the wiring bundle [9] to the hose clamp [4] at the end of the converter [1].

SUBTASK 21-73-01-420-011

(7) Tighten hose clamp [4] at 5 in-lb (1 N·m) to 15 in-lb (2 N·m).

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F. Ozone Converter Leakage Test

SUBTASK 21-73-01-860-002

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

SUBTASK 21-73-01-860-003

(2) Do this task: Pressurize the Pneumatic System, TASK 36-00-00-860-802.

SUBTASK 21-73-01-860-004

(3) Make sure the applicable L PACK or R PACK switch-light and the TRIM AIR switch-light are set to OFF, on the Air Conditioning Module, in the pilot's Overhead Panel, P5.

SUBTASK 21-73-01-790-001

WARNING DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE COOLING PACK DUCTS CAN BE HOT AND CAN CAUSE INJURY TO PERSONS.

(4) Do these steps to feel for air leakage around the ozone converter connections:

(a) Put your hand approximately six inches away from the connections and feel for air leakage.

(b) If there is air leakage, adjust the applicable coupling until the air leakage is not felt.

NOTE: Make sure you remove pneumatic power before you adjust the couplings.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-73-01-860-005

(1) Do this task: Depressurize the Pneumatic System, TASK 36-00-00-860-801.

SUBTASK 21-73-01-410-002

(2) If you replaced the ozone converter [1] for the left cooling pack,

close this access panel:

Number	Name/Location
195EL	Environmental Control Systems (ECS) Access Door

SUBTASK 21-73-01-410-001

(3) If you replaced the ozone converter [1] for the right cooling pack,

close this access panel:

Number	Name/Location
196ER	Environmental Control Systems (ECS) Access Door

——— END OF TASK ———

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