CHAPTER

21

AIR CONDITIONING

CHAPTER 21
AIR CONDITIONING

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1 thru 13	JUN 15/2016	
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21-CONTENTS		
1	Jun 15/2015	
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O 22	Jun 15/2016	
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O 24	Jun 15/2016	
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O 929	Jun 15/2016	
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967	Jun 15/2015	

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413	Oct 15/2015	

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Subject/Page	Date	COC
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405	Jun 15/2015	
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R 407	Jun 15/2016	
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402	Oct 15/2015	

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O 504	Jun 15/2016	
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O 412	Jun 15/2016	
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510	Jun 15/2015	

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413	Feb 15/2016	
414	Feb 15/2016	
415	Feb 15/2016	
21-51-04 Config 2 (cont)		
416	Feb 15/2016	
21-51-07 Config 2		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2015	
R 404	Jun 15/2016	
405	Feb 15/2016	
406	Feb 15/2016	
407	Jun 15/2015	
408	Jun 15/2015	
21-51-08		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2014	
404	Oct 15/2015	
405	Oct 15/2015	
406	Oct 15/2015	
407	Jun 15/2015	
R 408	Jun 15/2016	
O 409	Jun 15/2016	
410	Oct 15/2014	
21-51-10		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Jun 15/2015	
406	Feb 15/2016	
407	Feb 15/2016	
408	BLANK	
21-51-11		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2014	
404	Oct 15/2015	
R 405	Jun 15/2016	

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Subject/Page	Date	COC
21-51-11 (cont)		
R 406	Jun 15/2016	
407	Oct 15/2015	
408	Feb 15/2016	
409	Feb 15/2016	
410	Jun 15/2015	
411	Feb 15/2016	
412	BLANK	
21-51-12		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2015	
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405	Oct 15/2014	
406	Oct 15/2014	
21-51-13		
401	Jun 15/2015	
402	Oct 15/2015	
403	Jun 15/2015	
404	Jun 15/2015	
405	Jun 15/2015	
406	BLANK	
21-51-14		
401	Feb 15/2016	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Jun 15/2015	
406	Jun 15/2015	
407	Jun 15/2015	
408	BLANK	
21-51-15		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Feb 15/2016	
21-51-15 (cont)		
406	Feb 15/2016	
407	Feb 15/2016	
408	BLANK	
21-51-16		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Oct 15/2015	
406	Feb 15/2016	
407	Feb 15/2016	
408	Oct 15/2014	
21-51-16		
601	Jun 15/2015	
602	Jun 15/2015	
603	Feb 15/2015	
604	Jun 15/2015	
605	Oct 15/2015	
606	Oct 15/2015	
607	Oct 15/2015	
608	BLANK	
21-51-17		
401	Jun 15/2015	
402	Feb 15/2016	
403	Oct 15/2014	
404	Oct 15/2015	
405	Oct 15/2015	
406	Oct 15/2015	
407	Feb 15/2016	
408	Feb 15/2016	
409	Jun 15/2015	
410	BLANK	
21-51-21		
R 401	Jun 15/2016	
R 402	Jun 15/2016	
O 403	Jun 15/2016	
21-51-21 (cont)		
O 404	Jun 15/2016	
O 405	Jun 15/2016	
O 406	Jun 15/2016	
O 407	Jun 15/2016	
O 408	Jun 15/2016	
O 409	Jun 15/2016	
O 410	Jun 15/2016	
R 411	Jun 15/2016	
R 412	Jun 15/2016	
O 413	Jun 15/2016	
R 414	Jun 15/2016	
A 415	Jun 15/2016	
A 416	BLANK	
21-51-22		
R 401	Jun 15/2016	
O 402	Jun 15/2016	
403	Oct 15/2015	
404	Oct 15/2015	
405	Oct 15/2015	
406	Oct 15/2015	
407	Oct 15/2015	
R 408	Jun 15/2016	
R 409	Jun 15/2016	
R 410	Jun 15/2016	
R 411	Jun 15/2016	
R 412	Jun 15/2016	
21-51-22		
501	Jun 15/2015	
R 502	Jun 15/2016	
R 503	Jun 15/2016	
R 504	Jun 15/2016	
R 505	Jun 15/2016	
R 506	Jun 15/2016	
O 507	Jun 15/2016	
O 508	Jun 15/2016	
O 509	Jun 15/2016	

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Subject/Page	Date	COC
21-51-22 (cont)		
O 510	Jun 15/2016	
O 511	Jun 15/2016	
O 512	Jun 15/2016	
A 513	Jun 15/2016	
A 514	BLANK	
21-51-23		
R 401	Jun 15/2016	
O 402	Jun 15/2016	
403	Oct 15/2015	
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405	Oct 15/2015	
406	Oct 15/2015	
407	Jun 15/2015	
R 408	Jun 15/2016	
O 409	Jun 15/2016	
R 410	Jun 15/2016	
R 411	Jun 15/2016	
O 412	Jun 15/2016	
21-51-24		
R 401	Jun 15/2016	
402	Oct 15/2014	
R 403	Jun 15/2016	
404	Feb 15/2015	
405	Oct 15/2015	
406	Oct 15/2015	
407	Oct 15/2015	
408	Oct 15/2015	
409	Oct 15/2015	
410	Oct 15/2015	
411	Oct 15/2015	
412	Oct 15/2015	
R 413	Jun 15/2016	
O 414	Jun 15/2016	
415	Jun 15/2015	
416	Jun 15/2015	
417	Jun 15/2015	
21-51-24 (cont)		
418	Jun 15/2015	
21-51-24		
801	Oct 15/2015	
802	Jun 15/2015	
803	Jun 15/2015	
804	Oct 15/2015	
805	Oct 15/2014	
806	Oct 15/2014	
807	Oct 15/2015	
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809	Oct 15/2014	
810	Oct 15/2014	
811	Oct 15/2014	
812	BLANK	
21-51-27		
R 401	Jun 15/2016	
R 402	Jun 15/2016	
R 403	Jun 15/2016	
404	Oct 15/2015	
405	Oct 15/2015	
R 406	Jun 15/2016	
R 407	Jun 15/2016	
R 408	Jun 15/2016	
R 409	Jun 15/2016	
R 410	Jun 15/2016	
A 411	Jun 15/2016	
A 412	Jun 15/2016	
A 413	Jun 15/2016	
A 414	Jun 15/2016	
A 415	Jun 15/2016	
A 416	Jun 15/2016	
A 417	Jun 15/2016	
A 418	Jun 15/2016	
A 419	Jun 15/2016	
A 420	Jun 15/2016	
21-51-40		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Feb 15/2016	
406	Jun 15/2015	
21-51-41		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Feb 15/2016	
406	Jun 15/2015	
21-51-42 Config 2		
401	Oct 15/2014	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Feb 15/2016	
406	Oct 15/2014	
21-51-43		
401	Oct 15/2015	
402	Oct 15/2015	
403	Oct 15/2015	
R 404	Jun 15/2016	
O 405	Jun 15/2016	
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21-51-45		
401	Oct 15/2015	
402	Oct 15/2015	
403	Oct 15/2015	
404	Oct 15/2015	
R 405	Jun 15/2016	
O 406	Jun 15/2016	

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Subject/Page	Date	COC
21-51-50		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Feb 15/2016	
406	Feb 15/2016	
407	Feb 15/2016	
408	BLANK	
21-51-51		
201	Oct 15/2014	
202	Oct 15/2014	
203	Oct 15/2015	
204	Oct 15/2015	
205	Jun 15/2015	
206	Jun 15/2015	
207	Oct 15/2014	
208	BLANK	
21-51-51		
R 501	Jun 15/2016	
502	Jun 15/2015	
503	Jun 15/2015	
504	Oct 15/2015	
505	Oct 15/2015	
506	BLANK	
21-51-52		
401	Jun 15/2015	
402	Oct 15/2014	
R 403	Jun 15/2016	
404	Feb 15/2016	
405	Jun 15/2015	
406	BLANK	
21-51-52		
R 501	Jun 15/2016	
502	Jun 15/2015	
503	Jun 15/2015	
R 504	Jun 15/2016	
21-51-60		
401	Jun 15/2015	
402	Oct 15/2014	
R 403	Jun 15/2016	
404	Feb 15/2016	
405	Jun 15/2015	
406	BLANK	
21-51-65		
401	Oct 15/2014	
402	Oct 15/2014	
403	Oct 15/2015	
R 404	Jun 15/2016	
405	Jun 15/2015	
406	Jun 15/2015	
407	Jun 15/2015	
408	BLANK	
21-61-00 Config 2		
501	Oct 15/2015	
502	Oct 15/2015	
503	Oct 15/2015	
504	Oct 15/2015	
505	Oct 15/2015	
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512	Oct 15/2015	
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514	Oct 15/2015	
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517	Oct 15/2015	
518	Oct 15/2015	
519	Oct 15/2015	
520	Jun 15/2015	
21-61-00 Config 2 (cont)		
521	Jun 15/2015	
522	Jun 15/2015	
523	Jun 15/2015	
524	Jun 15/2015	
525	Jun 15/2015	
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21-61-04 Config 2		
401	Oct 15/2014	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Oct 15/2015	
406	Oct 15/2015	
407	Jun 15/2015	
408	Jun 15/2015	
21-61-04 Config 2		
R 501	Jun 15/2016	
502	Jun 15/2015	
503	Jun 15/2015	
504	Oct 15/2015	
505	Oct 15/2015	
506	Oct 15/2015	
507	Oct 15/2015	
508	Oct 15/2015	
21-61-05		
401	Feb 15/2016	
402	Feb 15/2016	
403	Oct 15/2015	
404	Oct 15/2015	
405	Oct 15/2015	
406	Oct 15/2015	
407	Oct 15/2015	
408	Oct 15/2015	
409	Feb 15/2016	
410	Feb 15/2016	

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AIR CONDITIONING

Subject/Page	Date	COC
21-61-06		
201	Feb 15/2015	
202	Feb 15/2015	
203	Oct 15/2015	
204	Oct 15/2015	
205	Oct 15/2015	
206	Jun 15/2015	
207	Oct 15/2015	
208	Feb 15/2015	
21-61-07 Config 2		
401	Oct 15/2014	
402	Oct 15/2015	
403	Oct 15/2015	
404	Jun 15/2015	
405	Jun 15/2015	
406	BLANK	
21-61-09		
401	Jun 15/2015	
402	Oct 15/2014	
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404	Oct 15/2015	
405	Feb 15/2016	
406	Feb 15/2016	
21-61-09		
601	Oct 15/2014	
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21-61-10		
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207	Oct 15/2015	
208	Jun 15/2015	
209	Jun 15/2015	
210	Jun 15/2015	
21-61-10		
R 601	Jun 15/2016	
602	Jun 15/2015	
603	Jun 15/2015	
604	Oct 15/2015	
605	Oct 15/2015	
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607	Oct 15/2015	
608	Oct 15/2015	
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21-61-11		
R 401	Jun 15/2016	
R 402	Jun 15/2016	
403	Oct 15/2015	
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405	Oct 15/2015	
406	Oct 15/2015	
407	Oct 15/2015	
R 408	Jun 15/2016	
R 409	Jun 15/2016	
410	BLANK	
21-61-12		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Oct 15/2015	
406	Oct 15/2015	
407	Oct 15/2015	
R 408	Jun 15/2016	
O 409	Jun 15/2016	
410	Jun 15/2015	
411	Oct 15/2014	
412	BLANK	
21-61-14		
201	Oct 15/2014	
202	Oct 15/2014	
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204	Oct 15/2015	
205	Oct 15/2014	
206	Oct 15/2014	
207	Oct 15/2015	
208	Oct 15/2015	
209	Oct 15/2015	
210	Oct 15/2015	
211	Jun 15/2015	
212	Jun 15/2015	
213	Jun 15/2015	
214	Jun 15/2015	
215	Jun 15/2015	
216	Oct 15/2014	
21-61-15		
401	Oct 15/2014	
402	Oct 15/2015	
403	Jun 15/2015	
404	Jun 15/2015	
21-61-17		
401	Jun 15/2015	
402	Jun 15/2015	
403	Oct 15/2015	
404	Feb 15/2016	
405	Jun 15/2015	
406	BLANK	
21-61-20		
201	Oct 15/2015	
202	Oct 15/2015	
203	Oct 15/2015	
204	Oct 15/2015	
21-61-20		
R 401	Jun 15/2016	
O 402	Jun 15/2016	

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Subject/Page	Date	COC
21-61-20 (cont)		
403	Oct 15/2015	
R 404	Jun 15/2016	
O 405	Jun 15/2016	
406	BLANK	
21-61-21		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2014	
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405	Oct 15/2015	
406	Jun 15/2015	
407	Jun 15/2015	
408	Feb 15/2016	
21-61-30 Config 2		
401	Oct 15/2014	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Oct 15/2015	
406	Oct 15/2015	
407	Oct 15/2015	
408	Jun 15/2015	
21-61-31		
401	Oct 15/2014	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
405	Jun 15/2015	
406	Jun 15/2015	
21-61-32		
401	Oct 15/2014	
402	Oct 15/2014	
403	Oct 15/2015	
404	Oct 15/2015	
R 405	Jun 15/2016	
406	Jun 15/2015	
21-62-00		
501	Jun 15/2015	
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503	Jun 15/2015	
504	Oct 15/2015	
21-62-01		
401	Jun 15/2015	
402	Oct 15/2014	
403	Oct 15/2014	
404	Oct 15/2015	
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406	Feb 15/2016	
407	Feb 15/2016	
408	Feb 15/2016	
409	Jun 15/2015	
410	BLANK	

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CHAPTER 21
AIR CONDITIONING

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
AIR CONDITIONING - GENERAL - MAINTENANCE PRACTICES	21-00-00		201	AKS ALL
Supply Conditioned Air to the Airplane TASK 21-00-00-800-801			201	AKS ALL
Remove Conditioned Air from the Airplane TASK 21-00-00-800-802			203	AKS ALL
Supply Conditioned Air with a Cooling Pack TASK 21-00-00-800-803			203	AKS ALL
Remove Conditioned Air Supplied by a Cooling Pack TASK 21-00-00-800-804			204	AKS ALL
Supply Conditioned Air with a Ground Air Source TASK 21-00-00-800-805			205	AKS ALL
Remove Conditioned Air Supplied by a Ground Air Source TASK 21-00-00-800-806			206	AKS ALL
AIR CONDITIONING - DDG MAINTENANCE PROCEDURES	21-00-00		901	AKS ALL
MMEL 21-1 (DDPG) Preparation - Air Conditioning Pack(s) Inoperative TASK 21-00-00-040-803			902	AKS ALL
MMEL 21-1 (DDPG) Restoration - Air Conditioning Pack(s) Inoperative TASK 21-00-00-040-804			903	AKS ALL
MMEL 21-2 (DDPG) Preparation - Flow Control and Shutoff Valve Inoperative TASK 21-00-00-040-805			904	AKS ALL
MMEL 21-2 (DDPG) Restoration - Flow Control and Shutoff Valve(s) Inoperative TASK 21-00-00-440-801			912	AKS ALL
MMEL 21-3 (DDPG) Preparation - Pack Trip Warning System Inoperative TASK 21-00-00-040-832			915	AKS ALL
MMEL 21-3 (DDPG) Restoration - Pack Trip Warning System Inoperative TASK 21-00-00-440-804			915	AKS ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-5 (DDPG) Preparation - Ram Air Modulating System Inoperative TASK 21-00-00-040-806			916	AKS ALL
MMEL 21-5 (DDPG) Restoration - Ram Air Modulation System Inoperative TASK 21-00-00-440-802			924	AKS ALL
MMEL 21-10 (DDPG) Preparation - Cabin Rate of Climb Indicator Inoperative TASK 21-00-00-040-834			927	AKS ALL
MMEL 21-10 (DDPG) Restoration - Cabin Rate of Climb Indicator Inoperative TASK 21-00-00-440-806			928	AKS ALL
MMEL 21-12 (DDPG) Preparation - Cabin Altitude Indicator Inoperative TASK 21-00-00-040-835			928	AKS ALL
MMEL 21-12 (DDPG) Restoration - Cabin Altitude Indicator Inoperative TASK 21-00-00-440-807			929	AKS ALL
MMEL 21-13 (DDPG) Preparation - Cabin Differential Pressure Indicator Inoperative TASK 21-00-00-040-836			930	AKS ALL
MMEL 21-13 (DDPG) Restoration - Cabin Differential Pressure Indicator Inoperative TASK 21-00-00-440-808			930	AKS ALL
DDG 21-14 Preparation - Cabin Pressure Control System Inoperative TASK 21-00-00-040-807			931	AKS ALL
DDG 21-14 Restoration - Cabin Pressure Control System Inoperative TASK 21-00-00-040-808			932	AKS ALL
MMEL 21-15 (DDPG) Preparation - Aft Outflow Valve - Two Actuators Inoperative TASK 21-00-00-040-809			933	AKS ALL
MMEL 21-15 (DDPG) Restoration - Aft Outflow Valve - Two Actuators Inoperative TASK 21-00-00-040-810			935	AKS ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-16 (DDPG) Preparation - Positive Pressure Relief Valves - One Valve Inoperative TASK 21-00-00-040-811			935	AKS ALL
MMEL 21-16 (DDPG) Restoration - Positive Pressure Relief Valves - One Valve Inoperative TASK 21-00-00-440-803			939	AKS ALL
MMEL 21-19 (DDPG) Preparation - Passenger Cabin Temperature Control System Inoperative TASK 21-00-00-040-816			940	AKS ALL
MMEL 21-19 (DDPG) Restoration - Passenger Cabin Temperature Control System Inoperative TASK 21-00-00-040-817			940	AKS ALL
MMEL 21-21 (DDPG) Preparation - Flight Deck Temperature Control System Inoperative TASK 21-00-00-040-818			941	AKS ALL
MMEL 21-21 (DDPG) Restoration - Flight Deck Temperature Control System Inoperative TASK 21-00-00-040-819			942	AKS ALL
MMEL 21-26 (DDPG) Preparation - Ground Preconditioned Air Connection Check Valve Inoperative TASK 21-00-00-040-838			943	AKS ALL
MMEL 21-26 (DDPG) Restoration - Ground Preconditioned Air Connection Check Valve Inoperative TASK 21-00-00-440-810			944	AKS ALL
MMEL 21-27 (DDPG) Preparation - Electronic Equipment Cooling Fan Inoperative TASK 21-00-00-040-839			944	AKS ALL
MMEL 21-27 (DDPG) Restoration - Electronic Equipment Cooling Fan Inoperative TASK 21-00-00-440-811			946	AKS ALL
MMEL 21-33 (DDPG) Preparation - Pack Temperature Control Valves Inoperative TASK 21-00-00-040-840			946	AKS ALL
MMEL 21-33 (DDPG) Restoration - Pack Temperature Control Valves Inoperative TASK 21-00-00-440-812			951	AKS ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-34 (DDPG) Preparation - Standby Pack Temperature Control Valves Inoperative TASK 21-00-00-040-841			953	AKS ALL
MMEL 21-34 (DDPG) Restoration - Standby Pack Temperature Control Valves Inoperative TASK 21-00-00-440-813			953	AKS ALL
MMEL 21-35 (DDPG) Preparation - Trim Air Pressure Regulating and Shutoff Valve Inoperative TASK 21-00-00-040-820			954	AKS ALL
MMEL 21-35 (DDPG) Restoration - Trim Air Pressure Regulating and Shutoff Valve Inoperative TASK 21-00-00-040-821			957	AKS ALL
MMEL 21-36 (DDPG) Preparation - Zone Trim Air Modulating Valve Inoperative TASK 21-00-00-040-822			959	AKS ALL
MMEL 21-36 (DDPG) Restoration - Zone Trim Air Modulating Valve Inoperative TASK 21-00-00-040-823			963	AKS ALL
MMEL 21-38 (DDPG) Preparation - Outflow Valve Position Indicator Inoperative TASK 21-00-00-040-824			964	AKS ALL
MMEL 21-38 (DDPG) Restoration - Outflow Valve Position Indicator Inoperative TASK 21-00-00-040-825			966	AKS ALL
MMEL 21-39 (DDPG) Preparation - Trim Air Check Valve Inoperative TASK 21-00-00-040-826			966	AKS ALL
MMEL 21-39 (DDPG) Restoration - Trim Air Check Valve Inoperative TASK 21-00-00-040-827			972	AKS ALL
MMEL 21-40 (DDPG) Preparation - Equipment Cooling Overboard Exhaust Valve Inoperative TASK 21-00-00-040-828			972	AKS ALL
MMEL 21-40 (DDPG) Restoration - Equipment Cooling Overboard Exhaust Valve Inoperative TASK 21-00-00-040-829			977	AKS ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
MMEL 21-41 (DDPG) Preparation - Door Area Heater Systems Inoperative TASK 21-00-00-040-843			977	AKS ALL
MMEL 21-41 (DDPG) Restoration - Door Area Heater Systems Inoperative TASK 21-00-00-040-844			978	AKS ALL
MMEL 21-42 (DDPG) Preparation - Equipment Cooling Low Flow Detection System Inoperative TASK 21-00-00-040-830			979	AKS ALL
MMEL 21-42 (DDPG) Restoration - Equipment Cooling Low Flow Detection System Inoperative TASK 21-00-00-040-831			984	AKS ALL
MMEL 21-43 (DDPG) Preparation - Equipment Cooling Air Filter Removal TASK 21-00-00-040-814			984	AKS ALL
MMEL 21-43 (DDPG) Restoration - Equipment Cooling Air Filter Removal TASK 21-00-00-040-815			985	AKS ALL
DDG 21-49 Preparation - Return Air Grille Broken or Missing TASK 21-00-00-400-802			985	AKS ALL
DDG 21-49 Restoration - Return Air Grille Broken or Missing TASK 21-00-00-440-816			986	AKS ALL
AIR CONDITIONING SYSTEM OIL CONTAMINATION REMOVAL - MAINTENANCE PRACTICES	21-00-01		201	AKS ALL
Oil Contamination Removal from Air Conditioning and Pneumatic Systems TASK 21-00-01-100-801			201	AKS ALL
CONFIDENCE CHECK OF AIRPLANE ABILITY TO MAINTAIN CABIN PRESSURE IN FLIGHT ON SINGLE PACK OPERATION - MAINTENANCE PRACTICES	21-00-05		201	AKS ALL
Airplane Dispatch with Single Pack Operation - Confidence Check TASK 21-00-05-780-801			201	AKS ALL

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CHAPTER 21
AIR CONDITIONING

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
AIR CONDITIONING SYSTEM DUCTS - REPAIRS	21-20-02		801	AKS ALL
Taped Joint Repair - Fiberglass/Kevlar Duct TASK 21-20-02-330-801			802	AKS ALL
External Patch - Fiberglass/Kevlar Duct TASK 21-20-02-330-802			808	AKS ALL
Structural Repair - Fiberglass/Kevlar Duct TASK 21-20-02-330-803			810	AKS ALL
Taped Joint Repair - Polyurethane Foam Duct TASK 21-20-02-330-804			813	AKS ALL
Duct End Repair - Polyurethane Foam Repair TASK 21-20-02-330-805			817	AKS ALL
External Patch - Polyurethane Foam Duct TASK 21-20-02-330-806			818	AKS ALL
Structural Repair - Polyurethane Foam Duct TASK 21-20-02-330-807			820	AKS ALL
Inner Lining Repair - Polyurethane Foam Duct TASK 21-20-02-330-808			823	AKS ALL
Duct Section Replacement - Polyurethane Foam Duct TASK 21-20-02-330-809			825	AKS ALL
Tape Replacement - Foam Wrapped Insulated Duct TASK 21-20-02-330-810			827	AKS ALL
Insulation Repair - Foam Wrapped Insulated Duct TASK 21-20-02-330-811			832	AKS ALL
Insulation Replacement - Foam Wrapped Insulated Duct TASK 21-20-02-330-812			834	AKS ALL
Tape Replacement - Fiberglass Insulated Duct TASK 21-20-02-330-813			837	AKS ALL
Insulation and Covering Repair - Fiberglass Insulated Duct TASK 21-20-02-330-814			840	AKS ALL
Insulation and Covering Replacement - Fiberglass Insulated Duct TASK 21-20-02-330-815			842	AKS ALL

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External Patch - Reinforced Thermoplastic Laminate Duct TASK 21-20-02-330-816			843	AKS ALL
Structural Repair - Reinforced Thermoplastic Laminate Duct TASK 21-20-02-330-817			846	AKS ALL
Duct End Repair - Reinforced Thermoplastic Laminate Duct TASK 21-20-02-330-818			848	AKS ALL
GROUND CONDITIONED AIR CONNECTION DUCT AND CHECK VALVE - REMOVAL/INSTALLATION	21-21-01	2	401	AKS ALL
Ground Conditioned Air Connection Duct Removal TASK 21-21-01-000-803-002		2	401	AKS ALL
Ground Conditioned Air Connection Duct Installation TASK 21-21-01-400-803-002		2	405	AKS ALL
Ground Conditioned Air Check Valve Removal TASK 21-21-01-000-804-002		2	406	AKS ALL
Ground Conditioned Air Check Valve Installation TASK 21-21-01-400-804-002		2	414	AKS ALL
Cooling Exchange Check Valve Removal TASK 21-21-01-000-808-002		2	417	AKS ALL
Cooling Exchange Check Valve Installation TASK 21-21-01-400-808-002		2	419	AKS ALL
Distribution Bay Mix Manifold - Removal/Installation	21-21-05		401	AKS ALL
Distribution Bay Mix Manifold Removal TASK 21-21-05-000-801			401	AKS ALL
Distribution Bay Mix Manifold Installation TASK 21-21-05-400-801			405	AKS ALL
WINDSHIELD AND FOOT AIR OUTLET VALVE - REMOVAL/INSTALLATION	21-22-01		401	AKS ALL
Windshield and Foot Air Outlet Valve Removal TASK 21-22-01-000-801			401	AKS ALL
Windshield and Foot Air Outlet Installation TASK 21-22-01-400-801			406	AKS ALL

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AIR OUTLET VALVE CONTROL CABLES - REMOVAL/INSTALLATION	21-22-02		401	AKS ALL
Air Outlet Valve Control Cables Removal TASK 21-22-02-000-801			401	AKS ALL
Air Outlet Valve Control Cables Installation TASK 21-22-02-400-801			406	AKS ALL
AIR OUTLET VALVE CONTROL CABLES - ADJUSTMENT/TEST	21-22-02		501	AKS ALL
Air Outlet Valve Control Cables Adjustment and Test TASK 21-22-02-820-801			501	AKS ALL
FLIGHT DECK AIR DISTRIBUTION SYSTEM MUFFLER/DUCT ASSEMBLY - REMOVAL/INSTALLATION	21-22-05		401	AKS ALL
Flight Deck Air Distribution System Muffler/Duct Assembly Removal TASK 21-22-05-000-801			401	AKS ALL
Flight Deck Air Distribution System Muffler/Duct Assembly Installation TASK 21-22-05-400-801			406	AKS ALL
FLIGHT DECK DUCT ASSEMBLY SCREEN - CLEANING	21-22-07		701	AKS ALL
Flight Deck Duct Assembly Removal TASK 21-22-07-020-801			701	AKS ALL
Flight Deck Duct Assembly Screen Cleaning TASK 21-22-07-100-801			705	AKS ALL
Flight Deck Duct Assembly Installation TASK 21-22-07-420-801			705	AKS ALL
FLIGHT COMPARTMENT GASPER AIR OUTLETS - REMOVAL/INSTALLATION	21-22-09		401	AKS ALL
Gasper Air Outlet Removal TASK 21-22-09-000-801			401	AKS ALL
Gasper Air Outlet Installation TASK 21-22-09-400-801			403	AKS ALL

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OVERHEAD DISTRIBUTION DUCT - MAINTENANCE PRACTICES	21-23-01		201	AKS ALL
Overhead Distribution Duct Removal TASK 21-23-01-000-801			201	AKS ALL
Overhead Distribution Duct Installation TASK 21-23-01-400-801			205	AKS ALL
Overhead Distribution Duct Insulation Repair TASK 21-23-01-300-801			207	AKS ALL
Insulation Replacement/Repair - Overhead Distribution Duct Sidewall Risers Interface Segment TASK 21-23-01-300-802			208	AKS ALL
SIDEWALL RISER DUCTS/TRANSITION DUCT - MAINTENANCE PRACTICES	21-23-02		201	AKS ALL
Sidewall Riser Ducts/Transition Duct Inspection TASK 21-23-02-212-801			201	AKS ALL
Sidewall Riser Ducts/Transition Duct Repair TASK 21-23-02-360-801			203	AKS ALL
RETURN AIR GRILLES (DECOMPRESSION VENTS) - MAINTENANCE PRACTICES	21-23-03		201	AKS ALL
Return Air Grille Removal TASK 21-23-03-000-801			201	AKS ALL
Return Air Grille Baffle Removal TASK 21-23-03-000-802			204	AKS ALL
Return Air Grille and Baffle Cleaning TASK 21-23-03-100-801			206	AKS ALL
Return Air Grille Baffle Installation TASK 21-23-03-400-801			206	AKS ALL
Return Air Grille Installation TASK 21-23-03-400-802			207	AKS ALL
Return Air Grille Baffle Inspection TASK 21-23-03-200-801			208	AKS ALL

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SIDEWALL RISER DUCTS - REMOVAL/INSTALLATION	21-23-04		401	AKS ALL
Sidewall Riser Ducts - Removal TASK 21-23-04-000-801			401	AKS ALL
Sidewall Riser Ducts - Installation TASK 21-23-04-400-801			404	AKS ALL
PASSENGER CABIN GASPER AIR OUTLETS - REMOVAL/INSTALLATION	21-24-04		401	AKS ALL
Gasper Air Outlet (PSU) Removal TASK 21-24-04-000-801			401	AKS ALL
Gasper Air Outlet (PSU) Installation TASK 21-24-04-400-801			404	AKS ALL
Gasper Air Outlet (LSU) Removal TASK 21-24-04-000-802			404	AKS ALL
Gasper Air Outlet (LSU) Installation TASK 21-24-04-400-802			406	AKS ALL
RECIRCULATION SYSTEM - MAINTENANCE PRACTICES	21-25-00		201	AKS ALL
Recirculation System - Deactivation TASK 21-25-00-800-801			201	AKS ALL
Recirculation System - Activation TASK 21-25-00-800-802			206	AKS ALL
RECIRCULATION SYSTEM - ADJUSTMENT/TEST	21-25-00	2	501	AKS ALL
Recirculation System - Operational Test TASK 21-25-00-710-802-002		2	501	AKS ALL
RECIRCULATION AIR FILTER - REMOVAL/INSTALLATION	21-25-01		401	AKS ALL
Recirculation Air Filter Removal TASK 21-25-01-000-801			401	AKS ALL
Recirculation Air Filter Installation TASK 21-25-01-400-801			407	AKS ALL
RECIRCULATION FAN - REMOVAL/INSTALLATION	21-25-02		401	AKS ALL
Recirculation Fan Removal TASK 21-25-02-000-801			401	AKS ALL

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Recirculation Fan Installation TASK 21-25-02-400-801			405	AKS ALL
RECIRCULATION FAN CHECK VALVE - REMOVAL/INSTALLATION	21-25-03		401	AKS ALL
Recirculation Fan Check Valve Removal TASK 21-25-03-000-801			401	AKS ALL
Recirculation Fan Check Valve Installation TASK 21-25-03-400-801			405	AKS ALL
RECIRCULATION FAN CHECK VALVE - INSPECTION/CHECK	21-25-03		601	AKS ALL
Recirculation Fan Check Valve Inspection TASK 21-25-03-200-801			601	AKS ALL
GALLEY VENTILATION MUFFLER - REMOVAL/INSTALLATION	21-26-01		401	AKS ALL
Galley Ventilation Muffler Removal TASK 21-26-01-100-801			401	AKS ALL
Galley Ventilation Muffler Installation TASK 21-26-01-400-801			405	AKS ALL
GALLEY CEILING VENTILATION GRILL - MAINTENANCE PRACTICES	21-26-03		201	AKS ALL
Galley Ceiling Ventilation Grill Removal TASK 21-26-03-000-801			201	AKS ALL
Galley Ceiling Ventilation Grill Cleaning TASK 21-26-03-100-801			204	AKS ALL
Galley Ceiling Ventilation Grill Installation TASK 21-26-03-400-801			204	AKS ALL
EQUIPMENT COOLING SYSTEM - MAINTENANCE PRACTICES	21-27-00		201	AKS ALL
Equipment Cooling System - Deactivation TASK 21-27-00-800-801			201	AKS ALL
Equipment Cooling System - Activation TASK 21-27-00-800-802			205	AKS ALL

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EQUIPMENT COOLING SYSTEM - ADJUSTMENT/TEST	21-27-00		501	AKS ALL
Equipment Cooling Low Flow Sensors - Operational Test TASK 21-27-00-700-801			501	AKS ALL
Equipment Cooling Fans - Operational Test TASK 21-27-00-700-802			504	AKS ALL
Equipment Cooling Overboard Exhaust Valve - Functional Test TASK 21-27-00-700-803			506	AKS ALL
Flight Compartment Display Unit Air Flow Test TASK 21-27-00-700-806			517	AKS ALL
Alternate Equipment Cooling Supply Fan - Operational Test TASK 21-27-00-890-801			519	AKS ALL
Alternate Equipment Cooling Exhaust Fan - Operational Test TASK 21-27-00-700-804			520	AKS ALL
Equipment Cooling Overboard Exhaust Valve Smoke Clearance Mode - Operational Test TASK 21-27-00-700-805			522	AKS ALL
Smoke Clearance Mode - Operational Test TASK 21-27-00-700-807			525	AKS ALL
EQUIPMENT COOLING AIR FILTER - REMOVAL/INSTALLATION	21-27-01		401	AKS ALL
Equipment Cooling Air Filter Removal TASK 21-27-01-000-801			401	AKS ALL
Equipment Cooling Air Filter Installation TASK 21-27-01-400-801			405	AKS ALL
EQUIPMENT COOLING SUPPLY FAN - REMOVAL/INSTALLATION	21-27-02		401	AKS ALL
Equipment Cooling Supply Fan Removal TASK 21-27-02-000-801			401	AKS ALL
Equipment Cooling Supply Fan Installation TASK 21-27-02-400-801			405	AKS ALL

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EQUIPMENT COOLING LOW FLOW SENSORS - MAINTENANCE PRACTICES	21-27-03		201	AKS ALL
Equipment Cooling Low Flow Sensors Removal TASK 21-27-03-000-802			201	AKS ALL
Equipment Cooling Low Flow Sensors Installation TASK 21-27-03-400-802			205	AKS ALL
Equipment Cooling Low Flow Sensors Cleaning TASK 21-27-03-400-803			207	AKS ALL
EQUIPMENT COOLING EXHAUST FAN - REMOVAL/INSTALLATION	21-27-04		401	AKS ALL
Equipment Cooling Exhaust Fan Removal TASK 21-27-04-000-801			401	AKS ALL
Equipment Cooling Exhaust Fan Installation TASK 21-27-04-400-801			405	AKS ALL
Equipment Cooling Exhaust Fan - Cleaning/Painting	21-27-04		701	AKS ALL
Equipment Cooling Exhaust Fan Cleaning TASK 21-27-04-110-801			701	AKS ALL
EQUIPMENT COOLING OVERBOARD EXHAUST VALVE - REMOVAL/INSTALLATION	21-27-05		401	AKS ALL
Equipment Cooling Overboard Exhaust Valve Removal TASK 21-27-05-000-801			401	AKS ALL
Equipment Cooling Overboard Exhaust Valve Installation TASK 21-27-05-400-801			405	AKS ALL
EQUIPMENT COOLING MUFFLER - REMOVAL/INSTALLATION	21-27-07		401	AKS ALL
Equipment Cooling Muffler Removal TASK 21-27-07-100-801			401	AKS ALL
Equipment Cooling Muffler Installation TASK 21-27-07-400-801			403	AKS ALL

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PRESSURIZATION CONTROL SYSTEM - MAINTENANCE PRACTICES	21-31-00		201	AKS ALL
Pressurization Control System - Deactivation TASK 21-31-00-800-801			201	AKS ALL
Pressurization Control System - Activation TASK 21-31-00-800-802			208	AKS ALL
Digital Cabin Pressure Controller NVM Download Procedure - Maintenance Practices TASK 21-31-00-970-802			208	AKS ALL
PRESSURIZATION CONTROL SYSTEM - ADJUSTMENT/TEST	21-31-00		501	AKS ALL
Pressurization System Manual Mode Test TASK 21-31-00-710-801			501	AKS ALL
750 Feet Per Minute Descent With Cargo Fire Mode Test TASK 21-31-00-710-802			507	AKS ALL
Master Caution Test TASK 21-31-00-700-801			509	AKS ALL
Pressurization System Ground Test TASK 21-31-00-700-802			511	AKS ALL
CABIN PRESSURE CONTROLLER (CPC) - REMOVAL/INSTALLATION	21-31-01		401	AKS ALL
Cabin Pressure Controller (CPC) Removal TASK 21-31-01-000-801			401	AKS ALL
Cabin Pressure Controller (CPC) Installation TASK 21-31-01-400-801			409	AKS ALL
CABIN PRESSURE CONTROL MODULE - REMOVAL/INSTALLATION	21-31-02		401	AKS ALL
Cabin Pressure Control Module Removal TASK 21-31-02-000-801			401	AKS ALL
Cabin Pressure Control Module Installation TASK 21-31-02-400-801			404	AKS ALL

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AFT OUTFLOW VALVE ASSEMBLY - REMOVAL/INSTALLATION	21-31-03		401	AKS ALL
Aft Outflow Valve Assembly Removal TASK 21-31-03-000-801			401	AKS ALL
Aft Outflow Valve Assembly Installation TASK 21-31-03-400-801			410	AKS ALL
POSITIVE PRESSURE RELIEF VALVE - REMOVAL/INSTALLATION	21-32-01		401	AKS ALL
Positive Pressure Relief Valve Removal TASK 21-32-01-000-801			401	AKS ALL
Positive Pressure Relief Valve Installation TASK 21-32-01-400-801			404	AKS ALL
POSITIVE PRESSURE RELIEF VALVE - ADJUSTMENT/TEST	21-32-01		501	AKS ALL
Positive Pressure Relief Valve - System Test with the Use of Hamilton Sundstrand Test Equipment TASK 21-32-01-700-801			501	AKS ALL
Positive Pressure Relief Valve - System Test with the Use of Boeing Test Equipment TASK 21-32-01-700-802			506	AKS ALL
POSITIVE PRESSURE RELIEF VALVE FILTER - REMOVAL/INSTALLATION	21-32-02		401	AKS ALL
Positive Pressure Relief Valve Filter Removal TASK 21-32-02-000-801			401	AKS ALL
Positive Pressure Relief Valve Filter Installation TASK 21-32-02-400-801			404	AKS ALL
NEGATIVE PRESSURE RELIEF VALVE - MAINTENANCE PRACTICES	21-32-03		201	AKS ALL
Negative Pressure Relief Valve Removal TASK 21-32-03-000-801			201	AKS ALL
Negative Pressure Relief Valve Installation TASK 21-32-03-400-801			205	AKS ALL
Negative Pressure Relief Valve Adjustment/Test TASK 21-32-03-700-801			206	AKS ALL

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CARGO COMPARTMENT BLOWOUT PANELS - REMOVAL/INSTALLATION	21-32-05		401	AKS ALL
Ceiling Blowout Panel Removal TASK 21-32-05-000-801			401	AKS ALL
Ceiling Blowout Panel Installation TASK 21-32-05-400-801			404	AKS ALL
Cargo Compartment Bulkhead Blowout Panel Removal TASK 21-32-05-000-802			404	AKS ALL
Cargo Compartment Bulkhead Blowout Panel Installation TASK 21-32-05-400-802			409	AKS ALL
CABIN PRESSURE INDICATION SYSTEM - ADJUSTMENT/TEST	21-33-00		501	AKS ALL
Cabin Altitude Warning Switch Functional Test TASK 21-33-00-000-801			501	AKS ALL
Check of the Cabin Rate of Climb Indicator TASK 21-33-00-700-801			506	AKS ALL
CABIN RATE OF CLIMB INDICATOR - REMOVAL/INSTALLATION	21-33-01		401	AKS ALL
Cabin Rate of Climb Indicator Removal TASK 21-33-01-000-801			401	AKS ALL
Cabin Rate of Climb Indicator Installation TASK 21-33-01-400-801			405	AKS ALL
CABIN ALTITUDE AND DIFFERENTIAL PRESSURE INDICATOR - REMOVAL/INSTALLATION	21-33-02		401	AKS ALL
Cabin Altitude and Differential Pressure Indicator Removal TASK 21-33-02-000-801			401	AKS ALL
Cabin Altitude and Differential Pressure Indicator Installation TASK 21-33-02-400-801			405	AKS ALL
CABIN ALTITUDE WARNING SWITCH - REMOVAL/INSTALLATION	21-33-04		401	AKS ALL
Cabin Altitude Warning Switch Removal TASK 21-33-04-000-801			401	AKS ALL

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Cabin Altitude Warning Switch Installation TASK 21-33-04-400-801			404	AKS ALL
Cabin Altimeter and Rate of Climb Module - Removal and Installation	21-33-07		401	AKS ALL
Cabin Altimeter and Rate of Climb Module Removal TASK 21-33-07-000-801			401	AKS ALL
Cabin Altimeter and Rate of Climb Module Installation TASK 21-33-07-400-801			403	AKS ALL
DOOR AREA HEATING SYSTEM - MAINTENANCE PRACTICES	21-45-00		201	AKS ALL
Door Area Heating System - Deactivation TASK 21-45-00-800-801			201	AKS ALL
Door Area Heating System - Activation TASK 21-45-00-800-802			210	AKS ALL
DOOR AREA HEATING SYSTEM - ADJUSTMENT/TEST	21-45-00		501	AKS ALL
Door Area Heater Operational Test TASK 21-45-00-700-802			501	AKS ALL
Emergency Exit Hatch Heaters Operational Test TASK 21-45-00-700-801			502	AKS ALL
DOOR AREA HEATER - REMOVAL/INSTALLATION	21-45-01		401	AKS ALL
Door Area Heater Removal TASK 21-45-01-000-801			401	AKS ALL
Door Area Heater Installation TASK 21-45-01-400-801			406	AKS ALL
EMERGENCY EXIT DOOR HEATER SYSTEM - REMOVAL/INSTALLATION	21-45-02		401	AKS ALL
Emergency Exit Door Heater Blanket Removal TASK 21-45-02-000-801			401	AKS ALL
Emergency Exit Door Heater Blanket Installation TASK 21-45-02-400-801			404	AKS ALL

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Emergency Exit Door Surround Panel Heater Blanket Removal TASK 21-45-02-000-802			405	AKS ALL
Emergency Exit Door Surround Panel Heater Blanket Installation TASK 21-45-02-400-802			408	AKS ALL
Emergency Exit Door Closeout Panel Heater Blanket Removal TASK 21-45-02-000-803			409	AKS ALL
Emergency Exit Door Closeout Panel Heater Blanket Installation TASK 21-45-02-400-803			411	AKS ALL
PACK FLOW CONTROL AND PACK COOLING SYSTEM - MAINTENANCE PRACTICES	21-51-00		201	AKS ALL
Air Cycle Air Conditioning and Temperature Control System - Deactivation TASK 21-51-00-800-803			201	AKS ALL
Air Cycle Air Conditioning and Temperature Control System - Activation TASK 21-51-00-800-804			205	AKS ALL
Ram Air System - Deactivation TASK 21-51-00-800-801			206	AKS ALL
Ram Air System - Activation TASK 21-51-00-800-802			208	AKS ALL
PACK FLOW CONTROL AND PACK COOLING SYSTEM - ADJUSTMENT/TEST	21-51-00		501	AKS ALL
Pack/Zone Temperature Controller BITE Test TASK 21-51-00-700-803			501	AKS 001-021
Pack Flow Control Valve - Operational Test TASK 21-51-00-700-802			509	AKS 001-021
Pack Flow Control Valve - Operational Test TASK 21-51-00-710-801			512	AKS 022-999
Ram Air System Operational Test TASK 21-51-00-730-801			515	AKS ALL

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FLOW CONTROL AND SHUTOFF VALVE - REMOVAL/INSTALLATION	21-51-01	2	401	AKS 001-021
Left Flow Control and Shutoff Valve Removal TASK 21-51-01-000-802-002		2	401	AKS 001-021
Right Flow Control and Shutoff Valve Removal TASK 21-51-01-000-805-002		2	407	AKS 001-021
Left Flow Control and Shutoff Valve Installation TASK 21-51-01-400-805-002		2	413	AKS 001-021
Right Flow Control and Shutoff Valve Installation TASK 21-51-01-400-802-002		2	417	AKS 001-021
FLOW CONTROL AND SHUTOFF VALVE - REMOVAL/INSTALLATION	21-51-01	3	401	AKS 022-999
Left Flow Control and Shutoff Valve Removal TASK 21-51-01-000-806-003		3	401	AKS 022-999
Right Flow Control and Shutoff Valve Removal TASK 21-51-01-000-807-003		3	407	AKS 022-999
Left Flow Control and Shutoff Valve Installation TASK 21-51-01-400-807-003		3	413	AKS 022-999
Right Flow Control and Shutoff Valve Installation TASK 21-51-01-400-806-003		3	416	AKS 022-999
AIR CONDITIONING ACCESSORY UNIT (ACAU) - REMOVAL/INSTALLATION	21-51-02		401	AKS ALL
Air Conditioning Accessory Unit (ACAU) Removal TASK 21-51-02-000-801			401	AKS ALL
Air Conditioning Accessory Unit (ACAU) Installation TASK 21-51-02-400-801			403	AKS ALL
AIR CONDITIONING ACCESSORY UNIT - ADJUSTMENT/TEST	21-51-02	2	501	AKS ALL
Air Conditioning Accessory Unit - Operational Test TASK 21-51-02-710-802-002		2	501	AKS ALL

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HEAT EXCHANGER AND PLENUM/DIFFUSER ASSEMBLY - REMOVAL/INSTALLATION	21-51-03	2	401	AKS ALL
Heat Exchanger and Plenum/Diffuser Assembly Removal TASK 21-51-03-000-805-002		2	401	AKS ALL
Heat Exchanger and Plenum/Diffuser Installation TASK 21-51-03-400-804-002		2	424	AKS ALL
HEAT EXCHANGER AND PLENUM/DIFFUSER ASSEMBLY - CLEANING/PAINTING	21-51-03		701	AKS ALL
Heat Exchanger and Plenum/Diffuser Assembly Cleaning TASK 21-51-03-000-801			701	AKS ALL
Heat Exchangers Off-Wing Cleaning - Alternate Procedure TASK 21-51-03-160-801			711	AKS ALL
Heat Exchangers Cleaning with Nitrogen Gas/Compressed Air - Supplemental Procedure TASK 21-51-03-160-802			711	AKS ALL
AIR CYCLE MACHINE - REMOVAL/INSTALLATION	21-51-04	2	401	AKS ALL
Air Cycle Machine (ACM) Removal TASK 21-51-04-000-802-002		2	401	AKS ALL
Air Cycle Machine Installation TASK 21-51-04-400-802-002		2	411	AKS ALL
CONDITIONED AIR CHECK VALVE - REMOVAL/INSTALLATION	21-51-07	2	401	AKS ALL
Conditioned Air Check Valve Removal TASK 21-51-07-000-802-002		2	401	AKS ALL
Conditioned Air Check Valve Installation TASK 21-51-07-400-802-002		2	405	AKS ALL
HIGH PRESSURE WATER SEPARATOR (HPWS) - REMOVAL/INSTALLATION	21-51-08		401	AKS ALL
High Pressure Water Separator Removal TASK 21-51-08-000-802			401	AKS ALL
High Pressure Water Separator Installation TASK 21-51-08-400-802			407	AKS ALL

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TEMPERATURE CONTROL VALVE - REMOVAL/INSTALLATION	21-51-10		401	AKS ALL
Temperature Control Valve Removal TASK 21-51-10-000-801			401	AKS ALL
Temperature Control Valve Installation TASK 21-51-10-400-801			405	AKS ALL
STANDBY TEMPERATURE CONTROL VALVE - REMOVAL/INSTALLATION	21-51-11		401	AKS ALL
Standby Temperature Control Valve Removal TASK 21-51-11-000-801			401	AKS ALL
Standby Temperature Control Valve Installation TASK 21-51-11-400-801			408	AKS ALL
CONDENSER - REMOVAL/INSTALLATION	21-51-12		401	AKS ALL
Condenser Removal TASK 21-51-12-000-801			401	AKS ALL
Condenser Installation TASK 21-51-12-400-802			405	AKS ALL
REHEATER - REMOVAL/INSTALLATION	21-51-13		401	AKS ALL
Reheater Removal TASK 21-51-13-000-801			401	AKS ALL
Reheater Installation TASK 21-51-13-400-801			403	AKS ALL
WATER EXTRACTOR - REMOVAL/INSTALLATION	21-51-14		401	AKS ALL
Water Extractor Removal TASK 21-51-14-000-801			401	AKS ALL
Water Extractor Installation TASK 21-51-14-400-801			405	AKS ALL
WATER EXTRACTOR DUCT - REMOVAL/INSTALLATION	21-51-15		401	AKS ALL
Water Extractor Duct Removal TASK 21-51-15-000-801			401	AKS ALL
Water Extractor Duct Installation TASK 21-51-15-400-801			405	AKS ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
WATER SPRAY NOZZLE - REMOVAL/INSTALLATION	21-51-16		401	AKS ALL
Water Spray Nozzle Removal TASK 21-51-16-000-801			401	AKS ALL
Water Spray Nozzle Installation TASK 21-51-16-400-801			406	AKS ALL
WATER SPRAY NOZZLE - INSPECTION/CHECK	21-51-16		601	AKS ALL
Water Spray Nozzle Check TASK 21-51-16-200-801			601	AKS ALL
HIGH PRESSURE WATER SEPARATOR MIX MUFF - REMOVAL/INSTALLATION	21-51-17		401	AKS ALL
High Pressure Water Separator Mix Muff Removal TASK 21-51-17-000-801			401	AKS ALL
High Pressure Water Separator Mix Muff Installation TASK 21-51-17-400-801			407	AKS ALL
RAM AIR INLET ACTUATOR - REMOVAL/INSTALLATION	21-51-21		401	AKS ALL
Ram Air Inlet Actuator Removal TASK 21-51-21-000-801			401	AKS ALL
Ram Air Inlet Actuator Installation TASK 21-51-21-400-801			409	AKS ALL
RAM AIR INLET DEFLECTOR DOOR AND SHAFT ASSEMBLY - REMOVAL/INSTALLATION	21-51-22		401	AKS ALL
Ram Air Inlet Deflector Door Removal TASK 21-51-22-000-801			401	AKS ALL
Ram Air Inlet Deflector Door Installation TASK 21-51-22-400-801			408	AKS ALL
Ram Air Inlet Deflector Door Shaft Assembly Removal TASK 21-51-22-000-802			409	AKS ALL
Ram Air Inlet Deflector Door Shaft Assembly Installation TASK 21-51-22-400-802			410	AKS ALL

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CHAPTER 21
AIR CONDITIONING

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
RAM AIR INLET SYSTEM - ADJUSTMENT	21-51-22		501	AKS ALL
Ram Air Inlet Deflector Door and Modulation Panels Adjustment TASK 21-51-22-400-803			501	AKS ALL
RAM AIR INLET MODULATION PANELS - REMOVAL/INSTALLATION	21-51-23		401	AKS ALL
Ram Air Inlet Modulation Panels Removal TASK 21-51-23-000-801			401	AKS ALL
Ram Air Inlet Modulation Panels Installation TASK 21-51-23-400-801			407	AKS ALL
RAM AIR DUCTS - REMOVAL/INSTALLATION	21-51-24		401	AKS ALL
Ram Air Ducts Removal TASK 21-51-24-000-801			401	AKS ALL
Ram Air Ducts Installation TASK 21-51-24-400-801			413	AKS ALL
RAM AIR DUCTS - REPAIRS	21-51-24		801	AKS ALL
Resin Damage - Fiberglass Ducts TASK 21-51-24-340-801			801	AKS ALL
External Patch - Fiberglass Ducts TASK 21-51-24-340-802			803	AKS ALL
Structural Repair - Fiberglass Ducts TASK 21-51-24-340-803			808	AKS ALL
RAM AIR EXHAUST ACTUATOR - REMOVAL/INSTALLATION	21-51-27		401	AKS ALL
Ram Air Exhaust Actuator - Removal TASK 21-51-27-000-801			401	AKS ALL
Ram Air Exhaust Actuator - Installation TASK 21-51-27-400-801			406	AKS ALL
SRADA Stowage Link - Removal TASK 21-51-27-000-802			410	AKS ALL
SRADA Stowage Link - Installation TASK 21-51-27-400-802			418	AKS ALL

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CHAPTER 21
AIR CONDITIONING

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
COMPRESSOR DISCHARGE OVERHEAT SWITCH - REMOVAL/INSTALLATION	21-51-40		401	AKS ALL
Compressor Discharge Overheat Switch Removal TASK 21-51-40-000-801			401	AKS ALL
Compressor Discharge Overheat Switch Installation TASK 21-51-40-400-801			405	AKS ALL
TURBINE INLET OVERHEAT SWITCH - REMOVAL/INSTALLATION	21-51-41		401	AKS ALL
Turbine Inlet Overheat Switch Removal TASK 21-51-41-000-801			401	AKS ALL
Turbine Inlet Overheat Switch Installation TASK 21-51-41-400-801			405	AKS ALL
PACK DISCHARGE OVERHEAT SWITCH - REMOVAL/INSTALLATION	21-51-42	2	401	AKS ALL
Pack Discharge Overheat Switch Removal TASK 21-51-42-000-803-002		2	401	AKS ALL
Pack Discharge Overheat Switch Installation TASK 21-51-42-400-803-002		2	405	AKS ALL
Pack Flow Sensor - Removal/Installation	21-51-43		401	AKS 022-999
Pack Flow Sensor Removal TASK 21-51-43-000-801			401	AKS 022-999
_Pack Flow Sensor Installation TASK 21-51-43-400-801			404	AKS 022-999
Pack Pressure Sensor - Removal/Installation	21-51-45		401	AKS 022-999
Pack Inlet Pressure Sensor Removal TASK 21-51-45-000-801			401	AKS 022-999
Pack Inlet Pressure Sensor Installation TASK 21-51-45-400-801			405	AKS 022-999
RAM AIR CONTROL TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-51-50		401	AKS ALL
Ram Air Control Temperature Sensor Removal TASK 21-51-50-000-801			401	AKS ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Ram Air Control Temperature Sensor Installation TASK 21-51-50-400-801			405	AKS ALL
MIX MANIFOLD TEMPERATURE SENSOR - MAINTENANCE PRACTICES	21-51-51		201	AKS ALL
Mix Manifold Temperature Sensor Removal TASK 21-51-51-000-803			201	AKS ALL
Mix Manifold Temperature Sensor Cleaning TASK 21-51-51-110-801			205	AKS ALL
Mix Manifold Temperature Sensor Installation TASK 21-51-51-400-802			205	AKS ALL
MIX MANIFOLD TEMPERATURE SENSOR - ADJUSTMENT/TEST	21-51-51		501	AKS ALL
Mix Manifold Temperature Sensor Test TASK 21-51-51-000-802			501	AKS ALL
PACK TEMPERATURE SENSOR - REMOVAL/INSTALLATION	21-51-52		401	AKS ALL
Pack Temperature Sensor Removal TASK 21-51-52-000-801			401	AKS ALL
Pack Temperature Sensor Installation TASK 21-51-52-400-801			404	AKS ALL
PACK TEMPERATURE SENSOR - ADJUSTMENT/TEST	21-51-52		501	AKS ALL
Pack Temperature Sensor Test TASK 21-51-52-720-801			501	AKS ALL
PACK TEMPERATURE BULB - REMOVAL/INSTALLATION	21-51-60		401	AKS ALL
Pack Temperature Bulb Removal TASK 21-51-60-000-801			401	AKS ALL
Pack Temperature Bulb Installation TASK 21-51-60-400-801			404	AKS ALL
AIR CONDITIONING MODULE - REMOVAL/INSTALLATION	21-51-65		401	AKS ALL
Air Conditioning Module Removal TASK 21-51-65-000-801			401	AKS ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Air Conditioning Module Installation TASK 21-51-65-400-801			404	AKS ALL
ZONE TEMPERATURE CONTROL AND INDICATION - ADJUSTMENT/TEST	21-61-00	2	501	AKS ALL
Pack/Zone Temperature Controller BITE Test TASK 21-61-00-700-806-002		2	501	AKS 001-021
Pack Flow Temperature Controller BITE Test TASK 21-61-00-740-801-002		2	509	AKS 022-999
Cabin Temperature Control and Indication - Operational Test TASK 21-61-00-700-807-002		2	520	AKS ALL
Duct Overheat Switch - Operational Test TASK 21-61-00-700-811-002		2	521	AKS ALL
DUCT TEMPERATURE LIMIT SENSOR - REMOVAL/INSTALLATION	21-61-04	2	401	AKS ALL
Duct Temperature Limit Sensor Removal TASK 21-61-04-000-803-002		2	401	AKS ALL
Duct Temperature Limit Sensor Installation TASK 21-61-04-400-803-002		2	407	AKS ALL
DUCT TEMPERATURE LIMIT SENSOR - ADJUSTMENT/TEST	21-61-04	2	501	AKS ALL
Duct Temperature Limit Sensor Test TASK 21-61-04-000-805-002		2	501	AKS ALL
DUCT OVERHEAT SWITCH - REMOVAL/INSTALLATION	21-61-05		401	AKS ALL
Duct Overheat Switch Removal TASK 21-61-05-000-801			401	AKS ALL
Duct Overheat Switch Installation TASK 21-61-05-400-801			409	AKS ALL
CABIN TEMPERATURE SENSOR ASSEMBLY FILTER - MAINTENANCE PRACTICES	21-61-06		201	AKS ALL
Cabin Temperature Sensor Assembly Filter Removal TASK 21-61-06-000-801			201	AKS ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Cabin Temperature Sensor Assembly Filter Cleaning TASK 21-61-06-100-801			206	AKS ALL
Cabin Temperature Sensor Assembly Filter Installation TASK 21-61-06-400-801			207	AKS ALL
CABIN TEMPERATURE SELECTOR - REMOVAL/INSTALLATION	21-61-07	2	401	AKS ALL
Cabin Temperature Selector Removal TASK 21-61-07-000-803-002		2	401	AKS ALL
Cabin Temperature Selector Installation TASK 21-61-07-400-803-002		2	404	AKS ALL
TRIM AIR CHECK VALVE - REMOVAL/INSTALLATION	21-61-09		401	AKS ALL
Trim Air Check Valve Removal TASK 21-61-09-000-801			401	AKS ALL
Trim Air Check Valve Installation TASK 21-61-09-400-801			405	AKS ALL
TRIM AIR CHECK VALVE - INSPECTION/CHECK	21-61-09		601	AKS ALL
Trim Air Check Valve Inspection TASK 21-61-09-000-802			601	AKS ALL
CABIN TEMPERATURE SENSOR - MAINTENANCE PRACTICES	21-61-10		201	AKS ALL
Cabin Temperature Sensor Removal TASK 21-61-10-000-802			201	AKS ALL
Cabin Temperature Sensor Cleaning TASK 21-61-10-100-801			208	AKS ALL
Cabin Temperature Sensor Installation TASK 21-61-10-400-802			208	AKS ALL
CABIN TEMPERATURE SENSOR - INSPECTION/CHECK	21-61-10		601	AKS ALL
Cabin Temperature Sensor Resistance Check TASK 21-61-10-200-802			601	AKS ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
CABIN TEMPERATURE SENSOR FAN - REMOVAL/INSTALLATION	21-61-11		401	AKS ALL
Cabin Temperature Sensor Fan Removal TASK 21-61-11-000-801			401	AKS ALL
Cabin Temperature Sensor Fan Installation TASK 21-61-11-400-801			408	AKS ALL
TRIM AIR DUCT PRESSURE SEAL - REMOVAL/INSTALLATION	21-61-12		401	AKS ALL
Trim Air Duct Pressure Seal Removal TASK 21-61-12-000-802			401	AKS ALL
Trim Air Duct Pressure Seal Installation TASK 21-61-12-400-802			408	AKS ALL
TEMPERATURE SENSOR ASSEMBLY DUCT/HOUSING - MAINTENANCE PRACTICES	21-61-14		201	AKS ALL
Flight Compartment Temperature Sensor Assembly Housing Removal TASK 21-61-14-000-802			201	AKS ALL
Passenger Cabin Temperature Sensor Assembly Duct Removal TASK 21-61-14-000-801			205	AKS ALL
Flight Compartment Temperature Sensor Assembly Housing Installation TASK 21-61-14-400-802			211	AKS ALL
Passenger Cabin Temperature Sensor Assembly Duct Installation TASK 21-61-14-400-801			212	AKS ALL
Flight Compartment Temperature Sensor Assembly Housing Cleaning TASK 21-61-14-100-802			214	AKS ALL
Passenger Cabin Temperature Sensor Assembly Duct Cleaning TASK 21-61-14-100-801			215	AKS ALL
TEMPERATURE CONTROL MODULE - REMOVAL/INSTALLATION	21-61-15		401	AKS ALL
Temperature Control Module Removal TASK 21-61-15-000-801			401	AKS ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Temperature Control Module Installation TASK 21-61-15-400-801			403	AKS ALL
PACK FLOW TEMPERATURE CONTROLLER - REMOVAL/INSTALLATION	21-61-17		401	AKS ALL
Pack Flow Temperature Controller Removal TASK 21-61-17-020-801			401	AKS ALL
Pack Flow Temperature Controller Installation TASK 21-61-17-400-801			404	AKS ALL
PACK/ZONE TEMPERATURE CONTROLLER - MAINTENANCE PRACTICES	21-61-20		201	AKS 001-021
Pack/Zone Temperature Controller - Deactivation TASK 21-61-20-800-801			201	AKS 001-021
Pack/Zone Temperature Controller - Activation TASK 21-61-20-800-802			204	AKS 001-021
PACK/ZONE TEMPERATURE CONTROLLER - REMOVAL/INSTALLATION	21-61-20		401	AKS 001-021
Pack/Zone Temperature Controller Removal TASK 21-61-20-000-801			401	AKS 001-021
Pack/Zone Temperature Controller Installation TASK 21-61-20-400-801			404	AKS 001-021
ZONE TRIM AIR MODULATING VALVE - REMOVAL/INSTALLATION	21-61-21		401	AKS ALL
Zone Trim Air Modulating Valve Removal TASK 21-61-21-000-801			401	AKS ALL
Zone Trim Air Modulating Valve Installation TASK 21-61-21-400-801			406	AKS ALL
DUCT TEMPERATURE BULB - REMOVAL/INSTALLATION	21-61-30	2	401	AKS ALL
Duct Temperature Bulb Removal TASK 21-61-30-000-803-002		2	401	AKS ALL
Duct Temperature Bulb Installation TASK 21-61-30-400-803-002		2	407	AKS ALL

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CHAPTER 21
AIR CONDITIONING

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
CABIN TEMPERATURE BULB - REMOVAL/INSTALLATION	21-61-31		401	AKS ALL
Cabin Temperature Bulb Removal TASK 21-61-31-000-801			401	AKS ALL
Cabin Temperature Bulb Installation TASK 21-61-31-400-801			405	AKS ALL
CABIN TEMPERATURE INDICATOR - REMOVAL/INSTALLATION	21-61-32		401	AKS ALL
Cabin Temperature Indicator Removal TASK 21-61-32-000-801			401	AKS ALL
Cabin Temperature Indicator Installation TASK 21-61-32-400-801			405	AKS ALL
TRIM AIR PRESSURE REGULATION AND SHUTOFF CONTROL - ADJUSTMENT/TEST	21-62-00		501	AKS ALL
Trim Air Pressure Regulating and Shutoff Valve - Operational Test TASK 21-62-00-000-801			501	AKS ALL
TRIM AIR PRESSURE REGULATING AND SHUTOFF VALVE - REMOVAL/INSTALLATION	21-62-01		401	AKS ALL
Trim Air Pressure Regulating and Shutoff Valve Removal TASK 21-62-01-000-801			401	AKS ALL
Trim Air Pressure Regulating and Shutoff Valve Installation TASK 21-62-01-400-801			406	AKS 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. It is recommended that the conditioned air to cool the airplane on the ground be supplied from a ground air source, when practical, as an alternative to operating the cooling pack (SL 737-21-053).

TASK 21-00-00-800-801

2. Supply Conditioned Air to the Airplane

(Figure 201)

A. General

SUBTASK 21-00-00-860-111

(1) It is recommended that the conditioned air to cool the airplane on the ground be supplied from a ground air source, when practical, as an alternative to operating the cooling packs. To supply conditioned air, do this task: Supply Conditioned Air with a Ground Air Source, TASK 21-00-00-800-805.

B. 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

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FLIGHT COMPARTMENT

AIR CONDITIONING
MODULE

A

G59246 S0006562272_V2

Air Conditioning - General - Maintenance Practices
Figure 201/21-00-00-990-801

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TASK 21-00-00-800-802

3. Remove Conditioned Air from the Airplane

(Figure 201)

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 ———

TASK 21-00-00-800-803

4. Supply Conditioned Air with a Cooling Pack

(Figure 201)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

B. Location Zones

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

C. General

SUBTASK 21-00-00-860-112

(1) It is recommended that the conditioned air to cool the airplane on the ground be supplied from a ground air source, when practical, as an alternative to operating the cooling packs. To supply conditioned air, do this task: Supply Conditioned Air with a Ground Air Source, TASK 21-00-00-800-805.

SUBTASK 21-00-00-860-125

(2) When conditions permit, open the doors for the air conditioning packs when they operate.

D. Prepare to Supply Conditioned Air with a Cooling Pack

SUBTASK 21-00-00-860-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-860-004

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-00-00-860-005

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 cabin pressure outflow valve is open.

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

SUBTASK 21-00-00-860-124

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.

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

E. Supply Conditioned Air with a Cooling Pack

SUBTASK 21-00-00-860-104

(1) Turn these selectors on the P5-17 cabin temperature control panel to the AUTO position:

(a) CONT CAB

(b) FWD CAB

(c) AFT CAB

SUBTASK 21-00-00-860-007

(2) Set the applicable L PACK switch or the R PACK switch, on the P5-10 air conditioning panel, to the AUTO position.

——— END OF TASK ———

TASK 21-00-00-800-804

5. Remove Conditioned Air Supplied by a Cooling Pack

(Figure 201)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-806	Remove Pressure from 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 21-00-00-860-008

(1) Set the applicable L PACK switch or the R PACK switch, on the P5-10 air conditioning panel, to the OFF position.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-00-00-860-009

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-00-00-860-010

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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TASK 21-00-00-800-805

6. Supply Conditioned Air with a Ground Air Source

A. Location Zones

Zone	Area
100	Lower Half of Fuselage

B. Access Panels

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

C. Procedure

SUBTASK 21-00-00-010-001

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

Open this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

SUBTASK 21-00-00-210-001

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

SUBTASK 21-00-00-860-011

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

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

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

SUBTASK 21-00-00-860-012

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.

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

(a) Make sure the cabin pressure outflow valve is open.

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

SUBTASK 21-00-00-860-123

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.

(5) Make sure that the L PACK and R PACK switches on the P5-10 air conditioning panel are set to OFF.

SUBTASK 21-00-00-860-158

(6) Make sure the L RECIRC FAN and R RECIRC FAN switches are set to OFF.

SUBTASK 21-00-00-860-013

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

(a) Make sure the conditioned air pressure does not exceed 15 inches of water (.54 psi) gauge pressure.

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(b) Make sure the conditioned air temperature does not exceed 71 degrees C (160 degrees F).

——— END OF TASK ———

TASK 21-00-00-800-806

7. Remove Conditioned Air Supplied by a Ground Air Source

A. Location Zones

Zone	Area
100	Lower Half of Fuselage

B. Access Panels

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

C. Procedure

SUBTASK 21-00-00-860-014

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

SUBTASK 21-00-00-020-001

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

SUBTASK 21-00-00-010-002

(3) Close this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

——— 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 Procedures Guide (DDPG). 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 21-1 (DDPG) Preparation - Air Conditioning Pack(s) Inoperative

(2) MMEL 21-1 (DDPG) Restoration - Air Conditioning Pack(s) Inoperative

(3) MMEL 21-2 (DDPG) Preparation - Flow Control and Shutoff Valve Inoperative

(4) MMEL 21-2 (DDPG) Restoration - Flow Control Shutoff Valve Inoperative

(5) MMEL 21-3 (DDPG) Preparation - Pack Trip Warning Systems Inoperative

(6) MMEL 21-3 (DDPG) Restoration - Pack Trip Warning Systems Inoperative

(7) MMEL 21-5 (DDPG) Preparation - Ram Air Inlet Modulation Systems Inoperative

(8) MMEL 21-5 (DDPG) Restoration - Ram Air Inlet Modulation Systems Inoperative

(9) MMEL 21-10 (DDPG) Preparation - Cabin Rate of Climb Indicator Inoperative

(10) MMEL 21-10 (DDPG) Restoration - Cabin Rate of Climb Indicator Inoperative

(11) MMEL 21-12 (DDPG) Preparation - Cabin Altitude Indicator Inoperative

(12) MMEL 21-12 (DDPG) Restoration - Cabin Altitude Indicator Inoperative

(13) MMEL 21-13 (DDPG) Preparation - Cabin Differential Pressure Indicator Inoperative

(14) MMEL 21-13 (DDPG) Restoration - Cabin Differential Pressure Indicator Inoperative

(15) DDG 21-14 Preparation - Cabin Pressure Control System - Two Modes Inoperative

(16) DDG 21-14 Restoration - Cabin Pressure Control System - Two Modes Inoperative

(17) MMEL 21-15 (DDPG) Preparation - Aft Outflow Valve - Two Actuators Inoperative

(18) MMEL 21-15 (DDPG) Restoration - Aft Outflow Valve - Two Actuators Inoperative

(19) MMEL 21-16 (DDPG) Preparation - Positive Pressure Relief Valves - One Valve Inoperative

(20) MMEL 21-16 (DDPG) Restoration - Positive Pressure Relief Valves - One Valve Inoperative

(21) MMEL 21-19 (DDPG) Preparation - Passenger Cabin Temperature Control System Inoperative

(22) MMEL 21-19 (DDPG) Restoration - Passenger Cabin Temperature Control System Inoperative

(23) MMEL 21-21 (DDPG) Preparation - Flight Deck Temperature Control System Inoperative

(24) MMEL 21-21 (DDPG) Restoration - Flight Deck Temperature Control System Inoperative

(25) MMEL 21-26 (DDPG) Preparation - Ground Preconditioned Air Connection Check Valve Inoperative

(26) MMEL 21-26 (DDPG) Restoration - Ground Preconditioned Air Connection Check Valve Inoperative

(27) MMEL 21-27 (DDPG) Preparation - Electrical/Electronic Equipment Cooling Blowers Inoperative

(28) MMEL 21-27 (DDPG) Restoration - Electrical/Electronic Equipment Cooling Blowers Inoperative

(29) MMEL 21-33 (DDPG) Preparation - Pack Temperature Control Valves Inoperative

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(30) MMEL 21-33 (DDPG) Restoration - Pack Temperature Control Valves Inoperative
(31) MMEL 21-34 (DDPG) Preparation - Standby Pack Temperature Control Valves Inoperative
(32) MMEL 21-34 (DDPG) Restoration - Standby Pack Temperature Control Valves Inoperative
(33) MMEL 21-35 (DDPG) Preparation - Trim Air Pressure Regulating and Shutoff Valve Inoperative
(34) MMEL 21-35 (DDPG) Restoration - Trim Air Pressure Regulating and Shutoff Valve Inoperative
(35) MMEL 21-36 (DDPG) Preparation - Zone Trim Air Modulating Valve Inoperative
(36) MMEL 21-36 (DDPG) Restoration - Zone Trim Air Modulating Valve Inoperative
(37) MMEL 21-38 (DDPG) Preparation - Outflow Valve Position Indicator Inoperative
(38) MMEL 21-38 (DDPG) Restoration - Outflow Valve Position Indicator Inoperative
(39) MMEL 21-39 (DDPG) Preparation - Trim Air Check Valve Inoperative
(40) MMEL 21-39 (DDPG) Restoration - Trim Air Check Valve Inoperative
(41) MMEL 21-40 (DDPG) Preparation - Equipment Cooling Overboard Exhaust Valve Inoperative
(42) MMEL 21-40 (DDPG) Restoration - Equipment Cooling Overboard Exhaust Valve Inoperative
(43) MMEL 21-41 (DDPG) Preparation - Door Area Heater Systems Inoperative
(44) MMEL 21-41 (DDPG) Restoration - Door Area Heater Systems Inoperative
(45) MMEL 21-42 (DDPG) Preparation - Equipment Cooling Low Flow Detector System Inoperative
(46) MMEL 21-42 (DDPG) Restoration - Equipment Cooling Low Flow Detector System Inoperative
(47) MMEL 21-43 (DDPG) Preparation - Equipment Cooling Air Filter Removal
(48) MMEL 21-43 (DDPG) Restoration - Equipment Cooling Air Filter Removal
(49) MMEL 21-49 (DDPG) Preparation - Return Air Grille Missing or Broken
(50) MMEL 21-49 (DDPG) Restoration - Return Air Grille Missing or Broken

TASK 21-00-00-040-803

2. MMEL 21-1 (DDPG) Preparation - Air Conditioning Pack(s) Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with one or both air conditioning packs inoperative.

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Both Air Conditioning Packs Inoperative - Deactivation Procedure

SUBTASK 21-00-00-840-001

(1) Do this step to put the recirculation fan in the INOP ON condition:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

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SUBTASK 21-00-00-710-027

(2) Close the flow control and shutoff valves for the air conditioning packs. To close the valves, do this task: MMEL 21-2 (DDPG) Preparation - Flow Control and Shutoff Valve Inoperative, TASK 21-00-00-040-805.

(a) Manually position the outflow valve to full OPEN

(b) Put one of the pack switches in the HIGH position.

(c) Advise dispatch of unpressurized flight. Maximum altitude for flight planning will be affected.

SUBTASK 21-00-00-880-002

(3) When the airplane is electrically powered on the ground and airport temperatures are at or above 73 degrees Fahrenheit (23 degrees Celsius), then use a ground cart or operative pack to provide cooling to the airplane.

——— END OF TASK ———

TASK 21-00-00-040-804

3. MMEL 21-1 (DDPG) Restoration - Air Conditioning Pack(s) Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with one or both air conditioning packs inoperative.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Both Air Conditioning Packs Inoperative - Reactivation Procedure

SUBTASK 21-00-00-860-017

(1) Do this step to put the recirculation fan in the usual condition:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-00-00-860-018

(2) Put the flow control and shutoff valves back to the usual condition. To put the valves to their usual condition, do this task: MMEL 21-2 (DDPG) Restoration - Flow Control and Shutoff Valve(s) Inoperative, TASK 21-00-00-440-801.

SUBTASK 21-00-00-860-114

(3) Put the outflow valve switch to the AUTO position.

E. Air Conditioning Packs Check

SUBTASK 21-00-00-860-019

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

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SUBTASK 21-00-00-860-020

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-00-00-810-003

(3) Put these switches on the P5-10 Air Conditioning Panel to the positions that follow:

(a) Put the L PACK switch to the AUTO position.

(b) Put the R PACK switch to the AUTO position.

(c) Put the ISOLATION VALVE switch to the AUTO position.

SUBTASK 21-00-00-810-004

(4) Do the applicable fault isolation task for the problem observed.

SUBTASK 21-00-00-710-048

(5) Put these switches on the P5-10 air conditioning panel to the following positions:

(a) Put the pack switches to the AUTO position.

(b) Put the recirculation fan switches to the AUTO position.

——— END OF TASK ———

TASK 21-00-00-040-805

4. MMEL 21-2 (DDPG) Preparation - Flow Control and Shutoff Valve Inoperative

(Figure 901)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with a flow control and shutoff valve inoperative.

NOTE: When the flow control and shutoff valve is locked closed you will not be able to operate the related pack.

B. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for Deactivation

SUBTASK 21-00-00-860-021

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-00-00-860-022

(2) Do this step to deactivate the flow control and shutoff valve for the left cooling pack:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-00-00-860-023

(3) Do this step to deactivate the flow control and shutoff valve for the right cooling pack:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

SUBTASK 21-00-00-010-003

(4) To get access to the flow control and shutoff valve for the left cooling pack, open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-00-00-010-004

(5) To get access to the flow control and shutoff valve for the right cooling pack, open these access panels in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Flow Control and Shutoff Valve Deactivation (Locked Closed)

AKS 001-021

SUBTASK 21-00-00-020-002

(1) For the left flow control and shutoff valve disconnect and stow the D488 electrical connector.

AKS 022-999

SUBTASK 21-00-00-020-039

(2) For the left flow control and shutoff valve disconnect and stow the D15830 electrical connector.

AKS 001-021

SUBTASK 21-00-00-020-003

(3) For the right flow control and shutoff valve disconnect and stow the D492 electrical connector.

AKS 022-999

SUBTASK 21-00-00-020-040

(4) For the right flow control and shutoff valve disconnect and stow the D15834 electrical connector.

AKS 001-021

SUBTASK 21-00-00-040-043

(5) If the left pack airflow shut-off valve limit switch has failed in the open position, do these steps at connector D486 at the left flow control and shutoff valve:

(a) Disconnect connector D486 from the left flow control and shutoff valve, V18.

(b) Install a jumper between pins 1 and 3 of connector D486 on the ships' wiring.

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AKS 001-021 (Continued)

(c) Make sure there is continuity to airplane ground at pin 3 of connector D486 on the ships' wiring.

(d) Cap and stow the electrical connector D486 with the jumper installed between pins 1 and 3.

AKS 022-999

SUBTASK 21-00-00-020-041

(6) If the left pack airflow shut-off valve limit switch has failed in the open position, do these steps at connector D15832 at the left flow control and shutoff valve:

(a) Disconnect connector D15832 from the left flow control and shutoff valve, V184.

(b) Install a jumper between pins 1 and 3 of connector D15832 on the ships' wiring.

(c) Make sure there is continuity to airplane ground at pin 3 of connector D15832 on the ships' wiring.

(d) Cap and stow the electrical connector D15832 with the jumper installed between pins 1 and 3.

AKS 001-021

SUBTASK 21-00-00-040-044

(7) If the right pack airflow shut-off valve limit switch has failed in the open position, do these steps at connector D490 at the right flow control and shutoff valve:

(a) Disconnect connector D490 from the right flow control and shutoff valve, V19.

(b) Install a jumper between pins 1 and 3 of connector D490 on the ships' wiring.

(c) Make sure there is continuity to airplane ground at pin 3 of connector D490 on the ships' wiring.

(d) Cap and stow the electrical connector D490 with the jumper installed between pins 1 and 3.

AKS 022-999

SUBTASK 21-00-00-040-060

(8) If the right pack airflow shut-off valve limit switch has failed in the open position, do these steps at connector D15836 at the right flow control and shutoff valve:

(a) Disconnect connector D15836 from the right flow control and shutoff valve, V185.

(b) Install a jumper between pins 1 and 3 of connector D15836 on the ships' wiring.

(c) Make sure there is continuity to airplane ground at pin 3 of connector D15836 on the ships' wiring.

(d) Cap and stow the electrical connector D15836 with the jumper installed between pins 1 and 3.

AKS ALL

SUBTASK 21-00-00-860-153

(9) If you deactivated the flow control and shutoff valve for the left cooling pack, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-00-00-860-154

(10) If you deactivated the flow control and shutoff valve for the right cooling pack, do this step:

Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

SUBTASK 21-00-00-980-001

(11) Do these steps to lock the flow control and shutoff valve in the closed position:

(a) Pull out the manual control shaft.

(b) Push in the manual control shaft.

SUBTASK 21-00-00-040-051

(12) If both flow control and shutoff valves are inoperative, do these steps:

(a) Manually position the outflow valve in the FULL OPEN position:

1) Put the Pressurization Mode selector to MAN.

2) Hold the valve toggle switch in the OPEN position until valve position indicator indicates FULL OPEN.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

(c) Put one of the pack switches to HIGH.

(d) If installed, shut off power to the air/ground public telephone system.

SUBTASK 21-00-00-860-155

(13) If you deactivated the flow control and shutoff valve for the left cooling pack, do this step:

Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-00-00-410-012

(14) If you deactivated the flow control and shutoff valve for the left cooling pack, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-00-00-860-156

(15) If you deactivated the flow control and shutoff valve for the right cooling pack, do this step:

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Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

SUBTASK 21-00-00-410-013

(16) If you deactivated the flow control and shutoff valve for the right cooling pack, close these access panels in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

——— **END OF TASK** ———

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G75117 S0006562287_V2

Flow Control and Shutoff Valve Deactivation
Figure 901/21-00-00-990-802 (Sheet 1 of 3)

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G75257 S0006562288_V3

Flow Control and Shutoff Valve Deactivation
Figure 901/21-00-00-990-802 (Sheet 2 of 3)

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LEFT ECS BAY
(RIGHT SIDE IS EQUIVALENT)

A

2405537 S0000556362_V2

Flow Control and Shutoff Valve Deactivation
Figure 901/21-00-00-990-802 (Sheet 3 of 3)

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TASK 21-00-00-440-801

5. MMEL 21-2 (DDPG) Restoration - Flow Control and Shutoff Valve(s) Inoperative

(Figure 901, Figure 901)

A. General

(1) This task puts the airplane back to its usual condition after operation with the pack flow control and shutoff valves inoperative.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for Reactivation

SUBTASK 21-00-00-860-027

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-00-00-860-028

(2) If you deactivated the flow control and shutoff valve for the left cooling pack, do this step:

(a) Make sure that this circuit breaker is open and has safety tag:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-00-00-860-029

(3) If you deactivated the flow control and shutoff valve for the right cooling pack, do this step:

(a) Make sure that this circuit breaker is open and has safety tag:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

SUBTASK 21-00-00-010-005

(4) To get access to the flow control and shutoff valve for the left cooling pack, open this access panel:

Number	Name/Location
192CL	ECS Access Door

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SUBTASK 21-00-00-010-006

(5) To get access to the flow control and shutoff valve for the right cooling pack, open these access panels in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Flow Control Valve and Shutoff Valve Reactivation

AKS 001-021

SUBTASK 21-00-00-440-002

(1) Do these steps at connector D486 at the left flow control and shutoff valve if capped and stowed:

(a) Remove the cap from connector D486.

(b) If installed, remove the jumper between pins 1 and 3 of connector D486 on the ships' wiring.

(c) Install the electrical connector D486.

AKS 022-999

SUBTASK 21-00-00-420-023

(2) Do these steps at connector D15832 at the left flow control and shutoff valve if capped and stowed:

(a) Remove the cap from connector D15832.

(b) If installed, remove the jumper between pins 1 and 3 of connector D15832 on the ships' wiring.

(c) Install the electrical connector D15832.

AKS 001-021

SUBTASK 21-00-00-440-003

(3) Do these steps at connector D490 at the right flow control and shutoff valve if capped and stowed:

(a) Remove the cap from connector D490.

(b) If installed, remove the jumper between pins 1 and 3 of connector D490 on the ships' wiring.

(c) Install the electrical connector D490.

AKS 022-999

SUBTASK 21-00-00-420-027

(4) Do these steps at connector D15836 at the right flow control and shutoff valve if capped and stowed:

(a) Remove the cap from connector D15836.

(b) If installed, remove the jumper between pins 1 and 3 of connector D15836 on the ships' wiring.

(c) Install the electrical connector D15836.

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AKS 001-021

SUBTASK 21-00-00-420-025

(5) For the left flow control and shutoff valve install the D488 electrical connector.

AKS 022-999

SUBTASK 21-00-00-420-024

(6) For the left flow control and shutoff valve install the D15830 electrical connector.

AKS 001-021

SUBTASK 21-00-00-020-005

(7) For the right flow control and shutoff valve install the D492 electrical connector.

AKS 022-999

SUBTASK 21-00-00-420-026

(8) For the right flow control and shutoff valve install the D15834 electrical connector.

AKS ALL

SUBTASK 21-00-00-860-030

(9) If you put the flow control and shutoff valve for the left cooling pack in its usual condition, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-00-00-860-031

(10) If you put the flow control and shutoff valve for the right cooling pack in its usual condition, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

SUBTASK 21-00-00-860-136

(11) If both flow control and shutoff valves were deactivated inoperative, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

(b) Put the pressurization mode selector to the AUTO position.

(c) Put the pack switches to the AUTO position.

(d) If installed, supply power to the air/ground public telephone system.

G. Flow Control and Shutoff Valve Check

SUBTASK 21-00-00-860-032

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-860-033

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

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SUBTASK 21-00-00-810-005

(3) Put these switches on the P5-10 Air Conditioning Panel to the positions that follow:

(a) Put the L PACK switch to the AUTO position.

(b) Put the R PACK switch to the AUTO position.

(c) Put the ISOLATION VALVE switch to the AUTO position.

SUBTASK 21-00-00-810-006

(4) Do the applicable fault isolation task for the problem observed.

——— END OF TASK ———

TASK 21-00-00-040-832

6. MMEL 21-3 (DDPG) Preparation - Pack Trip Warning System Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the pack trip warning systems inoperative.

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Prepare for Unpressurized Flight.

SUBTASK 21-00-00-040-033

(1) For dispatch with both pack trip warning systems inoperative, do this task: MMEL 21-1 (DDPG) Preparation - Air Conditioning Pack(s) Inoperative, TASK 21-00-00-040-803.

——— END OF TASK ———

TASK 21-00-00-440-804

7. MMEL 21-3 (DDPG) Restoration - Pack Trip Warning System Inoperative

A. General

(1) This task puts the airplane to its usual condition after operation with the pack trip warning systems inoperative.

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Both Pack Trip Warning Systems Reactivation

SUBTASK 21-00-00-840-002

(1) With both pack trip warning systems inoperative, do this task: MMEL 21-1 (DDPG) Restoration - Air Conditioning Pack(s) Inoperative, TASK 21-00-00-040-804.

——— END OF TASK ———

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TASK 21-00-00-040-806

8. MMEL 21-5 (DDPG) Preparation - Ram Air Modulating System Inoperative
(Figure 902)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the ram air modulation system inoperative.

(2) The inlet ram air modulation system consists of a deflector door, two modulation panels and a smart ram air door actuator (SRADA). The exit ram air modulation system consists of a smart ram air door actuator (SRADA), three louvers, and a linkage mechanism to move the louvers.

(3) If the ram air inlet panels are put into an inoperative flight open condition, the ram air modulated exhaust duct louvers must be put into a corresponding open condition also. Conversely, the ram air inlet panels must be put into an inoperative flight open condition if the fault condition is with the ram air modulated exhaust system.

B. References

Reference	Title
21-51-27-000-801	Ram Air Exhaust Actuator - Removal (P/B 401)
21-51-27-400-802	SRADA Stowage Link - Installation (P/B 401)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
191GL	Ram Air Actuator Panel - Forward
191GR	Ram Air Actuator Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door
192JL	Air Conditioning Panel - Aft
192JR	Air Conditioning Panel - Aft

E. Prepare for Deactivation

SUBTASK 21-00-00-020-029

(1) When the ram air inlet door and ram air exhaust duct louvers for the left cooling pack will be deactivated, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-00-00-020-030

(2) When the ram air inlet door and ram air exhaust duct louvers for the right cooling pack will be deactivated, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-00-00-010-007

(3) To get access to the ram air inlet door actuator for the left cooling pack, do this step:

Open this access panel:

Number	Name/Location
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-00-00-010-008

(4) To get access to the ram air inlet door actuator for the right cooling pack, do this step:

Open this access panel:

Number	Name/Location
191GR	Ram Air Actuator Panel - Forward

SUBTASK 21-00-00-010-047

(5) To get access to the ram air exhaust door actuator for the left cooling pack, do this step:

(a) Open these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-00-00-010-048

(6) To get access to the ram air exhaust door actuator for the right cooling pack, do this step:

Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192JR	Air Conditioning Panel - Aft

F. Ram Air Inlet Modulating System Deactivation (Secured Open)

SUBTASK 21-00-00-020-037

(1) Disconnect and stow electrical connectors [1] and [10].

SUBTASK 21-00-00-020-031

(2) Remove the bolt [2], washers [3] and [5], bushing [6] and nut [4] that connect the actuator rod end to the bellcrank.

SUBTASK 21-00-00-420-021

(3) Disconnect the actuator rod end from the bellcrank and install and tighten the bolt [2], the washers [3] and [5], bushing [6] and the nut [4] in the bellcrank.

SUBTASK 21-00-00-980-002

(4) Do these steps to secure the door in the flight open position:

(a) Turn the bellcrank to align the rigging pin holes on the shaft assembly with the holes on the bearing housing support.

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(b) Install the bolt [7] through the rigging pin holes.

1) Use a BACB30UU3P36D bolt or an equivalent with a 0.1875 inch (4.7625 mm) shank diameter and 2.2 inch (55.88) shank length.

2) If necessary, drill the shank end of the bolt for a cotter pin.

(c) Install the nut [8] and cotter pin [9] on the bolt [7].

1) Use a BACN10JD3 nut or an equivalent nut.

2) Use a BACP18BC01D06P cotter pin or an equivalent cotter pin with a 0.047 inch (1.193 mm) diameter and a 0.75 inch (19.05 mm) length.

SUBTASK 21-00-00-420-001

(5) Use lockwire to safety the actuator rod end to the bolt [2].

SUBTASK 21-00-00-860-036

(6) If you deactivated the ram air inlet door for the left cooling pack, close this access panel:

Number	Name/Location
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-00-00-860-037

(7) If you deactivated the ram air inlet door for the right cooling pack, close this access panel:

Number	Name/Location
191GR	Ram Air Actuator Panel - Forward

G. Ram Air Exit Modulating System Deactivation (Secured Open)

SUBTASK 21-00-00-040-062

(1) Do one of the steps that follow to place the system in the secured open condition:

(a) Secure open by installing the SRADA stowage link. Do this task: SRADA Stowage Link - Installation, TASK 21-51-27-400-802

(b) Secure open by removing the ram air exhaust actuator, do the following:

Figure 903

1) Remove the ram air exhaust actuator. Do this task: Ram Air Exhaust Actuator - Removal, TASK 21-51-27-000-801.

2) Cap and stow electrical connectors D14390 and D14392 for the deactivation of the left ram air exit modulating system.

3) Cap and stow electrical connectors D14398 and D14400 for the deactivation of the right ram air exit modulating system.

4) Remove the nut, washers and bolt that attach the most forward louver drive arm to the link assembly.

5) Move the link assembly to open the exit louvers until the most forward hole in the link assembly lines up with the hole in the most forward louver drive arm.

6) In the same order that they were just removed, install the nut, washers, and bolt through the most forward hole in the link assembly and the hole in the most forward louver drive arm.

SUBTASK 21-00-00-420-015

(2) If you deactivated the ram air exhaust louvers for the left cooling pack, do this step:

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

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Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-00-00-420-014

(3) If you deactivated the ram air exhaust louvers for the right cooling pack, do this step:

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

Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-00-00-410-018

(4) Close these panels that were removed for access to the left ram air exhaust duct:

(a) Close these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-00-00-410-019

(5) Close these panels that were removed for access to the right ram air exhaust duct:

(a) Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192JR	Air Conditioning Panel - Aft

END OF TASK

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LEFT RAM AIR INLET ACTUATOR
(RIGHT RAM AIR INLET ACTUATOR IS OPPOSITE)

A

2274652 S0000512410_V3

Ram Air Modulation System Deactivation
Figure 902/21-00-00-990-803 (Sheet 1 of 2)

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2274700 S0000512719_V3

Ram Air Modulation System Deactivation
Figure 902/21-00-00-990-803 (Sheet 2 of 2)

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2274307 S0000512407_V2

Ram Air Exit Louvers Modulation System Deactivation
Figure 903/21-00-00-990-811 (Sheet 1 of 2)

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RAM AIR EXHAUST DUCT
(RAM AIR EXHAUST ACTUATOR NOT SHOWN)

B

2274327 S0000512321_V3

Ram Air Exit Louvers Modulation System Deactivation
Figure 903/21-00-00-990-811 (Sheet 2 of 2)

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TASK 21-00-00-440-802

9. MMEL 21-5 (DDPG) Restoration - Ram Air Modulation System Inoperative

(Figure 902)

A. General

(1) This task puts the airplane back to its usual condition after operation with the ram air modulation system inoperative.

B. References

Reference	Title
21-51-27-000-802	SRADA Stowage Link - Removal (P/B 401)
21-51-27-400-801	Ram Air Exhaust Actuator - Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
191GL	Ram Air Actuator Panel - Forward
191GR	Ram Air Actuator Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door
192JL	Air Conditioning Panel - Aft
192JR	Air Conditioning Panel - Aft

E. Prepare for Reactivation

SUBTASK 21-00-00-860-040

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-00-00-020-038

(2) If the ram air inlet door and ram air exhaust duct louvers for the left cooling pack were deactivated, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-00-00-420-022

(3) If the ram air inlet door and ram air exhaust duct louvers for the right cooling pack were deactivated, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-00-00-010-009

(4) To get access to the ram air inlet door actuator for the left cooling pack, open this access panel:

Number	Name/Location
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-00-00-010-010

(5) To get access to the ram air inlet door actuator for the right cooling pack, open this access panel:

Number	Name/Location
191GR	Ram Air Actuator Panel - Forward

SUBTASK 21-00-00-010-049

(6) To get access to the ram air exhaust duct louvers for the left cooling pack, open these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-00-00-010-050

(7) To get access to the ram air exhaust duct louvers for the right cooling pack, open these access panels:

Number	Name/Location
192CR	ECS Access Door
192JR	Air Conditioning Panel - Aft

F. Ram Air Inlet Modulating System Reactivation

SUBTASK 21-00-00-420-002

(1) Remove the safety wire from the actuator rod end and the bolt [2].

SUBTASK 21-00-00-020-034

(2) Remove the cotter pin [9], nut [8] and bolt [7].

SUBTASK 21-00-00-820-002

(3) Turn the bellcrank to align with the actuator rod end.

SUBTASK 21-00-00-420-016

(4) Install the bolt [2], washers [3 and 5], bushing [6] and nut [4] that connect the actuator rod end to the bellcrank.

SUBTASK 21-00-00-420-017

(5) Install the electrical connectors [1] and [10] on the actuator.

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SUBTASK 21-00-00-860-043

(6) If you put the ram air inlet door for the left cooling pack to its usual condition, close this access panel:

Number	Name/Location
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-00-00-860-044

(7) If you put the ram air inlet door for the right cooling pack to its usual condition, close this access panel:

Number	Name/Location
191GR	Ram Air Actuator Panel - Forward

G. Ram Air Exit Modulating System Reactivation

SUBTASK 21-00-00-440-009

(1) Do one of the steps that follow to reactivate the system:

(a) If secured open by installing the SRADA stowage link. Do this task to reactivate: SRADA Stowage Link - Removal, TASK 21-51-27-000-802

(b) If secured open by removing the ram air exhaust actuator do the following to reactivate:

Figure 903

1) Remove the nut, washers and bolt that are attaching the most forward louver drive arm to the most forward hole in the link assembly.

2) Move the link assembly until the hole in the most forward louver drive arm aligns with the second most forward hole in the link assembly.

3) In the same order that they were just removed, install the bolt, washers and nut through the hole in the most forward louver drive arm and the second most forward hole in the link assembly.

4) Install the ram air exhaust actuator. Do this task: Ram Air Exhaust Actuator - Installation, TASK 21-51-27-400-801.

SUBTASK 21-00-00-410-021

(2) Close these panels that were removed for access to the left ram air exhaust duct:

Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-00-00-410-020

(3) Close these panels that were removed for access to the right ram air exhaust duct:

Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192JR	Air Conditioning Panel - Aft

SUBTASK 21-00-00-420-019

(4) If the ram air exhaust duct louvers for the left cooling pack were put back to their usual condition, do this step:

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Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-00-00-420-020

(5) If the ram air exhaust duct louvers for the right cooling pack were put back to their usual condition, do this step:

Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

H. Ram Air Modulating System Check

SUBTASK 21-00-00-860-047

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-810-007

(2) Do the applicable fault isolation task for the problem observed.

——— END OF TASK ———

TASK 21-00-00-040-834

10. MMEL 21-10 (DDPG) Preparation - Cabin Rate of Climb Indicator Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the cabin rate of climb indicator inoperative.

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
122	Forward Cargo Compartment - Right
212	Flight Compartment - Right

C. Prepare for Unpressurized Flight.

SUBTASK 21-00-00-040-035

(1) For dispatch with the cabin rate of climb indicator inoperative, do these steps:

(a) Close the flow control and shutoff valves for the air conditioning packs. To close the valves, do this task: MMEL 21-2 (DDPG) Preparation - Flow Control and Shutoff Valve Inoperative, TASK 21-00-00-040-805.

(b) On the P5 overhead panel, do these steps:

1) Put the pressurization mode selector in the MAN position.

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2) Hold the outflow valve toggle switch in the OPEN position until the outflow valve position indicator indicates 25% open.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-00-00-880-003

(2) When the airplane is electrically powered on the ground and airport temperatures are at or above 73 degrees Fahrenheit (23 degrees Celsius), then use a ground cart or operative pack to provide cooling to the airplane.

——— END OF TASK ———

TASK 21-00-00-440-806

11. MMEL 21-10 (DDPG) Restoration - Cabin Rate of Climb Indicator Inoperative

A. General

(1) This task puts the airplane to its usual condition after operation with the cabin rate of climb indicator inoperative.

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
122	Forward Cargo Compartment - Right
212	Flight Compartment - Right

C. Cabin Rate of Climb Indicator Restoration.

SUBTASK 21-00-00-760-001

(1) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-00-00-710-030

(2) Put the pressurization mode selector on the P5-6 pressurization control panel in the AUTO position.

SUBTASK 21-00-00-710-031

(3) Reactivate the flow control and shutoff valves for the air conditioning packs. To reactivate the valves, do this task: MMEL 21-2 (DDPG) Restoration - Flow Control and Shutoff Valve(s) Inoperative, TASK 21-00-00-440-801.

——— END OF TASK ———

TASK 21-00-00-040-835

12. MMEL 21-12 (DDPG) Preparation - Cabin Altitude Indicator Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the cabin altitude indicator inoperative.

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B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
122	Forward Cargo Compartment - Right
212	Flight Compartment - Right

C. Prepare for Unpressurized Flight.

SUBTASK 21-00-00-040-036

(1) For dispatch with the cabin altitude indicator inoperative, do these steps:

(a) Close the flow control and shutoff valves for the air conditioning packs. To close the valves, do this task: MMEL 21-2 (DDPG) Preparation - Flow Control and Shutoff Valve Inoperative, TASK 21-00-00-040-805.

(b) On the P5 overhead panel, do these steps:

1) Put the pressurization mode selector in the MAN position.

2) Hold the outflow valve toggle switch in the OPEN position until the outflow valve position indicator indicates 25% open.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-00-00-880-004

(2) When the airplane is electrically powered on the ground and airport temperatures are at or above 73 degrees Fahrenheit (23 degrees Celsius), then use a ground cart or operative pack to provide cooling to the airplane.

——— END OF TASK ———

TASK 21-00-00-440-807

13. MMEL 21-12 (DDPG) Restoration - Cabin Altitude Indicator Inoperative

A. General

(1) This task puts the airplane to its usual condition after operation with the cabin altitude indicator inoperative.

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
122	Forward Cargo Compartment - Right
212	Flight Compartment - Right

C. Cabin Altitude Indicator Restoration.

SUBTASK 21-00-00-760-002

(1) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

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SUBTASK 21-00-00-710-034

(2) Put the pressurization mode selector on the P5-6 pressurization control panel in the AUTO position.

SUBTASK 21-00-00-710-035

(3) Reactivate the flow control and shutoff valves for the air conditioning packs. To reactivate the valves, do this task: MMEL 21-2 (DDPG) Restoration - Flow Control and Shutoff Valve(s) Inoperative, TASK 21-00-00-440-801.

——— END OF TASK ———

TASK 21-00-00-040-836

14. MMEL 21-13 (DDPG) Preparation - Cabin Differential Pressure Indicator Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the cabin differential pressure indicator inoperative.

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
122	Forward Cargo Compartment - Right
212	Flight Compartment - Right

C. Prepare for Unpressurized Flight.

SUBTASK 21-00-00-040-037

(1) For dispatch with the cabin differential pressure indicator inoperative, do these steps:

(a) Close the flow control and shutoff valves for the air conditioning packs. To close the valves, do this task: MMEL 21-2 (DDPG) Preparation - Flow Control and Shutoff Valve Inoperative, TASK 21-00-00-040-805.

(b) On the P5 overhead panel, do these steps:

1) Put the pressurization mode selector in the MAN position.

2) Hold the outflow valve toggle switch in the OPEN position until the outflow valve position indicator indicates 25% open.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-00-00-880-005

(2) When the airplane is electrically powered on the ground and airport temperatures are at or above 73 degrees Fahrenheit (23 degrees Celsius), then use a ground cart or operative pack to provide cooling to the airplane.

——— END OF TASK ———

TASK 21-00-00-440-808

15. MMEL 21-13 (DDPG) Restoration - Cabin Differential Pressure Indicator Inoperative

A. General

(1) This task puts the airplane to its usual condition after operation with the cabin differential pressure indicator inoperative.

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B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
122	Forward Cargo Compartment - Right
212	Flight Compartment - Right

C. Cabin Differential Pressure Indicator Restoration.

SUBTASK 21-00-00-760-003

(1) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-00-00-710-038

(2) Put the pressurization mode selector on the P5-6 pressurization control panel in the AUTO position.

SUBTASK 21-00-00-710-039

(3) Reactivate the flow control and shutoff valves for the air conditioning packs. To reactivate the valves, do this task: MMEL 21-2 (DDPG) Restoration - Flow Control and Shutoff Valve(s) Inoperative, TASK 21-00-00-440-801.

——— END OF TASK ———

TASK 21-00-00-040-807

16. DDG 21-14 Preparation - Cabin Pressure Control System Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with two modes or one automatic mode of the cabin pressure control system inoperative.

(2) The cabin pressure control system has two automatic modes and one manual mode.

(3) When two of the three modes do not operate, then the airplane must be prepared for unpressurized flight.

(4) When the manual mode operates and one of the two automatic modes does not operate, then deactivate the controller that is Inoperative.

B. Location Zones

Zone	Area
145	Aft Cargo Compartment Equipment Bay - Left
212	Flight Compartment - Right

C. Two Cabin Pressure Controller Inoperative - Deactivation Procedure Prepare for Unpressurized Flight.

SUBTASK 21-00-00-860-048

(1) To prepare the airplane for unpressurized flight, do this task: MMEL 21-15 (DDPG) Preparation - Aft Outflow Valve - Two Actuators Inoperative, TASK 21-00-00-040-809.

D. One Automatic Cabin Pressure Controller Inoperative - Deactivation Procedure

SUBTASK 21-00-00-040-047

(1) Do one of the applicable step to deactivate the inoperative Cabin Pressure Controller

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

END OF TASK

TASK 21-00-00-040-808

17. DDG 21-14 Restoration - Cabin Pressure Control System Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with two modes or one automatic mode of the cabin pressure control system inoperative.

B. References

Reference	Title
21-31-01-000-801	Cabin Pressure Controller (CPC) Removal (P/B 401)
21-31-01-400-801	Cabin Pressure Controller (CPC) Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
145	Aft Cargo Compartment Equipment Bay - Left
212	Flight Compartment - Right

D. Two modes of the cabin Pressure Control System Reactivation

SUBTASK 21-00-00-860-049

(1) Do this task: MMEL 21-15 (DDPG) Restoration - Aft Outflow Valve - Two Actuators Inoperative, TASK 21-00-00-040-810.

E. One Automatic mode of the cabin Pressure Control System Reactivation

SUBTASK 21-00-00-860-127

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-440-005

(2) Do these tasks if you replace the inoperative cabin pressure controller:

(a) Do this task Cabin Pressure Controller (CPC) Removal, TASK 21-31-01-000-801

(b) Do this task Cabin Pressure Controller (CPC) Installation, TASK 21-31-01-400-801.

SUBTASK 21-00-00-440-006

(3) Do one of the applicable step to activate the Cabin Pressure Controller:

Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

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——— END OF TASK ———

TASK 21-00-00-040-809

18. MMEL 21-15 (DDPG) Preparation - Aft Outflow Valve - Two Actuators Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with two actuators of the aft outflow valve inoperative.

(2) The aft outflow valve has two automatic mode actuators and one manual mode actuator. When two of the three actuators do not operate, the airplane must be prepared for unpressurized flight.

B. References

Reference	Title
21-31-03-000-801	Aft Outflow Valve Assembly Removal (P/B 401)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-808-F00	Start the Engine Procedure (Normal Start) (P/B 201)

C. Location Zones

Zone	Area
145	Aft Cargo Compartment Equipment Bay - Left
212	Flight Compartment - Right

D. Airplane Preparation for Unpressurized Flight, Manual Mode Operates

SUBTASK 21-00-00-040-003

(1) At the P5-6 Pressurization Control Panel, do these steps to command the outflow valve to the 25% open position in the manual mode:

(a) Put the selector in the MAN position.

(b) Hold the VALVE switch in the OPEN position until the valve position indicator shows 25% open.

SUBTASK 21-00-00-860-050

(2) Make sure the outflow valve moved to the 25% open position.

SUBTASK 21-00-00-040-024

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

E. Airplane Preparation for Unpressurized Flight, Manual Mode Does Not Operate

SUBTASK 21-00-00-040-025

(1) Start both engines. To start the engines, do this task: Start the Engine Procedure (Normal Start), TASK 71-00-00-800-808-F00.

SUBTASK 21-00-00-040-026

(2) Run the engines for two minutes to allow them to stabilize.

SUBTASK 21-00-00-040-027

(3) Advance the thrust levers as necessary to make sure that N1 is greater than 60% and N2 is greater than 89%.

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SUBTASK 21-00-00-040-028

(4) Look at the outflow valve position indicator as is goes to the closed position.

SUBTASK 21-00-00-040-029

(5) When the outflow valve is in the 25% open position,

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

SUBTASK 21-00-00-040-030

(6) Do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 21-00-00-040-031

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

F. Airplane Preparation for Unpressurized Flight, Manual and Automatic Modes Do Not Operate.

SUBTASK 21-00-00-020-009

(1) If the outflow valve can not be positioned to the 25% open position or the manual mode does not operate, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	1	C01273	PRESSURIZATION CONTROL LCD LTG
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL
F	7	C01272	PRESSURIZATION CONTROL IND

(b) Do this task to remove the outflow valve: do this task: Aft Outflow Valve Assembly Removal, TASK 21-31-03-000-801

(c) Stow the electrical connectors.

SUBTASK 21-00-00-040-032

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

END OF TASK

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TASK 21-00-00-040-810

19. MMEL 21-15 (DDPG) Restoration - Aft Outflow Valve - Two Actuators Inoperative

A. General

(1) This task puts the airplane to its usual condition usual after operation with two actuators of the aft outflow valve inoperative.

B. References

Reference	Title
21-31-03-400-801	Aft Outflow Valve Assembly Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
145	Aft Cargo Compartment Equipment Bay - Left
212	Flight Compartment - Right

D. Prepare for Reactivation

SUBTASK 21-00-00-860-052

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-020-010

(2) If the outflow valve was removed, do this task: Aft Outflow Valve Assembly Installation, TASK 21-31-03-400-801.

E. Outflow Valve Automatic and Manual Modes Operational Check.

SUBTASK 21-00-00-860-053

(1) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT
F	1	C01273	PRESSURIZATION CONTROL LCD LTG
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL
F	7	C01272	PRESSURIZATION CONTROL IND

SUBTASK 21-00-00-810-008

(2) Do the applicable fault isolation task for the problem observed.

(3) Make sure the mode selector switch on the cabin pressurization control panel, P5-6, is returned to the AUTO position.

——— END OF TASK ———

TASK 21-00-00-040-811

20. MMEL 21-16 (DDPG) 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 One Positive Pressure Relief Valve Inoperative.

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B. References

Reference	Title
21-32-01-000-801	Positive Pressure Relief Valve Removal (P/B 401)
25-52-19-000-801	Aft Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)
25-52-19-400-801	Aft Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
D00095	Lubricant - Dry Film - MS122	

D. Location Zones

Zone	Area
145	Aft Cargo Compartment Equipment Bay - Left

E. Positive Pressure Relief Valve Deactivation

SUBTASK 21-00-00-010-011

(1) To get access to the positive pressure relief valves, do the steps that follow:

(a) Remove the aft bulkhead liner in the aft cargo compartment, do this task: Aft Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-19-000-801.

SUBTASK 21-00-00-020-011

(2) Remove the positive pressure relief valve that does not operate, do this task: Positive Pressure Relief Valve Removal, TASK 21-32-01-000-801

(a) Retain the clamp [23] and the gasket [21].

SUBTASK 21-00-00-350-001

(3) Make a plate from 0.125 - 0.1875 inch (3.17 - 4.76 mm) 2024 T3 aluminum to seal the pedestal:

(a) Use the gasket [21] as a template to calculate the circumference of the plate.

(b) Drill three holes in the plate [22] with dimensions and locations the same as the gasket [21].

(c) Set the plate [22] on the pedestal, make sure the fit is correct.

SUBTASK 21-00-00-640-001

(4) Apply the MS122 lubricant, D00095 to both sides of the gasket [21].

SUBTASK 21-00-00-420-005

(5) Install the gasket [21], the plate [22], and the clamp [23] on the pedestal.

SUBTASK 21-00-00-020-012

(6) Put an airtight cap on the ambient sense tube.

SUBTASK 21-00-00-410-003

(7) Install the aft bulkhead liner of the aft cargo compartment, do this task: Aft Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-19-400-801.

SUBTASK 21-00-00-040-053

(8) For dispatch with both pressure relief valves inoperative, do this task: MMEL 21-10 (DDPG) Preparation - Cabin Rate of Climb Indicator Inoperative, TASK 21-00-00-040-834.

END OF TASK

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Positive Pressure Relief Valve Deactivation
Figure 904/21-00-00-990-804 (Sheet 1 of 2)

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POSITIVE PRESSURE RELIEF VALVE
(EXAMPLE)

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Positive Pressure Relief Valve Deactivation
Figure 904/21-00-00-990-804 (Sheet 2 of 2)

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TASK 21-00-00-440-803

21. MMEL 21-16 (DDPG) Restoration - Positive Pressure Relief Valves - One Valve Inoperative

(Figure 904)

A. General

(1) This task puts the airplane back to its usual condition after operation with one of the positive pressure relief valves inoperative.

B. References

Reference	Title
21-32-01-400-801	Positive Pressure Relief Valve Installation (P/B 401)
21-32-01-700-802	Positive Pressure Relief Valve - System Test with the Use of Boeing Test Equipment (P/B 501)
25-52-19-000-801	Aft Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)
25-52-19-400-801	Aft Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)

C. Location Zones

Zone	Area
145	Aft Cargo Compartment Equipment Bay - Left

D. Positive Pressure Relief Valve Reactivation

SUBTASK 21-00-00-010-012

(1) Remove the aft bulkhead liner in the aft cargo compartment, do this task: Aft Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-19-000-801.

SUBTASK 21-00-00-020-013

(2) Remove the clamp [23] and the plate [22].

SUBTASK 21-00-00-020-014

(3) Remove the cap from the ambient sense tube.

SUBTASK 21-00-00-420-006

(4) Install a positive pressure relief valve, do this task: Positive Pressure Relief Valve Installation, TASK 21-32-01-400-801.

SUBTASK 21-00-00-720-001

(5) Do this task: Positive Pressure Relief Valve - System Test with the Use of Boeing Test Equipment, TASK 21-32-01-700-802.

NOTE: If a new positive pressure relief valve was installed you do not need to do this test.

SUBTASK 21-00-00-010-013

(6) Install the aft bulkhead liner in the aft cargo compartment, do this task: Aft Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-19-400-801.

SUBTASK 21-00-00-840-007

(7) With both pressure relief valves inoperative, do this task: MMEL 21-10 (DDPG) Restoration - Cabin Rate of Climb Indicator Inoperative, TASK 21-00-00-440-806.

——— END OF TASK ———

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TASK 21-00-00-040-816

22. MMEL 21-19 (DDPG) Preparation - Passenger Cabin Temperature Control System Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with a component of the Passenger Cabin Temperature Control System Inoperative. The Trim Air Pressure Regulating and Shutoff Valve is deactivated closed.

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Trim Air Pressure Regulating and Shutoff Valve Deactivation

SUBTASK 21-00-00-860-137

(1) Put the TRIM AIR switch to the OFF position.

D. Zone Trim Air Modulating Valve Deactivation

SUBTASK 21-00-00-040-005

(1) To deactivate a zone trim air modulating valve, do this task: MMEL 21-36 (DDPG) Preparation - Zone Trim Air Modulating Valve Inoperative, TASK 21-00-00-040-822.

SUBTASK 21-00-00-040-006

(2) Do this step on the P5-17 Cabin Temperature Panel:

(a) Put the zone temperature selector to the AUTO (12:00) position for the zone trim air modulating valve that you deactivated.

——— END OF TASK ———

TASK 21-00-00-040-817

23. MMEL 21-19 (DDPG) Restoration - Passenger Cabin Temperature Control System Inoperative

A. General

(1) This task gives the maintenance steps which return the airplane to its usual condition after flight with components of the Passenger Cabin Temperature Control System Inoperative.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Trim Air Pressure Regulating and Shutoff Valve Reactivation

SUBTASK 21-00-00-860-138

(1) Put the TRIM AIR switch to the ON position.

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E. Zone Trim Air Modulating Valve Reactivation

SUBTASK 21-00-00-040-008

(1) To return a zone trim air modulating valve to its usual condition, do this task: MMEL 21-36 (DDPG) Restoration - Zone Trim Air Modulating Valve Inoperative, TASK 21-00-00-040-823.

F. Passenger Cabin Temperature Control System Check

SUBTASK 21-00-00-860-060

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-860-061

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-00-00-860-062

(3) Put these switches on the P5-10 Air Conditioning Panel to their usual positions and remove any DO-NOT-OPERATE tags:

(a) BLEED 1

(b) BLEED 2

(c) BLEED APU

SUBTASK 21-00-00-810-010

(4) Put these switches on the P5-10 Air Conditioning Panel to the positions that follow:

(a) Put the L PACK switch to the AUTO position.

(b) Put the R PACK switch to the AUTO position.

(c) Put the ISOLATION VALVE switch to the AUTO position.

SUBTASK 21-00-00-860-063

(5) On the P5-17 Cabin Temperature Panel, put the TRIM AIR switch to the ON position and remove any DO-NOT-OPERATE tags.

SUBTASK 21-00-00-810-011

(6) Do the applicable fault isolation task for the problem(s) observed.

——— END OF TASK ———

TASK 21-00-00-040-818

24. MMEL 21-21 (DDPG) Preparation - Flight Deck Temperature Control System Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with a component of the Flight Deck Temperature Control System Inoperative.

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Trim Air Pressure Regulating and Shutoff Valve Deactivation

SUBTASK 21-00-00-860-139

(1) Put the TRIM AIR switch to the OFF position.

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D. Zone Trim Air Modulating Valve Deactivation

SUBTASK 21-00-00-040-010

(1) To close the zone trim air modulating valve, do this task: MMEL 21-36 (DDPG) Preparation - Zone Trim Air Modulating Valve Inoperative, TASK 21-00-00-040-822.

SUBTASK 21-00-00-040-011

(2) Do this step on the P5-17 Cabin Temperature Panel:

(a) Put the CONT CAB zone temperature selector to the AUTO (12:00) position.

——— END OF TASK ———

TASK 21-00-00-040-819

25. MMEL 21-21 (DDPG) Restoration - Flight Deck Temperature Control System Inoperative

A. General

(1) This task gives the maintenance steps which return the airplane to its usual condition after flight with components of the Flight Deck Temperature Control System Inoperative.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Trim Air Pressure Regulating and Shutoff Valve Reactivation

SUBTASK 21-00-00-860-140

(1) Put the TRIM AIR switch to the ON position.

E. Zone Trim Air Modulating Valve Reactivation

SUBTASK 21-00-00-040-013

(1) To return a zone trim air modulating valve to its usual condition, do this task: MMEL 21-36 (DDPG) Restoration - Zone Trim Air Modulating Valve Inoperative, TASK 21-00-00-040-823.

F. Passenger Cabin Temperature Control System Check

SUBTASK 21-00-00-860-064

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-860-065

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-00-00-860-066

(3) Put these switches on the P5-10 Air Conditioning Panel to their usual positions and remove any DO-NOT-OPERATE tags:

(a) BLEED 1

(b) BLEED 2

(c) BLEED APU

SUBTASK 21-00-00-810-012

(4) Put these switches on the P5-10 Air Conditioning Panel to the positions that follow:

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(a) Put the L PACK switch to the AUTO position.

(b) Put the R PACK switch to the AUTO position.

(c) Put the ISOLATION VALVE switch to the AUTO position.

SUBTASK 21-00-00-860-067

(5) On the P5-17 Cabin Temperature Panel, put the TRIM AIR switch to the ON position and remove any DO-NOT-OPERATE tags.

SUBTASK 21-00-00-810-013

(6) Do the applicable fault isolation task for the problem(s) observed.

——— END OF TASK ———

TASK 21-00-00-040-838

26. MMEL 21-26 (DDPG) Preparation - Ground Preconditioned Air Connection Check Valve Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the ground preconditioned air connection check valve inoperative.

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
122	Forward Cargo Compartment - Right
212	Flight Compartment - Right

C. Prepare for Unpressurized Flight.

SUBTASK 21-00-00-040-039

(1) For dispatch with the ground preconditioned air connection check valve inoperative, do these steps:

(a) Close the flow control and shutoff valves for the air conditioning packs. To close the valves, do this task: MMEL 21-2 (DDPG) Preparation - Flow Control and Shutoff Valve Inoperative, TASK 21-00-00-040-805.

(b) On the P5 overhead panel, do these steps:

1) Put the pressurization mode selector in the MAN position.

2) Hold the outflow valve toggle switch in the OPEN position until the outflow valve position indicator indicates 25% open.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-00-00-880-006

(2) When the airplane is electrically powered on the ground and airport temperatures are at or above 73 degrees Fahrenheit (23 degrees Celsius), then use a ground cart or operative pack to provide cooling to the airplane.

——— END OF TASK ———

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TASK 21-00-00-440-810

27. MMEL 21-26 (DDPG) Restoration - Ground Preconditioned Air Connection Check Valve Inoperative

A. General

(1) This task puts the airplane to its usual condition after operation with the ground preconditioned air connection check valve inoperative.

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
122	Forward Cargo Compartment - Right
212	Flight Compartment - Right

C. Ground Preconditioned Air Connection Check Valve Restoration.

SUBTASK 21-00-00-760-004

(1) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-00-00-710-042

(2) Put the pressurization mode selector on the P5-6 pressurization control panel in the AUTO position.

SUBTASK 21-00-00-710-043

(3) Reactivate the flow control and shutoff valves for the air conditioning packs. To reactivate the valves, do this task: MMEL 21-2 (DDPG) Restoration - Flow Control and Shutoff Valve(s) Inoperative, TASK 21-00-00-440-801.

——— END OF TASK ———

TASK 21-00-00-040-839

28. MMEL 21-27 (DDPG) Preparation - Electronic Equipment Cooling Fan Inoperative

A. General

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

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Equipment Cooling Supply And Exhaust Fan Inspection

SUBTASK 21-00-00-720-003

(1) On the P5 Equipment Cooling Panel, put the applicable SUPPLY or EXHAUST switch to the operative fan position (NORM or ALTN).

(a) Make sure that the applicable cooling supply or exhaust OFF light goes off.

SUBTASK 21-00-00-720-006

(2) When the supply system has both fans operative, do these steps:

(a) Put the EQUIP COOLING SUPPLY switch to the NORM position.

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(b) Open this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	12	C01116	EQPT COOLING SUPPLY FAN CONT-NORMAL

(c) Make sure the equipment cooling supply OFF light comes on.

(d) Put the EQUIP COOLING SUPPLY switch to the ALTN position.

(e) Make sure the equipment cooling supply OFF light goes off.

(f) Open this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	13	C01117	EQPT COOLING SUPPLY FAN CONTROL-ALTN

(g) Make sure the equipment cooling supply OFF light comes on.

(h) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	12	C01116	EQPT COOLING SUPPLY FAN CONT-NORMAL
C	13	C01117	EQPT COOLING SUPPLY FAN CONTROL-ALTN

(i) Make sure that the equipment cooling supply OFF light goes off.

(j) Put the EQUIPMENT COOLING SUPPLY switch to the NORM position.

SUBTASK 21-00-00-720-007

(3) When the exhaust system has both fans operative, do these steps:

(a) Put the EQUIP COOLING EXHAUST switch to the NORM position.

(b) Open this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	14	C01435	EQPT COOLING EXHAUST FAN CONT NORMAL

(c) Make sure the equipment cooling exhaust OFF light comes on.

(d) Put the EQUIP COOLING EXHAUST switch to the ALTN position.

(e) Make sure the equipment cooling exhaust OFF light goes off.

(f) Open this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	15	C01436	EQPT COOLING EXHAUST FAN CONT ALTN

(g) Make sure the equipment cooling exhaust OFF light comes on.

(h) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	14	C01435	EQPT COOLING EXHAUST FAN CONT NORMAL
C	15	C01436	EQPT COOLING EXHAUST FAN CONT ALTN

(i) Make sure that the equipment cooling exhaust OFF light goes off.

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(j) Put the EQUIPMENT COOLING EXHAUST switch to the NORM position.

——— END OF TASK ———

TASK 21-00-00-440-811

29. MMEL 21-27 (DDPG) Restoration - Electronic Equipment Cooling Fan Inoperative

A. General

(1) This task puts the airplane to its usual condition after operation with an electronic equipment cooling supply or exhaust fan inoperative.

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Put the Airplane Back to Its Usual Condition

SUBTASK 21-00-00-810-021

(1) Do the applicable fault isolation task for the problem observed.

——— END OF TASK ———

TASK 21-00-00-040-840

30. MMEL 21-33 (DDPG) Preparation - Pack Temperature Control Valves Inoperative

Figure 905

A. General

(1) This procedure prepares the airplane for dispatch under these two conditions:

(a) Dispatch for flight with the temperature control valve inoperative and the associated standby temperature control valve operational.

(b) Dispatch for flight with the pack temperature control valve(s) inoperative, provided that the associated pack is not used.

B. References

Reference	Title
21-51-00-700-803	Pack/Zone Temperature Controller BITE Test (P/B 501)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for Pressurized Flight with Temperature Control Valve Inoperative and Associated Standby Temperature Control Valve Operational

SUBTASK 21-00-00-860-161

(1) Do this task to remove pneumatic pressure from the pneumatic system: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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SUBTASK 21-00-00-860-162

(2) Put the L PACK and R PACK switches on the P5-10 air conditioning panel to OFF.

SUBTASK 21-00-00-860-164

(3) To deactivate the left temperature control valve, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-00-00-860-165

(4) To deactivate the right temperature control valve, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-00-00-010-055

(5) Get access to the left temperature control valve as follows:

Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-00-00-010-054

(6) Get access to the right temperature control valve as follows:

Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-00-00-020-043

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. HOT DUCTS CAN CAUSE INJURIES TO PERSONNEL.

(7) As applicable, deactivate left temperature control valve, V139, as follows:

(a) Disconnect and stow electrical connector D3862 from temperature control valve.

(b) Turn the manual override on the valve until the visual position indicator shows that the valve is fully closed.

SUBTASK 21-00-00-040-061

(8) As applicable, deactivate the right temperature control valve, V141, as follows:

(a) Disconnect and stow electrical connector D3872 from the temperature control valve.

(b) Turn the manual override on the valve until the visual position indicator shows that the valve is fully closed.

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SUBTASK 21-00-00-860-169

(9) If the left pack Temperature Control Valve, V139, was deactivated, do this step:

(a) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-00-00-860-170

(10) If the right pack Temperature Control Valve, V141, was deactivated, do this step:

(a) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-00-00-740-001

(11) Make sure that the associated Standby Pack Temperature Control valve operates:

(a) Do the Pack/Zone Temperature Controller BITE Test. Do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-51-00-700-803.

(b) Make sure that the red lamp for the STBY OTHER PACK TCV does not come on.

NOTE: A red lamp for THIS PACK TCV will illuminate.

SUBTASK 21-00-00-410-022

(12) If the left temperature control valve was deactivated, do this step:

(a) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-00-00-410-023

(13) If the right temperature control valve was deactivated, do this step:

Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Deactivation - Prepare for dispatch for flight with the pack temperature control valve(s) inoperative, provided that the associated pack is not used.

SUBTASK 21-00-00-040-040

(1) For dispatch with one or both pack temperature control valves inoperative, do this task: MMEL 21-1 (DDPG) Preparation - Air Conditioning Pack(s) Inoperative, TASK 21-00-00-040-803.

END OF TASK

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Temperature Control Valve Installation
Figure 905/21-00-00-990-812 (Sheet 1 of 2)

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TEMPERATURE CONTROL VALVE

B

2399096 S0000554441_V1

Temperature Control Valve Installation
Figure 905/21-00-00-990-812 (Sheet 2 of 2)

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TASK 21-00-00-440-812

31. MMEL 21-33 (DDPG) Restoration - Pack Temperature Control Valves Inoperative

Figure 905

A. General

(1) This task restores the airplane to its usual condition after operation under these two conditions:

(a) Dispatch for flight with the temperature control valve inoperative and the associated standby temperature control valve operational.

(b) Dispatch for flight with the pack temperature control valve(s) inoperative, provided that the associated pack is not used.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Pack Temperature Control Valves Reactivation After Dispatch for Flight with the Temperature Control Valve Inoperative and the Associated Standby Temperature Control Valve Operational

SUBTASK 21-00-00-860-166

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

SUBTASK 21-00-00-860-167

(2) Set the L PACK and R PACK switches on the P5-10 air conditioning panel to OFF and attach DO-NOT-OPERATE tags to the switches.

SUBTASK 21-00-00-860-171

(3) If the temperature control valve for the left pack was deactivated, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-00-00-860-172

(4) If the temperature control valve for the right pack was deactivated, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT

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(Continued)

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-00-00-010-051

(5) If the left temperature control valve was deactivated, do this step to get access to the temperature control valve:

(a) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-00-00-010-052

(6) If the right temperature control valve was deactivated, do this step to get access to the temperature control valve:

(a) Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-00-00-860-168

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. HOT DUCTS CAN CAUSE INJURIES TO PERSONNEL.

(7) Turn the manual override on the applicable temperature control valve until the visual position indicator is between the OPEN and CLOSED positions.

SUBTASK 21-00-00-420-028

(8) As applicable, connect the electrical connector D3862 to the left Temperature Control Valve, V139, or connect electrical connector D3872 to the right Temperature Control Valve, V141.

SUBTASK 21-00-00-860-173

(9) If the left temperature control valve was restored, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-00-00-860-174

(10) If the right temperature control valve was restored, do this step:

Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

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SUBTASK 21-00-00-410-024

(11) If the left temperature control valve was restored, do this step:

(a) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-00-00-410-025

(12) If the right temperature control valve was restored, do this step:

(a) Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Reactivation - Dispatch for flight with the pack temperature control valve(s) inoperative, provided that the associated pack is not used.

SUBTASK 21-00-00-440-008

(1) With one or both pack temperature control valves inoperative, do this task: MMEL 21-1 (DDPG) Restoration - Air Conditioning Pack(s) Inoperative, TASK 21-00-00-040-804..

——— END OF TASK ———

TASK 21-00-00-040-841

32. MMEL 21-34 (DDPG) Preparation - Standby Pack Temperature Control Valves Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the standby pack temperature control valves inoperative.

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Prepare for Deactivation

SUBTASK 21-00-00-040-042

(1) For dispatch with one or both standby pack temperature control valves inoperative, do this task: MMEL 21-1 (DDPG) Preparation - Air Conditioning Pack(s) Inoperative, TASK 21-00-00-040-803.

——— END OF TASK ———

TASK 21-00-00-440-813

33. MMEL 21-34 (DDPG) Restoration - Standby Pack Temperature Control Valves Inoperative

A. General

(1) This task puts the airplane to its usual condition after operation with the standby pack temperature control valves inoperative.

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

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C. Standby Pack Temperature Control Valves Reactivation

SUBTASK 21-00-00-840-005

(1) With one or both standby pack temperature control valves inoperative, do this task: MMEL 21-1 (DDPG) Restoration - Air Conditioning Pack(s) Inoperative, TASK 21-00-00-040-804.

——— END OF TASK ———

TASK 21-00-00-040-820

34. MMEL 21-35 (DDPG) Preparation - Trim Air Pressure Regulating and Shutoff Valve Inoperative
(Figure 906)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with a Trim Air Pressure Regulating and Shutoff Valve Inoperative.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for Deactivation

SUBTASK 21-00-00-860-068

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

SUBTASK 21-00-00-860-069

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

SUBTASK 21-00-00-860-070

(3) On the P5-17 Cabin Temperature Panel, put the TRIM AIR switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-00-00-860-071

(4) Put these switches on the P5-10 Air Conditioning Panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) BLEED 1

(b) BLEED 2

(c) BLEED APU

SUBTASK 21-00-00-010-014

(5) To get access to the trim air pressure regulating and shutoff valve, open these panels in the specified sequence:

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Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

F. Trim Air Pressure Regulating and Shutoff Valve Deactivation (Locked Closed)

SUBTASK 21-00-00-040-014

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS ARE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect and stow the electrical connector.

SUBTASK 21-00-00-040-015

(2) Turn the manual override hex on the shutoff valve until the visual position indicator shows the full closed position.

SUBTASK 21-00-00-010-015

(3) Close these panels in the specified sequence:

Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-00-00-860-072

(4) Put these switches on the P5-10 Air Conditioning Panel to their usual positions and remove the DO-NOT-OPERATE tags:

(a) BLEED 1

(b) BLEED 2

(c) BLEED APU

——— END OF TASK ———

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Trim Air Pressure Regulating and Shutoff Valve Deactivation
Figure 906/21-00-00-990-805

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TASK 21-00-00-040-821

35. MMEL 21-35 (DDPG) Restoration - Trim Air Pressure Regulating and Shutoff Valve Inoperative

(Figure 906)

A. General

(1) This task gives the maintenance steps which return the airplane to its usual condition after flight with the Trim Air Pressure Regulating and Shutoff Valve Inoperative.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for Reactivation

SUBTASK 21-00-00-860-073

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

SUBTASK 21-00-00-860-074

(2) Put these switches on the P5-10 Air Conditioning Panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) BLEED 1

(b) BLEED 2

(c) BLEED APU

SUBTASK 21-00-00-010-016

(3) To get access to the trim air pressure regulating and shutoff valve, open these panels in the specified sequence:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

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F. Trim Air Pressure Regulating and Shutoff Valve Reactivation

SUBTASK 21-00-00-040-016

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS ARE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Turn the manual override hex on the shutoff valve until the visual position indicator is in the full open position.

SUBTASK 21-00-00-040-017

(2) Install the electrical connector on the trim air pressure regulating and shutoff valve.

SUBTASK 21-00-00-860-075

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

G. Trim Air Pressure Regulating and Shutoff Valve Check

SUBTASK 21-00-00-860-076

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-860-077

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-00-00-860-078

(3) Put these switches on the P5-10 Air Conditioning Panel to their usual positions and remove the DO-NOT-OPERATE tags:

(a) BLEED 1

(b) BLEED 2

(c) BLEED APU

SUBTASK 21-00-00-810-014

(4) Put these switches on the P5-10 Air Conditioning Panel to the positions that follow:

(a) Put the L PACK switch to the AUTO position.

(b) Put the R PACK switch to the AUTO position.

(c) Put the ISOLATION VALVE switch to the AUTO position.

SUBTASK 21-00-00-860-079

(5) On the P5-17 Cabin Temperature Panel, put the TRIM AIR switch to the ON position and remove DO-NOT-OPERATE tag.

SUBTASK 21-00-00-810-015

(6) Do the applicable fault isolation task for the problem observed.

END OF TASK

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TASK 21-00-00-040-822

36. MMEL 21-36 (DDPG) Preparation - Zone Trim Air Modulating Valve Inoperative

(Figure 907)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with a Zone Trim Air Modulating Valve Inoperative.

(2) There are three Zone Trim Air Modulating Valves. The valve for the control cabin is in the left ECS bay. The valves for the forward and the aft passenger cabin zones are in the right ECS bay.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for Deactivation

SUBTASK 21-00-00-860-080

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

SUBTASK 21-00-00-010-018

(2) To get access to the zone trim air modulating valves in the right ECS bay, open these panels in the specified sequence:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

F. Zone Trim Air Modulating Valve Deactivation (Locked Closed)

SUBTASK 21-00-00-860-134

(1) Set the CONT CAB, FWD CAB and/or AFT CAB temperature selectors on the P5-17 temperature control panel to OFF.

SUBTASK 21-00-00-040-018

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS ARE HOT AND CAN CAUSE INJURY TO PERSONS.

(2) Disconnect and stow the electrical connector from the defective valve.

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SUBTASK 21-00-00-040-019

(3) Turn the manual override on the defective valve until the visual position indicator shows the full closed position.

SUBTASK 21-00-00-010-020

(4) When a zone trim air modulating valve in the right ECS bay was deactivated, close these panels in the specified sequence:

Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-00-00-860-133

(5) Set the temperature selector associated with the deactivated trim air modulating valve to AUTO.

——— END OF TASK ———

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Zone Trim Air Modulating Valve Deactivation
Figure 907/21-00-00-990-806 (Sheet 1 of 2)

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Zone Trim Air Modulating Valve Deactivation
Figure 907/21-00-00-990-806 (Sheet 2 of 2)

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TASK 21-00-00-040-823

37. MMEL 21-36 (DDPG) Restoration - Zone Trim Air Modulating Valve Inoperative

(Figure 907)

A. General

(1) This task gives the maintenance steps which return the airplane to its usual condition after flight with a Zone Trim Air Modulating Valve Inoperative.

(2) There are three Zone Trim Air Modulating Valves. The valve for the control cabin is in the left ECS bay. The valves for the forward and the aft passenger cabin zones are in the right ECS bay.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for Reactivation

SUBTASK 21-00-00-860-085

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

SUBTASK 21-00-00-860-086

(2) On the P5-17 Cabin Temperature Panel, put the TRIM AIR switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-00-00-860-087

(3) Put these switches on the P5-10 Air Conditioning Panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) BLEED 1

(b) BLEED 2

(c) BLEED APU

SUBTASK 21-00-00-010-021

(4) To get access to the zone trim air modulating valve in the left ECS bay, open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-00-00-010-022

(5) To get access to the zone trim air modulating valves in the right ECS bay, open these panels in the specified sequence:

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Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

F. Zone Trim Air Modulating Valve Reactivation

SUBTASK 21-00-00-040-020

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS ARE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Turn the manual override on the defective valve until the visual position indicator is between the open and the closed positions.

SUBTASK 21-00-00-040-021

(2) Install the electrical connector on the zone trim air modulating valve.

SUBTASK 21-00-00-860-088

(3) Put these switches on the P5-10 Air Conditioning Panel to their usual positions and remove the DO-NOT-OPERATE tags:

(a) BLEED 1

(b) BLEED 2

(c) BLEED APU

SUBTASK 21-00-00-860-089

(4) On the P5-17 Cabin Temperature Panel, put the TRIM AIR switch to the ON position and remove the DO-NOT-OPERATE tag.

G. Zone Trim Air Modulating Valve Check

SUBTASK 21-00-00-860-090

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-860-091

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-00-00-810-016

(3) Put these switches on the P5-10 Air Conditioning Panel to the positions that follow:

(a) Put the L PACK switch to the AUTO position.

(b) Put the R PACK switch to the AUTO position.

(c) Put the ISOLATION VALVE switch to the AUTO position.

SUBTASK 21-00-00-810-017

(4) Do the applicable fault isolation task for the problem observed.

——— END OF TASK ———

TASK 21-00-00-040-824

38. MMEL 21-38 (DDPG) Preparation - Outflow Valve Position Indicator Inoperative

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the outflow valve position indicator inoperative.

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B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
145	Aft Cargo Compartment Equipment Bay - Left
212	Flight Compartment - Right

D. Preparation - Outflow Valve Operational Test

SUBTASK 21-00-00-860-092

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-860-093

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	1	C01273	PRESSURIZATION CONTROL LCD LTG
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL
F	7	C01272	PRESSURIZATION CONTROL IND

E. Outflow Valve Operational Test - Manual Mode

SUBTASK 21-00-00-710-010

(1) On the P5-6 Pressurization Control Panel, put the mode selector to MAN.

SUBTASK 21-00-00-710-011

(2) Make sure the MANUAL light goes on.

SUBTASK 21-00-00-710-012

(3) Hold the VALVE switch in the OPEN position for 30 seconds.

SUBTASK 21-00-00-710-013

(4) Look at the aft outflow valve to make sure it moved to the fully open position.

SUBTASK 21-00-00-710-014

(5) Hold the VALVE switch in the CLOSE position for 30 seconds.

SUBTASK 21-00-00-710-015

(6) Look at the aft outflow valve to make sure it moved to the fully closed position.

F. Outflow Valve Operational Test - Automatic Modes

SUBTASK 21-00-00-710-016

(1) On the P5-6 Pressurization Control Panel, put the mode selector to AUTO.

SUBTASK 21-00-00-710-017

(2) Make sure the MANUAL light goes off.

SUBTASK 21-00-00-710-018

(3) Look at the aft outflow valve to make sure it moved to the fully open position.

END OF TASK

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TASK 21-00-00-040-825

39. MMEL 21-38 (DDPG) Restoration - Outflow Valve Position Indicator Inoperative

A. General

(1) This task gives the maintenance steps put the airplane in its usual condition after flight with the outflow valve position indicator inoperative.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Reactivation

SUBTASK 21-00-00-860-094

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-00-860-095

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	1	C01273	PRESSURIZATION CONTROL LCD LTG
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL
F	7	C01272	PRESSURIZATION CONTROL IND

SUBTASK 21-00-00-810-018

(3) Do the applicable fault isolation task for the problem observed.

(4) Make sure the mode selector switch on the cabin pressurization control panel, P5-6, is returned to the AUTO position.

——— END OF TASK ———

TASK 21-00-00-040-826

40. MMEL 21-39 (DDPG) Preparation - Trim Air Check Valve Inoperative

(Figure 908)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with a Trim Air Check Valve Inoperative.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (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-11158	Blank-Off Plate, Trim Air Check Valve (Dispatch) Part #: A21015-8 Supplier: 81205

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Prepare for Deactivation

SUBTASK 21-00-00-860-096

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

SUBTASK 21-00-00-860-097

(2) Put these switches on the P5-10 Air Conditioning Panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) BLEED 1

(b) BLEED 2

(c) BLEED APU

SUBTASK 21-00-00-010-023

(3) To get access to the trim air check valve in the left ECS bay, open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-00-00-010-024

(4) To get access to the trim air check valve in the right ECS bay, open these panels in the specified sequence:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

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G. Trim Air Check Valve Deactivation

SUBTASK 21-00-00-020-017

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS ARE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Do these steps to remove the flanged exhaust duct [44]:

(a) Loosen the clamps [41].

(b) Move the end of the hose [42] off the flanged exhaust duct [44].

(c) Remove the bolts [43] that hold the flanged exhaust duct [44] to the airplane structure.

(d) Remove the flanged exhaust duct [44].

(e) Remove the clamps [41] and the hose [42].

SUBTASK 21-00-00-020-018

(2) Loosen the forward clamp.

SUBTASK 21-00-00-020-019

(3) Move the clamp to the adjacent duct.

SUBTASK 21-00-00-040-022

(4) Do these steps to deactivate the trim air check valve:

(a) Install the blank-off plate, SPL-11158 between the check valve and the duct flange.

NOTE: If blank-off plate, SPL-11158 is not available, then fabricate a blanking plate which has these specifications:

Allowable materials:

1. Titanium 6AL-4V per MIL-T-9046 Type 3 Comp C
2. Inconel 718 per AMS 5596
3. 301 CRES per MIL-S-5059 1/2, 3/4, or Fullhard

Dimensions:

Diameter; 3.10 in. (78.74 mm) — 3.00 in. (76.2 mm)

Thickness; 0.040 in. (1.016 mm)

(b) Move the clamp to the duct connection.

(c) Tighten the nut on the clamp to 55 pound-inches (6.2 newton-meters).

SUBTASK 21-00-00-020-020

(5) Do these steps to install the flanged exhaust duct [44]:

(a) Put the hose [42] in its position on the elbow of the ram air exhaust.

(b) Install one of the clamps [41] on the hose [42].

NOTE: Make sure the clamp is not installed on the duct bead. Keep a 0.125 inch (3.2 mm) minimum distance between the clamp and the edge of the hose.

(c) Put the flanged exhaust duct [44] in its position.

(d) Move the end of the hose [42] on the duct [44].

(e) Install the bolts [43] that hold the flanged exhaust duct [44] to the airplane structure.

(f) Install the remaining clamp [41].

NOTE: Make sure the clamp is not installed on the duct bead. Keep a 0.125 inch (3.2 mm) minimum distance between the clamp and the edge of the hose.

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SUBTASK 21-00-00-700-001

(6) Perform a leakage test:

(a) Put these switches on the P5-10 Air Conditioning Panel to their usual positions and remove the DO-NOT-OPERATE tags:

1) BLEED 1

2) BLEED 2

3) BLEED APU

(b) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801

(c) Put the applicable PACK switch to the AUTO position.

(d) Put the TRIM AIR switch to the OFF position.

(e) Check valve flange for leakage.

1) Diffused leakage is satisfactory.

2) Jet blast leakage must be repaired by joint or clamp realignment.

SUBTASK 21-00-00-010-025

(7) When the trim air check valve in the left ECS bay was deactivated, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-00-00-010-026

(8) When the trim air check valve in the right ECS bay was deactivated, close these panels in the specified sequence:

Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-00-00-860-142

(9) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

END OF TASK

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Trim Air Check Valve Deactivation
Figure 908/21-00-00-990-807 (Sheet 1 of 2)

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Trim Air Check Valve Deactivation
Figure 908/21-00-00-990-807 (Sheet 2 of 2)

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TASK 21-00-00-040-827

41. MMEL 21-39 (DDPG) Restoration - Trim Air Check Valve Inoperative

(Figure 908)

A. General

(1) This task puts the airplane back to its usual condition after operation with one a trim air check valve inoperative.

B. References

Reference	Title
21-61-09-000-801	Trim Air Check Valve Removal (P/B 401)
21-61-09-400-801	Trim Air Check Valve Installation (P/B 401)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Trim Air Check Valve Reactivation

SUBTASK 21-00-00-040-023

(1) Replace the defective trim air check valve. To replace the trim air check valve,

These are the tasks:

Trim Air Check Valve Removal, TASK 21-61-09-000-801,

Trim Air Check Valve Installation, TASK 21-61-09-400-801.

(2) Be sure the blanking plate used between the duct assembly and the inoperative trim air check valve is removed at the completion of Trim Air Check Valve Installation, TASK 21-61-09-400-801.

NOTE: Blanking plate material specifications are as follows: Titanium 6AL-4V per MIL-T-9046 Type 3 Comp C, Inconel 718 per AMS 5596, and 301 CRES per MIL-S-5059 1/2, 3/4, or Fullhard. Blanking plate dimension specifications are as follows: Diameter is 3.10 (+0.10 or -0.00) inches and Thickness is 0.040 inch.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-00-00-860-099

(1) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812

——— END OF TASK ———

TASK 21-00-00-040-828

42. MMEL 21-40 (DDPG) Preparation - Equipment Cooling Overboard Exhaust Valve Inoperative

(Figure 909)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with an equipment cooling overboard exhaust valve that does not operate and with both packs operating. The actuator is verified to be in the smoke position.

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B. References

Reference	Title
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)

C. Tools/Equipment

Reference	Description
STD-3907	Mirror - Dental

D. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Equipment Cooling Overboard Exhaust Valve Inspection

SUBTASK 21-00-00-010-027

(1) To get access to the equipment cooling overboard exhaust valve, do this task:

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-00-00-010-028

(2) Remove the access panel on the top of the raised platform that is just aft and outboard of this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-00-00-720-002

(3) Use a dental mirror, STD-3907 to make sure the position indicator shows that the valve is in the SMOKE position.

SUBTASK 21-00-00-040-057

(4) If the overboard exhaust valve has not failed in the SMOKE position, do these steps to position and deactivate the valve in the SMOKE position:

(a) Put the airplane in the air mode with the BITE in the Proximity Switch Electronics Unit (PSEU). To put the airplane in the air mode with the BITE in the Proximity Switch Electronics Unit (PSEU), do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

(b) Put the applicable PACK switches to the HIGH position.

(c) Put the R RECIRC FAN switch to the OFF position.

(d) After 10 seconds,

Open this circuit breaker and install safety lock:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

(e) Disconnect, cap and stow electrical connector D11880 on the overboard exhaust valve.

(f) Make sure the equipment cooling overboard exhaust valve is in the SMOKE position.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-00-00-010-029

(5) Install the access panel.

SUBTASK 21-00-00-010-030

(6) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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ELECTRICAL AND ELECRONICS COMPARTMENT

A

B

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Equipment Cooling Overboard Exhaust Valve Deactivation
Figure 909/21-00-00-990-808 (Sheet 1 of 2)

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EQUIPMENT COOLING OVERBOARD EXHAUST VALVE
(OXYGEN BOTTLE INSTALLATION NOT SHOWN FOR CLARITY)
(VIEW IN THE DOWN DIRECTION)

B

G74229 S0006562343_V2

Equipment Cooling Overboard Exhaust Valve Deactivation
Figure 909/21-00-00-990-808 (Sheet 2 of 2)

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TASK 21-00-00-040-829

43. **MMEL 21-40 (DDPG) Restoration - Equipment Cooling Overboard Exhaust Valve Inoperative**
(Figure 909)

A. **General**

(1) This task puts the airplane back to its usual condition after operation with an equipment cooling overboard exhaust valve that does not operate.

B. **Location Zones**

Zone	Area
118	Electrical and Electronics Compartment - Right

C. **Put the Airplane Back to Its Usual Condition**

SUBTASK 21-00-00-810-019

(1) Do the applicable fault isolation task for the problem observed.

——— END OF TASK ———

TASK 21-00-00-040-843

44. **MMEL 21-41 (DDPG) Preparation - Door Area Heater Systems Inoperative**

A. **General**

(1) This task gives the maintenance steps which prepare the airplane for flight with either of these door area heater systems inoperative:

(a) Forward Door Area Heater System

(b) Overwing Emergency Exit Door Heater Systems

1) Door Lining Heaters

2) Door Trim Heaters

3) Close out Panel Heaters

(c) Aft Door Area Heater System

B. **Location Zones**

Zone	Area
830	Subzone - Passenger Compartment Doors, Left
840	Subzone - Passenger Compartment Doors, Right

C. **Deactivation Procedure**

SUBTASK 21-00-00-865-001

(1) To deactivate the forward door area or the overwing emergency exit door heater systems,

Open this circuit breaker and install safety lock:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

SUBTASK 21-00-00-865-002

(2) To deactivate the aft door area heater system,

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Open this circuit breaker and install safety lock:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	7	C01279	DOOR AREA HTR-AFT

——— **END OF TASK** ———

TASK 21-00-00-040-844

45. MMEL 21-41 (DDPG) Restoration - Door Area Heater Systems Inoperative

A. General

(1) This task puts back the airplane to its usual condition after operation with either of these door area heater systems inoperative:

(a) Forward Door Area Heater System

(b) Overwing Emergency Exit Door Heater Systems

1) Door Lining Heaters

2) Door Trim Heaters

3) Close out Panel Heaters

(c) Aft Door Area Heater System

B. References

Reference	Title
21-45-01-000-801	Door Area Heater Removal (P/B 401)
21-45-01-400-801	Door Area Heater Installation (P/B 401)
21-45-02-000-801	Emergency Exit Door Heater Blanket Removal (P/B 401)
21-45-02-000-802	Emergency Exit Door Surround Panel Heater Blanket Removal (P/B 401)
21-45-02-000-803	Emergency Exit Door Closeout Panel Heater Blanket Removal (P/B 401)
21-45-02-400-801	Emergency Exit Door Heater Blanket Installation (P/B 401)
21-45-02-400-802	Emergency Exit Door Surround Panel Heater Blanket Installation (P/B 401)
21-45-02-400-803	Emergency Exit Door Closeout Panel Heater Blanket Installation (P/B 401)

C. Location Zones

Zone	Area
830	Subzone - Passenger Compartment Doors, Left
840	Subzone - Passenger Compartment Doors, Right

D. Reactivation Procedure

SUBTASK 21-00-00-865-003

(1) To reactivate the forward door area or the overwing emergency exit door heater systems, Remove the safety lock and close this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

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SUBTASK 21-00-00-865-004

(2) To reactivate the aft door area heater system,

Remove the safety lock and close this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	7	C01279	DOOR AREA HTR-AFT

E. Door Area Heater System Repair

SUBTASK 21-00-00-900-001

(1) To replace an inoperative forward door area heater or aft door area heater, do these tasks:

(a) Door Area Heater Removal, TASK 21-45-01-000-801

(b) Door Area Heater Installation, TASK 21-45-01-400-801

SUBTASK 21-00-00-900-002

(2) To replace an inoperative overwing emergency exit door lining heater, do these tasks:

(a) Emergency Exit Door Heater Blanket Removal, TASK 21-45-02-000-801

(b) Emergency Exit Door Heater Blanket Installation, TASK 21-45-02-400-801

SUBTASK 21-00-00-900-003

(3) To replace an inoperative overwing emergency exit door closeout panel heater, do these tasks:

(a) Emergency Exit Door Closeout Panel Heater Blanket Removal, TASK 21-45-02-000-803

(b) Emergency Exit Door Closeout Panel Heater Blanket Installation, TASK 21-45-02-400-803

SUBTASK 21-00-00-900-004

(4) To replace an inoperative overwing emergency exit door trim panel heater, do these tasks:

(a) Emergency Exit Door Surround Panel Heater Blanket Removal, TASK 21-45-02-000-802

(b) Emergency Exit Door Surround Panel Heater Blanket Installation, TASK 21-45-02-400-802

——— END OF TASK ———

TASK 21-00-00-040-830

46. MMEL 21-42 (DDPG) Preparation - Equipment Cooling Low Flow Detection System Inoperative

(Figure 910)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with an equipment cooling low flow sensor that does not operate.

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

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D. Equipment Cooling Supply and Exhaust Fan Inspection

SUBTASK 21-00-00-860-100

(1) Do these steps on the Equipment Cooling Panel:

(a) Put the SUPPLY switch to the NORMAL position.

(b) Put the EXHAUST switch to the NORMAL position.

SUBTASK 21-00-00-010-031

(2) To get access to the equipment cooling supply and exhaust fans, do this task:

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-00-00-010-032

(3) Do this step to check the equipment cooling exhaust fans:

Remove the access panel on the top of the raised platform that is just aft and outboard of this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-00-00-710-019

(4) Make sure the normal equipment cooling supply fan operates.

NOTE: Put your hand on the fan to feel for vibration. If you feel vibration, the fan is on.

SUBTASK 21-00-00-710-020

(5) Make sure the normal equipment cooling exhaust fan operates.

NOTE: Put your hand on the fan to feel for vibration or air exiting the overboard exhaust vent at the bottom of the airplane near the centerline at STA 370. If you feel vibration or air, the fan is on.

SUBTASK 21-00-00-860-101

(6) Do these steps on the Equipment Cooling Panel:

(a) Put the SUPPLY switch to the ALTERNATE position.

(b) Put the EXHAUST switch to the ALTERNATE position.

SUBTASK 21-00-00-710-021

(7) Make sure the alternate equipment cooling supply fan operates.

NOTE: Put your hand on the fan to feel for vibration. If you feel vibration, the fan is on.

SUBTASK 21-00-00-710-022

(8) Make sure the alternate equipment cooling exhaust fan operates.

NOTE: Put your hand on the fan to feel for vibration. If you feel vibration, the fan is on.

SUBTASK 21-00-00-410-006

(9) Install the access panel.

SUBTASK 21-00-00-010-033

(10) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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SUBTASK 21-00-00-930-001

(11) To make sure that the remaining detector system operates normally, do this task: MMEL 21-27 (DDPG) Preparation - Electronic Equipment Cooling Fan Inoperative, TASK 21-00-00-040-839.

SUBTASK 21-00-00-860-102

(12) Put the SUPPLY and the EXHAUST switches on the Equipment Cooling Panel to their usual positions.

——— END OF TASK ———

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ELECTRICAL AND ELECTRONICS COMPARTMENT

A

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Equipment Cooling Low Flow Detector System Deactivation
Figure 910/21-00-00-990-809 (Sheet 1 of 2)

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Equipment Cooling Low Flow Detector System Deactivation
Figure 910/21-00-00-990-809 (Sheet 2 of 2)

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TASK 21-00-00-040-831

47. MMEL 21-42 (DDPG) Restoration - Equipment Cooling Low Flow Detection System Inoperative

A. General

(1) This task puts the airplane back to its usual condition after operation with an equipment cooling low flow sensor that does not operate.

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

C. Put the Airplane Back to Its Usual Condition

SUBTASK 21-00-00-810-020

(1) Do the applicable fault isolation task for the problem observed.

——— END OF TASK ———

TASK 21-00-00-040-814

48. MMEL 21-43 (DDPG) 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.

(2) You must remove electrical power from the airplane 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.

B. References

Reference	Title
21-27-01-000-801	Equipment Cooling Air Filter Removal (P/B 401)
25-52-16-400-801	Forward Cargo Compartment Forward Bulkhead Liner - Installation (P/B 401)

C. Location Zones

Zone	Area
122	Forward Cargo Compartment - Right

D. Equipment Cooling Air Filter Removal

SUBTASK 21-00-00-020-015

(1) Do this task: Equipment Cooling Air Filter Removal, TASK 21-27-01-000-801.

SUBTASK 21-00-00-410-004

(2) Install the forward right bulkhead liner in the forward cargo compartment. To install the liner, do this task: Forward Cargo Compartment Forward Bulkhead Liner - Installation, TASK 25-52-16-400-801.

——— END OF TASK ———

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TASK 21-00-00-040-815

49. MMEL 21-43 (DDPG) 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
21-27-01-400-801	Equipment Cooling Air Filter Installation (P/B 401)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-16-000-801	Forward Cargo Compartment Forward Bulkhead Liner - Removal (P/B 401)

C. Location Zones

Zone	Area
122	Forward Cargo Compartment - Right

D. Equipment Cooling Air Filter - Installation

SUBTASK 21-00-00-410-005

(1) Remove the forward right bulkhead liner in the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Forward Bulkhead Liner - Removal, TASK 25-52-16-000-801.

SUBTASK 21-00-00-020-016

(2) Do this task: Equipment Cooling Air Filter Installation, TASK 21-27-01-400-801.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-00-00-860-058

(1) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812

——— END OF TASK ———

TASK 21-00-00-400-802

50. DDG 21-49 Preparation - Return Air Grille Broken or Missing

A. General

(1) This task gives the steps which prepare the airplane for flight with a broken or missing return air grille.

(2) Only one return air grille can be blocked at a time.

(3) For a damaged return air grille not located in one of the listed locations, it is acceptable to replace the damaged return air grille with one in the allowed location if the two return air grille assemblies are the same part number.

B. References

Reference	Title
21-23-03 P/B 201	RETURN AIR GRILLES (DECOMPRESSION VENTS) - MAINTENANCE PRACTICES
25	EQUIPMENT/FURNISHINGS

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C. **Location Zones**

Zone	Area
231	Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Left
232	Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Right
241	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Left
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

D. **Procedure**

SUBTASK 21-00-00-010-038

(1) Find the damaged return air grille.

SUBTASK 21-00-00-200-001

(2) Determine if the damaged return air grille is in a location that is permitted to have a damaged or missing return air grille. It is permitted for a return air grille to be missing or damaged in these locations:

(a) Station 887–907.

SUBTASK 21-00-00-010-039

(3) Remove interior furnishings that block access to the damaged return air grille (EQUIPMENT/FURNISHINGS, CHAPTER 25).

SUBTASK 21-00-00-020-022

(4) Remove the damaged return air grille (RETURN AIR GRILLES (DECOMPRESSION VENTS) - MAINTENANCE PRACTICES, PAGEBLOCK 21-23-03/201).

SUBTASK 21-00-00-400-001

(5) Install a solid panel that fully covers the opening caused by removing the damaged return air grille.

E. **Put the Airplane Back to Its Usual Condition**

SUBTASK 21-00-00-420-007

(1) Install the interior furnishings removed for access to the damaged return air grille (EQUIPMENT/FURNISHINGS, CHAPTER 25).

——— **END OF TASK** ———

TASK 21-00-00-440-816

51. DDG 21-49 Restoration - Return Air Grille Broken or Missing

A. **General**

(1) This task puts the airplane back to its usual condition after operation with a broken or missing return air grille.

B. **References**

Reference	Title
21-23-03 P/B 201	RETURN AIR GRILLES (DECOMPRESSION VENTS) - MAINTENANCE PRACTICES
25	EQUIPMENT/FURNISHINGS

C. **Location Zones**

Zone	Area
231	Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Left
232	Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Right
241	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Left

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(Continued)

Zone	Area
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

D. Procedure

SUBTASK 21-00-00-010-040

(1) Remove the interior furnishings necessary to access the blocked return air grille location (EQUIPMENT/FURNISHINGS, CHAPTER 25).

SUBTASK 21-00-00-020-023

(2) Remove the solid panel used in the location of the damaged return air grille (RETURN AIR GRILLES (DECOMPRESSION VENTS) - MAINTENANCE PRACTICES, PAGEBLOCK 21-23-03/201).

SUBTASK 21-00-00-400-002

(3) Install a new return air grille (RETURN AIR GRILLES (DECOMPRESSION VENTS) - MAINTENANCE PRACTICES, PAGEBLOCK 21-23-03/201).

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-00-00-410-011

(1) Install the interior furnishings removed for access to the damaged return air grille (EQUIPMENT/FURNISHINGS, CHAPTER 25).

——— 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. 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

NOTE: See Figure 201.

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)
21-25-01-000-801	Recirculation Air Filter Removal (P/B 401)
21-25-01-400-801	Recirculation Air Filter Installation (P/B 401)
21-51-03-000-801	Heat Exchanger and Plenum/Diffuser Assembly Cleaning (P/B 701)
21-51-04-000-802-002	Air Cycle Machine (ACM) Removal (P/B 401)
21-51-04-400-802-002	Air Cycle Machine Installation (P/B 401)
21-51-08-000-802	High Pressure Water Separator Removal (P/B 401)
21-51-08-400-802	High Pressure Water Separator Installation (P/B 401)
21-51-12-000-801	Condenser Removal (P/B 401)
21-51-12-400-802	Condenser Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
49-11-00-860-801	APU Starting and Operation - Activation (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-805-F00	Engine Ground Safety Precautions (P/B 201)
71-00-00-800-807-F00	Start the Engine Procedure (Selection) (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.

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Reference	Description
SPL-2462	Deactivator - Check Valve Part #: C21006-7 Supplier: 81205 Opt Part #: C21006-1 Supplier: 81205 Opt Part #: PF80-012-500 Supplier: 053H3

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Procedure

SUBTASK 21-00-01-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-01-010-001

(2) To get access to the cooling packs, open the access panels in the sequence that follows:

Open this access panel:

Number	Name/Location
192CL	ECS Access Door

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

SUBTASK 21-00-01-020-013

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.

(3) Install the deactivator, SPL-2462, in the ground air connector as follows:

(a) Put the deactivator, SPL-2462, in the ground air connector so that the check valve flappers are open.

(b) Install the coupling 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.

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SUBTASK 21-00-01-860-002

(4) Make sure these switches on the P5 overhead panel, are set to the indicated positions:

(a) On the P5-10 air conditioning panel:

1) L PACK and R PACK switches are set to OFF.

2) L RECIRC FAN and R RECIRC FAN switches are set to OFF.

(b) On the P5-11 thermal anti-ice panel:

1) WING, ENGINE 1, and ENGINE 2, ANTI-ICE switches are set to OFF.

SUBTASK 21-00-01-860-003

(5) Start the APU and let the APU operation become stable. To start and operate the APU, do this task: APU Starting and Operation - Activation, TASK 49-11-00-860-801.

SUBTASK 21-00-01-860-005

(6) Do the steps which follow to remove the oil contamination from the APU pneumatic ducts:

NOTE: This procedure will remove the oil contamination from the APU bleed air. The APU bleed air will go out through the check valve in the pneumatic ground air connector.

(a) Make sure the ISOLATION VALVE switch on the P5-10 air conditioning panel is set to OPEN.

(b) Make sure the APU BLEED switch, on the P5-10 air conditioning panel, is set to ON.

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.

(c) Let the APU operate until the air that comes out of the pneumatic ground connector has no smell of the oil contamination.

SUBTASK 21-00-01-860-011

(7) Set the ISOLATION VALVE switch on the P5-10 air conditioning panel to CLOSE.

SUBTASK 21-00-01-860-008

(8) Start the left engine and let the engine operate at ground idle speed. To start and operate the engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

(a) Use the APU to start the engine as it is still in operation.

(b) Set the APU BLEED switch, on the P5-10 air conditioning panel, to OFF.

(c) Set the ISOLATION VALVE switch on the P5-10 air conditioning panel to OPEN.

SUBTASK 21-00-01-860-009

(9) Do the steps which follow to remove the oil contamination from the left engine pneumatic ducts:

(a) Set the engine pneumatic BLEED 1 switch, on the P5-10 air conditioning panel, to ON.

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.

(b) 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 71-00-00-800-805-F00.

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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.

(c) Let the engine 1 pneumatic air flow until the air that comes out of the pneumatic ground connector has no smell of the oil contamination.

(d) Set the engine pneumatic BLEED 1 switch to OFF.

SUBTASK 21-00-01-860-014

(10) Stop the operation of the left engine. To stop the operation of the engine, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 21-00-01-080-005

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.

(11) Remove the ground cart supply hose coupling from the nipple on the ground air connector check valve assembly.

SUBTASK 21-00-01-090-001

(12) Remove the deactivator, SPL-2462, from the pneumatic ground air connector.

SUBTASK 21-00-01-860-015

(13) Set the APU BLEED switch, on the P5-10 air conditioning panel, to ON.

SUBTASK 21-00-01-860-018

(14) Start the right engine and let the engine operate at ground idle speed. To start and operate the engine, do this task: Start the Engine Procedure (Selection), TASK 71-00-00-800-807-F00.

(a) Use the APU to start the engine as it is still in operation.

(b) Set the APU BLEED switch, on the P5-10 air conditioning panel, to OFF.

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.

(c) 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 71-00-00-800-805-F00.

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.

(d) Install the 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 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.

(e) Set the ISOLATION VALVE switch on the P5-10 air conditioning panel to CLOSE.

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SUBTASK 21-00-01-860-016

(15) Do the steps which follow to remove the oil contamination from the right engine pneumatic ducts:

(a) Set the engine pneumatic BLEED 2 switch, on the P5-10 air conditioning panel, to ON.

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.

(b) 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 71-00-00-800-805-F00.

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.

(c) Let the engine 2 pneumatic air flow until the air that comes out of the pneumatic ground connector has no smell of the oil contamination.

(d) Set the engine pneumatic BLEED 2 switch to OFF.

SUBTASK 21-00-01-860-017

(16) Stop the operation of the right engine. To stop the operation of the engine, do this task: Stop the Engine Procedure (Usual Engine Stop), TASK 71-00-00-700-819-F00.

SUBTASK 21-00-01-800-001

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.

(17) Remove the ground cart supply hose and deactivator, SPL-2462, from the pneumatic ground connector.

SUBTASK 21-00-01-860-006

(18) Do the steps which follow to remove the oil contamination from the air conditioning packs and the ducts that are downstream of the packs:

(a) Supply conditioned air with the left and right cooling packs. To do this, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

(b) Put the TRIM AIR switch to the ON position.

(c) Turn the CONT CAB, FWD CAB, AND AFT CAB temperature selectors, on the P5-17 cabin temperature control panel, to the full WARM position.

(d) Let the packs operate until the air that goes into the control cabin and the passenger cabin has no smell of the oil contamination.

(e) Shut down the cooling packs. To shut down the cooling packs, do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804

SUBTASK 21-00-01-200-001

(19) Do this inspection of the air cycle machine:

(a) Remove the air cycle machine. To remove the air cycle machine, do this task: Air Cycle Machine (ACM) Removal, TASK 21-51-04-000-802-002.

(b) Make sure that you can turn the rotating components of the ACM with 20 inch-pounds of torque applied on the axial nut just aft of the fan impeller.

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(c) If the ACM does not rotate with 20 inch-pounds of torque, replace the ACM with a serviceable unit.

(d) Do this task: Air Cycle Machine Installation, TASK 21-51-04-400-802-002.

SUBTASK 21-00-01-100-009

(20) Clean the heat exchanger and plenum/diffuser assembly, if contamination is found. To clean them, do this task: Heat Exchanger and Plenum/Diffuser Assembly Cleaning, TASK 21-51-03-000-801.

NOTE: Cleaning of the heat exchanger and plenum/diffuser assembly is recommended once the contamination has been rectified.

SUBTASK 21-00-01-210-005

(21) Examine the high pressure water separator and condenser for contamination.

NOTE: Removal and cleaning of these components is recommended once the contamination has been rectified.

(a) Do this task:High Pressure Water Separator Removal, TASK 21-51-08-000-802

(b) Do this task:Condenser Removal, TASK 21-51-12-000-801

(c) Clean the components that have contamination, replace the components if they have too much contamination.

(d) Do this task:Condenser Installation, TASK 21-51-12-400-802

(e) Do this task:High Pressure Water Separator Installation, TASK 21-51-08-400-802

SUBTASK 21-00-01-160-001

(22) Clean the pneumatic ducts and the components where you can see the oil contamination.

SUBTASK 21-00-01-960-001

(23) Replace the components if they have too much contamination.

SUBTASK 21-00-01-210-001

(24) Examine the recirculation air filters for contamination:

(a) Replace the filters if they have contamination. To replace the filter,

These are the tasks:

Recirculation Air Filter Removal, TASK 21-25-01-000-801,

Recirculation Air Filter Installation, TASK 21-25-01-400-801.

F. Put the Airplane Back to its Usual Condition

SUBTASK 21-00-01-010-002

(1) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-00-01-010-003

(2) Close these panels, in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

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SUBTASK 21-00-01-860-007

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812

——— END OF TASK ———

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FLIGHT COMPARTMENT

AIR CONDITIONING MODULE

A

G58956 S0006562364_V2

Air Conditioning System Oil Contamination - Removal
Figure 201/21-00-01-990-801

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CONFIDENCE CHECK OF AIRPLANE ABILITY TO MAINTAIN CABIN PRESSURE IN FLIGHT ON SINGLE PACK OPERATION - MAINTENANCE PRACTICES

1. General

A. The function of this procedure is to do a ground check of the capability of the air conditioning pack(s) to pressurize the airplane when it is in flight. This test can be accomplished prior to dispatch at an interval best determined by the operator.

TASK 21-00-05-780-801

2. Airplane Dispatch with Single Pack Operation - Confidence Check

A. General

(1) This confidence check consists primarily of these three tests:

(a) Phase I Test - pressurize cabin from 0.0 to 4.0 PSID using the right engine, the APU, and the packs. The same side engine bleed and pack combination will best duplicate the in-flight configuration.

(b) Phase II Test - once a 4.0 PSID cabin pressure is achieved, operate the pack(s) independently in low flow mode and high flow mode with the corresponding engine bleed source and note the cabin rate of change indications. The engines are operated at ground idle and flight idle conditions.

(c) Phase III Test - perform a cabin leak down test from 4.0 PSID cabin pressure and note the cabin differential pressure for 120 seconds at 10 second intervals.

(2) Figure 201 provides a graphical representation of the three confidence check tests.

(3) Figure 202 provides a data sheet to record the Phase I, II, III test results.

(4) Figure 203 provides supplemental troubleshooting information.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-804	Supply Pressure to the Pneumatic System with One or Both Engines (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
49-11-00-860-801	APU Starting and Operation - Activation (P/B 201)
71-00-00-700-819-F00	Stop the Engine Procedure (Usual Engine Stop) (P/B 201)
71-00-00-800-808-F00	Start the Engine Procedure (Normal Start) (P/B 201)

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

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E. Phase I Test. Airplane Pressurization

SUBTASK 21-00-05-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-00-05-860-002

(2) Prepare for airplane pressurization as follows:

(a) Make sure that the nose and main landing gear are pinned. To install the downlock pins, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

(b) Inspect the condition of the following items for evidence of wear and tear:

1) The forward and aft cargo door seals

2) The main entry door seals

3) The service door seals

4) The duct pressure seals

NOTE: The duct pressure seals are the seals on the ducts that go from an unpressurized compartment such as the ECS bays to the pressurized distribution bay compartment or aft cargo compartment.

(c) Record the condition of the door seals and the duct seals on the data sheet of Figure 202

(d) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

(e) Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

(f) Open this access panel:

Number	Name/Location
192CR	ECS Access Door

SUBTASK 21-00-05-480-001

(3) Make sure that there is audio communication between the flight compartment personnel and ground personnel.

SUBTASK 21-00-05-860-003

(4) Pack and isolation valve operation/position information can be obtained from the FMC Maintenance Discrete page. Do these steps on the Flight Management Computer (FMC) to display the FMCS ANALOG page 1/4:

(a) Press the INIT REF function key on the CDU front panel.

(b) Push the LSK adjacent to <INDEX (LSK 6L) to show the INIT REF INDEX 1/1 page.

(c) Push the LSK adjacent to MAINT> (LSK 6R) to show the MAINT BITE INDEX page.

(d) Push the LSK adjacent to <FMCS (LSK 1L) to show the FMCS BITE 1/1 page.

(e) Push the LSK adjacent to <DISCRETES (LSK 4L) to show the FMCS ANALOG DISC 1/4 page.

(f) Use the ECS PACK H/L (high flow, low flow) line entry on the ANALOG DISC 1/4 page.

(g) The following information can be displayed on the FMC:

1) ECS PACK ON/OFF (LEFT and RIGHT)

a) Indicates if the left or right pack is on or off.

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2) ECS PACK H/L LO HI (LEFT and RIGHT)

a) Indicates the pack is in the low flow mode or if it has been commanded to the high flow mode. A pack can be commanded to the high flow mode even if it is off.

3) ISOLATION VALVE OPEN (CLOSED)

a) Indicates if the valve is open or closed.

SUBTASK 21-00-05-860-011

(5) Start the APU by doing this task: APU Starting and Operation - Activation, TASK 49-11-00-860-801.

(a) Let the APU become stable at the governed speed.

SUBTASK 21-00-05-860-006

(6) Position the ISOLATION VALVE switch to OPEN.

SUBTASK 21-00-05-860-010

(7) Set the BLEED 1 and BLEED 2 switches on the P5-10 air conditioning panel to the ON position.

NOTE: The cabin is not being pressurized at this point.

SUBTASK 21-00-05-710-001

(8) Do these steps to make sure the pack flow control and shutoff valves operate correctly:

(a) Pressurize the pneumatic system with the APU by doing this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

(b) Set the APU BLEED switch on the air conditioning panel to ON.

(c) Set the L and R PACK switches on the air conditioning panel to AUTO.

(d) Make sure the ECS PACK H/L indication on the FMC display shows LO for both packs.

(e) Set the L PACK switch to HIGH.

(f) Make sure the ECS PACK H/L indication on the FMC display shows HI for the left pack and LO for the right pack.

(g) Set the R PACK switch to HIGH.

(h) Make sure the ECS PACK H/L indication on the FMC display shows HI for both packs.

(i) Put the L and R PACK switches on the air conditioning panel to AUTO.

(j) Make sure the ECS PACK H/L indication on the FMC display shows LO for both packs.

(k) Put the L and R PACK switches to OFF.

SUBTASK 21-00-05-780-001

(9) Pressurize the airplane with both packs as follows:

(a) Pressurize the airplane to 4.0 psid as follows:

1) Start the right engine using the APU bleed air. Do this task: Start the Engine Procedure (Normal Start), TASK 71-00-00-800-808-F00.

a) APU BLEED switch is set to ON.

2) Set the ISOLATION VALVE switch to CLOSE.

3) Supply pneumatic pressure to the right pack with the right engine at ground idle. To supply pneumatic pressure with an engine, do this task: Supply Pressure to the Pneumatic System with One or Both Engines, TASK 36-00-00-860-804.

a) BLEED 2 switch is set to ON.

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b) BLEED 1 switch is set to OFF.

c) R PACK switch is set to AUTO.

4) Supply pneumatic pressure to the left pack with the APU. To supply pneumatic pressure with the APU, do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

a) APU BLEED switch is set to ON.

b) L PACK switch is set AUTO.

(b) Manually operate the outflow valve MANUAL VALVE CLOSE/OPEN switch to maintain the cabin pressure of 4.0 psid as follows:

NOTE: Pressurizing the airplane to 4.0 psid for the short duration of the test will not harm the airplane.

1) Make sure the pressurization mode selector is set to MAN.

2) Move the MANUAL VALVE CLOSE/OPEN toggle switch as necessary to maintain 4.0 psid on the DIFF PRESS gauge.

(c) If a differential pressure of 4.0 psid cannot be maintained, either a pack supply or airplane leakage problem exists. Do the applicable fault isolation tasks.

F. Phase II Test. Ability of a Single Pack to Pressurize the Passenger Cabin

SUBTASK 21-00-05-780-002

(1) Do this check of the right pack capability to pressurize the passenger cabin with the right engine running:

(a) Make sure the pressure differential on the DIFF PRESS/CABIN ALT indicator on the P5-17 panel indicates a steady 4.0 psid.

1) If a differential pressure of 4.0 psid cannot be maintained, either a pack supply or airplane leakage problem exists. Do the applicable fault isolation tasks.

(b) Set the ISOLATION VALVE switch to CLOSE.

(c) Set the L PACK switch on the P5-10 air conditioning panel to OFF.

(d) Make sure the BLEED 2 switch is set to ON.

(e) Make sure the R PACK switch is set to AUTO.

(f) Slowly move the right engine throttle until N2 increases to 72% (+0%, -2%).

(g) Manually operate the outflow valve MANUAL VALVE CLOSE/OPEN switch as necessary to maintain 4.0 psid on the DIFF PRESS gauge.

(h) Monitor the ANALOG DISC 1/4 page on the FMC CDU to make sure the pack and isolation valve operation is as commanded.

NOTE: Prior to the test of the packs, the cabin pressure must be 4.0 psid with a cabin rate of change of 0.0 fpm.

(i) Set the R PACK switch to HIGH.

(j) Make sure the ECS PACK H/L indication on the FMC Maintenance Discrete page shows HI for the right pack.

NOTE: The outflow valve should not be adjusted during the pack check. The delta pressure will rise during high flow mode. However, this is not a normal test and exceeding 4.0 psid, but staying under 4.5 psid, is approved for a short period of time.

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(k) Make a record of the cabin rate of change, right engine bleed duct pressure, and right engine N2 information in the Phase II data sheet fields of Figure 202 once HIGH mode is achieved and indications are stable.

(l) Move the right engine throttle to the ground idle position.

(m) Put the R PACK switch to AUTO.

(n) Manually operate the outflow valve MANUAL VALVE CLOSE/OPEN switch (at no more than 500 feet per minute descent rate) as necessary to achieve a steady 4.0 psid cabin pressure on the DIFF PRESS indicator.

SUBTASK 21-00-05-780-012

(2) Do this check of the left pack capability to pressurize the passenger cabin with the left engine running.

(a) Set the APU BLEED switch to ON.

(b) Start the left engine with the APU bleed air. Do this task:

Start the Engine Procedure (Normal Start), TASK 71-00-00-800-808-F00.

(c) Make sure the ISOLATION VALVE switch is set to CLOSE.

(d) Make sure the APU BLEED switch is set to OFF.

(e) Set the BLEED 1 switch to ON.

NOTE: A dual bleed light should illuminate. Ignore this indication.

(f) Make sure the L PACK switch is set to AUTO.

(g) Set the R PACK switch to OFF.

(h) Put the BLEED 2 switch to OFF.

(i) Shut down the right engine: TASK 71-00-00-700-819-F00.

(j) Slowly move the left engine throttle until N2 increases to 72% (+0%, -2%).

(k) Manually operate the outflow valve MANUAL VALVE CLOSE/OPEN switch as necessary to maintain 4.0 psid on the DIFF PRESS gauge.

(l) Monitor the ANALOG DISC 1/4 page on the FMC CDU to make sure the pack and isolation valve operation is as commanded.

NOTE: Prior to the test of the packs, the cabin pressure must be 4.0 psid with a ROC of 0.0 fpm. The outflow valve should not be adjusted during the pack check.

(m) Put the L PACK switch to HIGH.

(n) Make sure the ECS PACK H/L indication on the FMC Maintenance Discrete page shows HI for the left pack.

NOTE: The outflow valve should not be adjusted during the pack check. The delta pressure will rise during high flow mode. However, this is not a normal test and exceeding 4.0 psid, but staying under 4.5 psid, is approved for a short period of time.

(o) Make a record of the cabin rate of change, left engine bleed duct pressure, and left engine N2 information in the Phase II data sheet fields of Figure 202 once HIGH mode is achieved and indications are stable.

(p) Move the left engine throttle to the ground idle position.

(q) Put the L PACK switch to AUTO.

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(r) Manually operate the outflow valve MANUAL VALVE CLOSE/OPEN switch (at no more than 500 feet per minute descent rate) as necessary to achieve a steady 4.0 psid cabin pressure on the DIFF PRESS indicator.

G. Phase III Test. Airplane Leak Down Check

SUBTASK 21-00-05-200-001

(1) Do this check of the leakage of the cabin pressure.

(a) Make a record of the cabin temperature.

(b) Put the APU BLEED switch to ON.

(c) Set the BLEED 1 switch to OFF.

(d) Shut down the left engine.

SUBTASK 21-00-05-210-003

(2) This step is optional. Inspect these components for any sign of leakage:

(a) Doors

(b) Hatches

(c) Equipment cooling valve

(d) Bilge drains

(e) Flight deck windows

(f) Safety relief valves

(g) APU duct seals at the pressure bulkhead penetrations at Sta. 727 and Sta. 1016

(h) Duct seals in the air conditioning bays at Sta. 540

(i) Outflow valve seal

SUBTASK 21-00-05-860-012

(3) When 4.2 ± 0.1 psid on the DIFF PRESS gauge has been achieved and stabilized, fully close (manually) the aft outflow valve.

(a) Make sure that the indication on the gauge above the CLOSE/OPEN switch on the P5-17 pressurization control panel shows that the valve is fully closed.

SUBTASK 21-00-05-040-001

(4) Put the L PACK switch to OFF.

SUBTASK 21-00-05-780-011

CAUTION: KEEP THE APU IN OPERATION. IF YOU DO NOT KEEP THE APU IN OPERATION, EQUIPMENT DAMAGE COULD OCCUR.

(5) Continue to operate the APU.

SUBTASK 21-00-05-700-002

(6) Let the cabin pressure leak down to 4.0 psid (time zero) then start the timer.

(a) Make a record of the pressure differential indications on the Figure 202 at 10 second intervals until the cabin pressure reduces to 2.5 psi.

1) See the table in Performance Summary for system performance evaluation.

SUBTASK 21-00-05-860-007

(7) Depressurize the airplane and restore it to its unpressurized condition as follows:

(a) Turn on either pack by putting the appropriate PACK switch to ON.

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(b) Modulate the outflow valve to depressurize the airplane at approximately 500 feet per minute.

SUBTASK 21-00-05-860-008

(8) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

(9) Make sure the mode selector switch on the cabin pressurization control panel, P5-6, is returned to the AUTO position.

SUBTASK 21-00-05-080-001

(10) Remove the nose and main landing gear safety locks. To remove the locks, do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

H. Performance Summary

SUBTASK 21-00-05-780-007

(1) Best performance of the air conditioning packs and airplane structure is as follows:

Table 201/21-00-05-993-801

SYSTEM	OPTIMUM PERFORMANCE
Single Pack - Low Flow Mode	Able to maintain or increase cabin differential at 4.0 PSID and cabin rate of change of 0 or negative value (cabin pressurizing).
Single Pack - High Flow Mode	Able to maintain or increase cabin differential at 4.0 PSID and cabin rate of change of -500 feet/minute or greater (cabin pressurizing).
Cabin Leakage Rate from 4.0 to 2.5 psi	120-130 seconds is optimum; Airplane will maintain pressure in flight even with slightly degraded inflow. 110-120 seconds is acceptable; Airplane will maintain pressure in flight with normal inflow. 100-110 seconds is marginally acceptable; Airplane will maintain pressure in flight with normal inflow. Less than 100 seconds is unacceptable: Airplane will not maintain pressure in flight. Perform maintenance.

SUBTASK 21-00-05-780-008

(2) If the test data agrees with the best performance data for the packs (inflow) and the airplane structure (outflow), you can be very sure that cabin pressure can be maintained at cruise (FL250) on a single pack.

SUBTASK 21-00-05-780-009

(3) Refer to the data sheet in Figure 202 and the troubleshooting information in Figure 203 to better determine the condition of the packs and the airplane and what action if any is recommended.

END OF TASK

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1 OUTFLOW VALVE IN MANUAL MODE

L06909 S0006562371_V2

Airplane Dispatch with Single Pack Operation - Confidence Check
Figure 201/21-00-05-990-801

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AIRPLANE _____ HOURS _____ CYCLES _____ DATE _____

PHASE I - INITIAL CABIN PRESSURIZATION (0.0 TO 4.0 PSID)

CONDITION OF CARGO AND MAIN ENTRY DOOR SEALS _____

FLOW CONTROL VALVE INDICATOR MODULATION LEFT VALVE _____ RIGHT VALVE _____

ANY OBVIOUS AIR LEAK NOISE FROM INSIDE CABIN _____

ANY OBVIOUS LEAKS OUTSIDE AIRPLANE _____

ESTIMATED TIME TO PRESSURIZE FROM 0.0 TO 4.0 PSID _____

BLEED SOURCE(S) USED TO ACHIEVE 4.0 PSID LEFT ENGINE RIGHT ENGINE APU

PHASE II - SINGLE PACK ABILITY TO PRESSURIZE THE CABIN (LOW AND HIGH FLOW MODE)

	CABIN RATE OF CHANGE	BLEED SOURCE & DUCT PRESSURE	ENGINE N2 %
LEFT PACK LOW FLOW MODE	_____	_____	_____
LEFT PACK HIGH FLOW MODE	_____	_____	_____
RIGHT PACK LOW FLOW MODE	_____	_____	_____
RIGHT PACK HIGH FLOW MODE	_____	_____	_____

PHASE III - AIRPLANE LEAK DOWN (NO PACK OPERATION)

CABIN TEMPERATURE _____

TIME (SECONDS)	CABIN (PSID)	CABIN (RATE OF CHANGE)
10	_____	_____
20	_____	_____
30	_____	_____
40	_____	_____
50	_____	_____
60	_____	_____
70	_____	_____
80	_____	_____
90	_____	_____
100	_____	_____
110	_____	_____
120	_____	_____

Airplane Dispatch with Single Pack Operation - Confidence Check - Data Sheet
Figure 202/21-00-05-990-802

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SYSTEM	MINIMUM REQUIREMENT	REQUIREMENT SATISFIED	
		YES	NO
SINGLE PACK - LOW FLOW MODE	ABLE TO MAINTAIN CABIN DIFFERENTIAL PRESSURE OF 3.9 - 4.1 PSID AND CABIN RATE OF CHANGE IS 0 TO -100 FEET/MINUTE	CONFIDENCE IS HIGH THAT AIRPLANE WILL MAINTAIN PRESSURE WITH SINGLE PACK IN HIGH FLOW MODE WHILE AT CRUISE.	CONFIDENCE IS LOW THAT AIRPLANE WILL MAINTAIN PRESSURE ON SINGLE PACK IN THE HIGH FLOW MODE AT CRUISE. EMPHASIS NEEDS TO BE PLACED ON THE FOLLOWING: OUTFLOW WAS AIRPLANE LEAK DOWN DURING PHASE III TEST LESS THAN 100 SECONDS? IF SO, FIRST CHECK FOR CABIN LEAKS THEN RUN PHASE III TEST AGAIN. INFLOW IF THE CABIN LEAK DOWN RATE WAS ACCEPTABLE, THEN THE PACK PERFORMANCE NEEDS TO BE INVESTIGATED. DO VARIOUS PACK SYSTEM HEALTH CHECKS (AMM 21-51-00/501).
SINGLE PACK - HIGH FLOW MODE	CABIN RATE OF CHANGE IS -500 FEET/MINUTE OR MORE	CONFIDENCE IS HIGH THAT AIRPLANE WILL MAINTAIN PRESSURE WITH SINGLE PACK IN HIGH FLOW MODE WHILE AT CRUISE.	

481671 S0000143933_V2

Airplane Dispatch with Single Pack Operation - Troubleshooting
Figure 203/21-00-05-990-803 (Sheet 1 of 3)

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SYSTEM	MINIMUM REQUIREMENT	REQUIREMENT SATISFIED	
		YES	NO
AIRPLANE/ STRUCTURE AIR LEAKAGE	LEAK DOWN RATE FROM 4.0 TO 2.5 PSID IS GREATER THAN OR EQUAL TO A MINIMUM OF 100 SECONDS (110 TO 120 SECONDS IS THE TARGET)	CABIN LEAKAGE IS ACCEPTABLE. OPERATORS MAY WISH TO CONSIDER CONDUCTING AMM 05-51-91/201 LEAKAGE TEST ON C-CHECK BASIS AND MONITOR PERFORMANCE.	INSPECT AND REPAIR ANY AIR LEAKAGE AS NOTED ON THE DATA SHEET. SPECIFICALLY: DOORS AND HATCHES - MISSING OR TORN SEALS, POOR CONTACT BETWEEN DOOR SEALS AND AIRPLANE DUE TO DIRT, ETC., INSPECT SEALING COMPOUND AREAS AND REPAIR DOOR SEALS (AMM 52-09-10/801). OVERBOARD EXHAUST VALVE - P/N 20798-01 OEV SHOULD CLOSE AT 0.7 TO 1.1 PSID. NOTE: ALL BILGE DRAINS OPEN IS EQUIVALENT TO A 3.75 INCH (95.25 mm) DIAMETER HOLE IN THE PRESSURE VESSEL. BILGE DRAINS - SHOULD CLOSE AT APPROXIMATELY 2.0 PSID: - CABIN PRESSURE SAFETY RELIEF VALVE - OUTFLOW VALVE SEAL - NEGATIVE PRESSURE RELIEF VALVE SEAL - WATER SERVICE PANEL - FLIGHT DECK WINDOWS - PRESSURE BULKHEAD PENETRATIONS SHOULD ALL HAVE MINIMAL LEAKAGE - SIGNIFICANT LEAKS SHOULD BE RESOLVED AS REQUIRED.

481722 S0000143934_V4

Airplane Dispatch with Single Pack Operation - Troubleshooting
Figure 203/21-00-05-990-803 (Sheet 2 of 3)

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SYSTEM	MINIMUM REQUIREMENT	REQUIREMENT SATISFIED	
		YES	NO
ENGINE BLEED DUCT PRESSURE - GROUND IDLE	WITH N1 AT APPROXIMATELY 20%, DUCT PRESSURE SHOULD BE 15 TO 20 PSI (AMM 36-11-00/501)	CONTINUE TO MAINTAIN BLEED SYSTEM COMPONENTS ON 1C - CHECK INTERVALS AS SPECIFIED IN MPD SECTION 1.1.	CONSIDER ACCOMPLISHING THE ENGINE BLEED AIR DISTRIBUTION SYSTEM AMM 36-11-00/501 TO HELP IMPROVE SYSTEM PERFORMANCE.
ENGINE BLEED DUCT PRESSURE - FLIGHT IDLE	WITH N1 AT APPROXIMATELY 33%, DUCT PRESSURE SHOULD BE 26 TO 38 PSI (AMM 36-11-00/501)		
CABIN PRESSURIZATION CONTROL SYSTEM	AFTER SUCCESSFUL COMPLETION OF THE PHASE I, II, III TESTS AND CABIN PRESSURE CAN BE MAINTAINED	CONFIDENCE IS HIGH THAT CABIN PRESSURE CAN BE MAINTAINED.	CONSIDER ACCOMPLISHING PRESSURIZATION CONTROL SYSTEM - ADJUSTMENT/TEST (AMM 21-31-00/501).

481873 S0000143935_V4

Airplane Dispatch with Single Pack Operation - Troubleshooting
Figure 203/21-00-05-990-803 (Sheet 3 of 3)

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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 Ducts

(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 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 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) BMS 8-385 Type 4 is the preferred foam insulation material that meets the flame propagation requirement. BMS 8-385 Type 6 and BMS 8-300 Type VIII insulation are new, qualified materials optional to BMS 8-385 Type 4.

(3) If BMS 8-300, Type II, Grade 5 foam insulation material is used, it must be completely covered with BMS 5-157, Type I, Class 1, Grade B, composition MPVF tape or BMS 5-157, Type I, Class 2, Grade C, composition MPEEK that meets the flame propagation requirement.

(4) Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(5) 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 BMS 5-157, Type I, Class 1, Grade B, composition MPVF and BMS 5-157, Type I, Class 2, Grade C, composition MPEEK are qualified tapes used to secure insulation to 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
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00066	Sealant - RTV - Dow Corning 90-006	
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
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
G50327	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1

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(Continued)

Reference	Description	Specification
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

D. Prepare for the Repair

SUBTASK 21-20-02-840-001

(1) Do this task:Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806

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 METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use the solvent, B00148 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 solvent, B00148 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.

NOTE: 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.

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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:

(a) You must install insulation that meets one of these specifications:

1) BMS 8-385 Type 4 foam insulation, G50449

2) BMS 8-385 Type 6 foam insulation, G51169

3) BMS 8-300 Type VIII foam insulation, G51170.

(b) Use BMS 5-157 MPVF tape, G50327 or BMS 5-157 MPEEK tape, G50789 to install the insulation.

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

488737 S0000145928_V2

Air Conditioning System Ducts Repair
Figure 801/21-20-02-990-802 (Sheet 1 of 3)

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STRUCTURAL REPAIR - FIBERGLASS/KEVLAR DUCT - OVERHEAD VIEW

STRUCTURAL REPAIR - FIBERGLASS/KEVLAR DUCT - CROSS-SECTION VIEW

488738 S0000145930_V2

Air Conditioning System Ducts Repair
Figure 801/21-20-02-990-802 (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

488739 S0000145931_V2

Air Conditioning System Ducts Repair
Figure 801/21-20-02-990-802 (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
36-00-00-860-806	Remove Pressure from 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)
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
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	
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1
G51169	Foam - Flexible Melamine,	BMS8-385 Type 6
G51170	Foam - Flexible Polyimide	BMS8-300 Type VIII

D. Prepare for the Repair

SUBTASK 21-20-02-840-008

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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 joint.

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.

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use the solvent, B00148 and a cotton wiper, G00034 to clean the duct joint area.

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(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 to remove any unwanted contamination from the duct.

(d) Use the solvent, B00148 and a cotton wiper, G00034 to clean the duct joint area.

SUBTASK 21-20-02-840-012

(5) Cut sufficient pieces of the Fiberglass glass fabric, G00031 to equal the thickness of the duct. Cut the Fiberglass glass fabric, G00031 pieces 1/2 inch larger on all sides than the damage. Round the corners of the pieces of the Fiberglass fabric.

SUBTASK 21-20-02-840-013

(6) Prepare the applicable resin:

(a) Fiberglass duct repair - Hetron 92 resin, G02137

(b) Kevlar duct repair - resin, A00040

E. Repair the Air Conditioning Duct

SUBTASK 21-20-02-340-006

(1) Apply a thin, smooth layer of the applicable Hetron 92 resin, G02137 or resin, A00040 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 21-20-02-340-007

(2) Place a piece of the Fiberglass fabric 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

(3) Soak the Fiberglass fabric with the applicable resin.

SUBTASK 21-20-02-340-009

(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 21-20-02-340-010

(5) Remove the plastic sheet from the Fiberglass fabric piece and remove any unwanted resin with a wiping cloth.

SUBTASK 21-20-02-340-011

(6) Place another piece of the Fiberglass fabric on the first piece, soak it with resin, and smooth it. Continue using the same procedure until the thickness of the patch equals the thickness of the duct.

SUBTASK 21-20-02-340-012

(7) Allow the resin to cure for 24 hours at room temperature.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-014

(1) If insulation was removed from the duct joint, install new insulation:

(a) You must install insulation that meets one of these specifications:

1) BMS 8-385 Type 4, foam insulation, G50449

2) BMS 8-385 Type 6, foam insulation, G51169

3) BMS 8-300 Type VIII, foam insulation, G51170I.

(b) Use BMS 5-157 MPVF or BMS 5-157 MPEEK tape to install the insulation.

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SUBTASK 21-20-02-840-015

(2) Replace the panels or other airplane structure removed to gain access to the duct joint.

——— 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
36-00-00-860-806	Remove Pressure from 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)
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
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	
G50327	Tape - Advanced Insulation Blanket	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

D. **Prepare for the Repair**

SUBTASK 21-20-02-840-016

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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.

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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).

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(d) Use the solvent, B00148 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) Cut sufficient pieces of the Fiberglass glass fabric, G00031 to equal the thickness of the duct. Cut each piece of the Fiberglass fabric 1/2 inch larger to fit the taper of the opening. Cut one piece of the Fiberglass fabric a minimum of 2 inches larger on all sides than the opening in the duct.

SUBTASK 21-20-02-840-021

(6) Cut a piece of plastic sheet 2 to 3 inches larger on all sides than the opening. Cut a piece of cardboard or aluminum 2 to 3 inches larger than the opening on all sides.

SUBTASK 21-20-02-840-022

(7) 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 21-20-02-840-023

(8) Prepare the applicable resin:

(a) Fiberglass duct repair - Hetron 92 resin, G02137

(b) Kevlar duct repair - resin, A00040

E. Repair the Air Conditioning Duct

SUBTASK 21-20-02-340-013

(1) Apply a thin, smooth layer of Hetron 92 resin, G02137 or resin, A00040 to the plastic sheet in the opening in the duct.

SUBTASK 21-20-02-340-014

(2) Place a piece of the Fiberglass fabric in the opening over the plastic sheet so that it covers the opening completely.

SUBTASK 21-20-02-340-015

(3) Soak the Fiberglass fabric with the applicable resin.

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SUBTASK 21-20-02-340-016

(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 21-20-02-340-017

(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 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 21-20-02-340-019

(7) Place the last piece of the Fiberglass fabric on top of the patch so it extends beyond the opening a minimum of 2 inches on all sides. Smooth the Fiberglass fabric to remove bubbles or winkles.

SUBTASK 21-20-02-340-020

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Wipe the duct around the patch with a cotton wiper, G00034 and solvent, B00148 to remove unwanted resin.

SUBTASK 21-20-02-340-021

(9) Allow the resin to cure for 24 hours at room temperature.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-024

(1) If insulation was removed from the duct joint, install new insulation:

(a) You must install insulation that meets one of these specifications:

1) BMS 8-385 Type 4 foam insulation, G50449

2) BMS 8-385 Type 6 foam insulation, G51169

3) BMS 8-300 Type VIII foam insulation, G51170.

(b) Use BMS 5-157 MPVF tape, G50327 or BMS 5-157 MPEEK tape, G50789 to install the insulation.

SUBTASK 21-20-02-840-025

(2) Replace the panels or other airplane structure removed to gain access to the duct joint.

END OF TASK

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TASK 21-20-02-330-804

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
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
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 21-20-02-840-052

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-053

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-840-054

(3) Do these steps to remove loose tape and unwanted adhesive from the duct joint.

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use the solvent, B00148 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 solvent, B00148 and a cotton wiper, G00034 to clean any dust from the duct joint area.

SUBTASK 21-20-02-840-055

(4) Examine the end of each air conditioning duct.

SUBTASK 21-20-02-840-056

(5) 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.

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SUBTASK 21-20-02-840-057

(6) Cut a piece of the Fiberglass glass fabric, G00031 that is 3 inches wide and is long enough to go around the duct a minimum of two times.

SUBTASK 21-20-02-840-058

(7) Prepare the applicable resin.

E. Repair the Taped Joint

SUBTASK 21-20-02-340-057

(1) Apply 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 21-20-02-340-058

(2) Apply a thin, smooth layer of resin to the joint area a minimum of 2 inches wider than the duct joint.

SUBTASK 21-20-02-340-059

(3) Apply resin to one side of the Fiberglass glass fabric, G00031.

SUBTASK 21-20-02-340-060

(4) Wrap the Fiberglass fabric around the duct joint a minimum of two times. Make sure the resin on the Fiberglass fabric is in contact with the duct.

SUBTASK 21-20-02-340-061

(5) Smooth the Fiberglass fabric to remove bubbles or wrinkles.

SUBTASK 21-20-02-340-062

(6) Allow the resin to cure for 24 hours at room temperature.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-059

(1) 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

488740 S0000145932_V2

Air Conditioning System Ducts Repair
Figure 802/21-20-02-990-803 (Sheet 1 of 2)

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STRUCTURAL REPAIR - POLYURETHANE FOAM DUCT

DUCT SECTION REPLACEMENT - POLYURETHANE FOAM DUCT

488741 S0000145933_V2

Air Conditioning System Ducts Repair
Figure 802/21-20-02-990-803 (Sheet 2 of 2)

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TASK 21-20-02-330-805

6. Duct End Repair - Polyurethane Foam Repair

(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
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
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	

D. Prepare for the Repair

SUBTASK 21-20-02-840-026

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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 21-20-02-840-028

(3) Do these steps to remove loose tape and unwanted adhesive from the duct end area.

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use solvent, B00148 and a lint-free cloth, G00834 to clean the duct end area.

NOTE: Clean the inner surface and the outer surface of the duct a minimum of 1 inch from the duct end.

(b) Sand the duct end area to remove any adhesive that remains.

(c) Use the solvent, B00148 and a lint-free cloth, G00834 to clean any dust from the duct end area.

SUBTASK 21-20-02-840-029

(4) Cut a piece of the Fiberglass glass fabric, G00031 the length of the outside circumference of the duct. The Fiberglass 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.

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SUBTASK 21-20-02-840-030

(5) Prepare the resin.

E. Repair the Duct End

SUBTASK 21-20-02-340-022

(1) Apply a thin, smooth layer of resin on the duct end and on the surface of the duct a minimum of 1/2 inch from the duct end.

SUBTASK 21-20-02-340-023

(2) Wrap the Fiberglass fabric around the duct end so that it overlaps a minimum of 1/2 inch on both sides of the end.

SUBTASK 21-20-02-340-024

(3) Soak the Fiberglass fabric with resin.

SUBTASK 21-20-02-340-025

(4) Put a piece of plastic sheet on the Fiberglass fabric and press lightly with your hand to smooth the edges of the Fiberglass fabric and to remove bubbles or wrinkles.

SUBTASK 21-20-02-340-026

(5) Allow the resin to cure for 24 hours at room temperature.

SUBTASK 21-20-02-340-027

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Clean the area with a cotton wiper, G00034 and solvent, B00148 to remove unwanted resin.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-031

(1) 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
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740

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(Continued)

Reference	Description	Specification
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 21-20-02-840-032

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-033

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-210-001

(3) Examine the inner surface of the duct.

SUBTASK 21-20-02-210-002

(4) If the inner lining is damaged, then do the Duct Section Replacement - Polyurethane Foam Duct procedure below.

SUBTASK 21-20-02-210-003

(5) Examine the damage to the duct. 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 21-20-02-840-034

(6) Do these steps to prepare the air conditioning duct:

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use the solvent, B00148 and a cotton wiper, G00034 to clean the damaged area.

(b) Sand the damaged area to remove any unwanted contamination.

(c) Use the solvent, B00148 and a cotton wiper, G00034 to clean any dust from the damaged area.

SUBTASK 21-20-02-840-035

(7) 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 21-20-02-840-036

(8) Prepare the applicable resin.

E. Repair the Duct

SUBTASK 21-20-02-340-028

(1) Apply a thin, smooth layer of resin 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.

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SUBTASK 21-20-02-340-029

(2) Place a piece of the Fiberglass glass fabric, G00031 on the resin so that it extends beyond the damaged area a minimum of 1/2 inch to all sides.

SUBTASK 21-20-02-340-030

(3) Soak the Fiberglass fabric with resin.

SUBTASK 21-20-02-340-031

(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 21-20-02-340-032

(5) Remove the plastic sheet from the Fiberglass fabric and remove unwanted resin with a cotton wiper, G00034.

SUBTASK 21-20-02-340-033

(6) Follow the same procedure to apply the second piece of the Fiberglass fabric.

SUBTASK 21-20-02-340-034

(7) Allow the resin to cure for 24 hours at room temperature.

SUBTASK 21-20-02-340-035

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Remove unwanted resin from the edges of the Fiberglass fabric with a cotton wiper, G00034 soaked with solvent, B00148.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-037

(1) Replace the panels or other airplane structure removed to gain access to the duct joint.

——— END OF TASK ———

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
36-00-00-860-806	Remove Pressure from 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)

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(Continued)

Reference	Description	Specification
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding (AMM 20-30-91/201) - 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	
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 21-20-02-840-038

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-039

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-210-004

(3) Examine the inner surface of the duct.

SUBTASK 21-20-02-210-005

(4) If the duct lining is damaged, then do the Duct Section Replacement - Polyurethane Foam Duct procedure below.

SUBTASK 21-20-02-210-006

(5) 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 21-20-02-840-040

(6) Do these steps to prepare the air conditioning duct.

(a) Remove the damaged portion of the outer lining and the damaged foam material.

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(b) Use the solvent, B00148 and a cotton wiper, G00034 to clean the damaged area.

(c) Sand the duct outer surface a minimum of 2 inches from the edges of the damaged area to remove any unwanted contamination.

(d) Use the solvent, B00148 and a cotton wiper, G00034 to clean any dust from the damaged area.

SUBTASK 21-20-02-840-041

(7) Cut a piece of the polyurethane foam foam, G00077 to fit the area where the damaged foam was removed.

(a) Put the foam in the opening to make sure it is the correct size and shape.

SUBTASK 21-20-02-840-042

(8) Prepare glass fabric, G00031 to cover the damaged area:

(a) Cut two pieces of the glass fabric, G00031 two inches larger on all sides than the damaged area.

(b) Round the corners of the two pieces of the glass fabric, G00031.

SUBTASK 21-20-02-840-043

(9) Prepare the applicable resin, G50400, or resin, G50399, or resin, A00040 or Hetron 92 resin, G02137.

E. Repair the Duct

SUBTASK 21-20-02-340-036

(1) Use the resin mixture to bond the piece of foam, G00077 (plug) to the damaged area on the duct:

(a) Make sure you fill all gaps and voids with the resin mixture.

SUBTASK 21-20-02-340-039

(2) Put the glass fabric, G00031 onto a piece of plastic sheeting, G50305.

SUBTASK 21-20-02-340-041

(3) Pour the resin mixture onto the glass fabric, G00031.

SUBTASK 21-20-02-300-002

(4) Put a second piece of plastic sheeting, G50305 over the glass fabric, G00031.

SUBTASK 21-20-02-300-003

(5) Use a plastic squeegee or your hand to remove unwanted resin, bubbles and wrinkles from the fiberglass fabric as follows:

(a) Smooth from the center of the fiberglass fabric to the edges of the fiberglass fabric.

SUBTASK 21-20-02-300-004

(6) Remove the top piece of the plastic sheeting from the fiberglass fabric.

SUBTASK 21-20-02-300-005

(7) Put the glass fabric coated with the resin over the foam plug so that it extends beyond the damaged area a minimum of two inches on all sides.

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SUBTASK 21-20-02-300-006

(8) Rub the glass fabric over the foam plug with a squeegee until the surface is smooth and unwanted resin is removed.

SUBTASK 21-20-02-340-046

(9) Follow the same steps above to apply a second piece of the glass fabric, G00031 over the damaged area.

SUBTASK 21-20-02-340-047

(10) Allow the resin to cure for 24 hours at room temperature.

SUBTASK 21-20-02-300-001

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

(11) Remove unwanted resin from the edges of the repaired area with a cotton wiper, G00034 soaked with Butyl Carbitol solvent, B01027 or Series 91 solvent, B01011.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-044

(1) 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
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
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 21-20-02-840-045

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-046

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-840-047

(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.

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Use the solvent, B00148 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 solvent, B00148 and a cotton wiper, G00034 to remove any dust from the damaged area.

SUBTASK 21-20-02-840-048

(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 21-20-02-840-049

(5) Prepare the applicable resin.

E. Repair the Inner Lining

SUBTASK 21-20-02-340-049

(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 21-20-02-340-050

(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 21-20-02-340-051

(3) Soak the Fiberglass fabric with the applicable resin.

SUBTASK 21-20-02-340-052

(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 21-20-02-340-053

(5) Remove the plastic sheet from the patch and remove unwanted resin with a cotton wiper, G00034.

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SUBTASK 21-20-02-340-054

(6) Follow the same procedure to apply the second piece of Fiberglass fabric.

SUBTASK 21-20-02-340-055

(7) Allow the resin to cure for 24 hours at room temperature.

SUBTASK 21-20-02-340-056

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Remove unwanted resin from the edges of the repaired area with a cotton wiper, G00034 soaked with solvent, B00148.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-050

(1) Use the applicable procedure to return the duct to its usual condition.

SUBTASK 21-20-02-840-051

(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
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
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: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

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SUBTASK 21-20-02-840-061

(2) Gain access to the damaged air conditioning duct.

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: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use the solvent, B00148 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 solvent, B00148 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.

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(7) Clean any unwanted resin from the joint areas with a cotton wiper, G00034 and solvent, B00148.

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 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 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. Melamine BMS8-385 Type 4 is the preferred foam insulation material that meets the flame propagation requirement. Melamine BMS 8-385 Type 6 and polyimide BMS 8-300 Type VIII insulation are optional to BMS8-385 Type 4.

(c) Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(d) 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.

(e) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327 or tape, G50789 to meet the flammability/flame propagation requirement. Wrap the tape, G50327 or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

Reference	Title
20-30-91-910-801	Final Cleaning of Composites Prior to Non-structural Bonding (Series 91) (P/B 201)
36-00-00-860-806	Remove Pressure from 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 (AMM 20-30-91/201) - Series 91	
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket	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

D. Prepare for the Repair

SUBTASK 21-20-02-840-069

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-070

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-840-071

(3) If necessary, remove the air conditioning duct.

SUBTASK 21-20-02-840-072

(4) 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 METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Use the Series 91 solvent, B01011 and a wiping fabric to clean the repair area (Final Cleaning of Composites Prior to Non-structural Bonding (Series 91), TASK 20-30-91-910-801).

E. Replace the Tape

SUBTASK 21-20-02-420-001

(1) Install the tape, G50327 or tape, G50789 to the repair area (Figure 803).

(a) Make sure the tape, G50327 or tape, G50789 has an overlap of all the edges and seams of the insulation by a minimum of 1.00 inch (25.4 mm).

F. Rework Ducts Insulated with Polyimide Foam Insulation

SUBTASK 21-20-02-420-002

(1) Install tape, G50327 or tape, G50789 to completely cover all exposed surfaces of foam insulation as shown in (Figure 803).

(a) The tape, G50327 or tape, G50789 must cover 100% of the brown colored hypalon insulation surface.

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(b) Cut the tape, G50327 or tape, G50789 as required to fit around air outlets, branches and insulation vent holes.

(c) The tape, G50327 or tape, G50789 may be installed spiral wrapped or lengthwise down the duct depending on installers preference.

(d) The tape, G50327 or tape, G50789 may be installed in any configuration as long as 100% complete coverage of the foam insulation, G02470 insulation is obtained.

(e) Maintain a minimum of 1/8 inch overlap of tape, G50327 or tape, G50789.

(f) Avoid compression of the foam insulation, G02470 insulation.

(g) Wrinkles in the tape, G50327 or tape, G50789 are acceptable if pinched together and contain no voids.

(h) The tape, G50327 or tape, G50789 may be installed to the foam insulation, G02470 insulation prior to installation on the duct if desired by the installer.

(i) For foam insulation, G02470 insulation installed on duct joints, tape, G50327 or tape, G50789 may be applied to the foam insulation, G02470 insulation before or after the foam insulation, G02470 insulation is installed over the duct joint.

(j) The tape, G50327 or tape, G50789 orientation is optional.

SUBTASK 21-20-02-420-008

(2) If necessary, install the air conditioning duct.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-075

(1) 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 803/21-20-02-990-804 (Sheet 1 of 2)

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REWORK POLYIMIDE FOAM INSULATED DUCT
(EXAMPLE)

NOTE:

- 2-INCH (50.8 mm) WIDE, 3-INCH (76.2 mm) WIDE OR 12-INCH (304.8 mm)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.

2 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 803/21-20-02-990-804 (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 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. Melamine foam insulation, G51169, BMS 8-385, Type 6 and polyimide foam insulation, G51170, BMS 8-300, Type VIII insulation are new, qualified materials optional to BMS 8-385, Type 4.

(c) Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(d) 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.

(e) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327 to meet the flammability/flame propagation requirement. Wrap the tape, G50327 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470. The tape, G50789 is optional to the tape, G50327.

B. References

Reference	Title
20-30-91-910-801	Final Cleaning of Composites Prior to Non-structural Bonding (Series 91) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding (AMM 20-30-91/201) - Series 91	
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket	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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D. Prepare for the Repair

SUBTASK 21-20-02-840-076

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-077

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-840-078

(3) If necessary, remove the air conditioning duct.

SUBTASK 21-20-02-840-079

(4) Do these steps to remove loose tape and unwanted adhesive from the repair area:

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use the Series 91 solvent, B01011 and a wiping cloth to clean the repair area (Final Cleaning of Composites Prior to Non-structural Bonding (Series 91), TASK 20-30-91-910-801).

E. Repair the Insulation

SUBTASK 21-20-02-420-003

(1) Install a minimum 2.0 inch (50.8 mm) wide patch of the tape, G50327 or tape, G50789 to completely cover the damaged area of the insulation (Figure 803).

(a) Make sure the tape, G50327 or tape, G50789 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 Polyimide Foam Insulation

SUBTASK 21-20-02-420-004

(1) Install tape, G50327 to completely cover all exposed surfaces of foam insulation as shown in (Figure 803).

(a) The tape, G50327 or tape, G50789 must cover 100% of the brown colored hypalon insulation surface.

(b) Cut the tape, G50327 or tape, G50789 as required to fit around air outlets, branches and insulation vent holes.

(c) The tape, G50327 or tape, G50789 may be installed spiral wrapped or lengthwise down the duct depending on installers preference.

(d) The tape, G50327 or tape, G50789 may be installed in any configuration as long as 100% complete coverage of the foam insulation, G02470 insulation is obtained.

(e) Maintain a minimum of 1/8 inch overlap of tape, G50327 or tape, G50789.

(f) Avoid compression of the foam insulation, G02470 insulation.

(g) Wrinkles in tape, G50327 or tape, G50789 are acceptable if pinched together and contain no voids.

(h) The tape, G50327 or tape, G50789 may be installed to the foam insulation, G02470 insulation prior to installation on the duct if desired by the installer.

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(i) For foam insulation, G02470 insulation installed on duct joints, tape, G50327 or tape, G50789 may be applied to the foam insulation, G02470 insulation before or after the foam insulation, G02470 insulation is installed over the duct joint.

(j) The tape, G50327 or tape, G50789 orientation is optional.

SUBTASK 21-20-02-420-009

(2) If necessary, install the air conditioning duct.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-082

(1) 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 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 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. BMS 8-385 Type 6 flexible melamine foam and BMS 8-300 Type VIII flexible polyimide foam insulation are optional to BMS8-385 Type 4.

(c) Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(d) 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.

(e) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327 or tape, G50789 to meet the flammability/flame propagation requirement. Wrap the tape, G50327 or tape, G50789 across 100% of the brown hypalon insulation surface of the polyimide foam insulation, G02470.

B. References

Reference	Title
20-30-91-910-801	Final Cleaning of Composites Prior to Non-structural Bonding (Series 91) (P/B 201)
36-00-00-860-806	Remove Pressure from 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 (AMM 20-30-91/201) - Series 91	
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket	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

D. Prepare for the Repair

SUBTASK 21-20-02-840-083

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-840-084

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-840-085

(3) Remove the damaged air conditioning duct to permit removal of the foam insulation.

SUBTASK 21-20-02-840-086

(4) 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 repair duct.

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Use the Series 91 solvent, B01011 and a wiping cloth to clean the repair area (Final Cleaning of Composites Prior to Non-structural Bonding (Series 91), TASK 20-30-91-910-801).

E. Replace the Insulation

SUBTASK 21-20-02-420-007

(1) Do these steps to install one of these foam insulations: foam insulation, G50449, foam insulation, G51169, foam insulation, G51170 or foam insulation, G02470 on the duct:

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WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use the Series 91 solvent, B01011 and a wiping cloth to clean the outer surface of the foam insulation (Final Cleaning of Composites Prior to Non-structural Bonding (Series 91), TASK 20-30-91-910-801).

(b) Wrap the foam insulation around the duct.

(c) Install strips of 2 inch wide (50.8 mm) tape, G50327 or tape, G50789 to the edges and seams of the foam insulation (Figure 803)

(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).

(e) Install the tape, G50327 or tape, G50789 as shown in (Figure 803)

F. Rework Ducts insulated with Polyimide Foam Insulation

SUBTASK 21-20-02-420-005

(1) Install tape, G50327 or tape, G50789 to completely cover all exposed surfaces of foam insulation as shown in (Figure 803).

(a) The tape, G50327 or tape, G50789 must cover 100% of the brown colored hypalon insulation surface.

(b) Cut the tape, G50327 or tape, G50789 as required to fit around air outlets, branches and insulation vent holes.

(c) The tape, G50327 or tape, G50789 may be installed spiral wrapped or lengthwise down the duct depending on installers preference.

(d) The tape, G50327 or tape, G50789 may be installed in any configuration as long as 100% complete coverage of the foam insulation, G02470 insulation is obtained.

(e) Maintain a minimum of 1/8 inch overlap of tape, G50327 or tape, G50789.

(f) Avoid compression of the foam insulation, G02470 insulation.

(g) Wrinkles in the tape, G50327 or tape, G50789 are acceptable if pinched together and contain no voids.

(h) The tape, G50327 or tape, G50789 may be installed to the foam insulation, G02470 insulation prior to installation on the duct if desired by the installer.

(i) For foam insulation, G02470 insulation installed on duct joints, tape, G50327 or tape, G50789 may be applied to the foam insulation, G02470 insulation before or after the foam insulation, G02470 insulation is installed over the duct joint.

(j) The tape orientation is optional.

SUBTASK 21-20-02-420-006

(2) Install the air conditioning duct you removed for the repair.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-089

(1) Replace the panels or other airplane structure removed to gain access to the duct.

END OF TASK

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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
20-30-91-910-801	Final Cleaning of Composites Prior to Non-structural Bonding (Series 91) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding (AMM 20-30-91/201) - Series 91	
G50327	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK

D. Prepare for the Repair

SUBTASK 21-20-02-840-090

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

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.

SUBTASK 21-20-02-840-093

(4) 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 METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Use the Series 91 solvent, B01011 and a wiping cloth to clean the repair area (Final Cleaning of Composites Prior to Non-structural Bonding (Series 91), TASK 20-30-91-910-801).

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SUBTASK 21-20-02-840-094

(5) Install the tape, G50327 or tape, G50789 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

(6) If necessary, install the air conditioning duct.

E. 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 804/21-20-02-990-805**

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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).

(2) This procedure has these repair instructions:

(a) Replacement of loose or old tape (Repair Method 1)

(b) Repair of cuts or tears in the flame-resistant covering and Fiberglass insulation (Repair Method 2)

(c) Replacement of the Fiberglass insulation (Repair Method 3).

B. References

Reference	Title
20-30-91-910-801	Final Cleaning of Composites Prior to Non-structural Bonding (Series 91) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding (AMM 20-30-91/201) - Series 91	
G50327	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK

D. Tape Replacement (Repair Method 1)

SUBTASK 21-20-02-840-097

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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.

SUBTASK 21-20-02-840-100

(4) Remove all loose or old cargo liner joint sealing tape from the insulation/covering.

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SUBTASK 21-20-02-110-001

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Use the Series 91 solvent, B01011 and a wiping cloth to clean the repair area (Final Cleaning of Composites Prior to Non-structural Bonding (Series 91), TASK 20-30-91-910-801).

SUBTASK 21-20-02-420-011

(6) Install new tape, G50327 or tape, G50789 to completely cover all surfaces of insulation and existing tape as shown in (Figure 803):

(a) Use a continuous strip of tape to wrap around the insulation/covering and the duct.

1) Make sure the new tape overlaps the edges of the adjacent tape by a minimum of 1/8-inch.

2) Make sure the new tape overlaps onto the ends of the duct by a minimum of 1-inch.

SUBTASK 21-20-02-840-102

(7) If removed, install the air conditioning duct.

E. Cuts or Tears in Fiberglass Insulation/Covering (Repair Method 2)

SUBTASK 21-20-02-020-002

(1) Remove the duct if needed for better access.

SUBTASK 21-20-02-110-002

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Use the Series 91 solvent, B01011 and a wiping cloth to clean the repair area (Final Cleaning of Composites Prior to Non-structural Bonding (Series 91), TASK 20-30-91-910-801).

SUBTASK 21-20-02-340-097

(3) Apply a minimum 2-inch wide patch of tape, G50327 or tape, G50789 to completely cover the damaged area on the insulation/covering.

(a) Make sure to apply a large enough patch to assure full coverage of the damaged area with a minimum 2-inch overlap.

SUBTASK 21-20-02-420-012

(4) If removed, install the air conditioning duct.

F. Fiberglass Insulation Replacement (Repair Method 3)

SUBTASK 21-20-02-020-001

(1) Remove the fiberglass insulation from the duct.

SUBTASK 21-20-02-420-013

(2) Install new melamine foam insulation. To install the insulation, do this task: Insulation Replacement - Foam Wrapped Insulated Duct, TASK 21-20-02-330-812.

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G. 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).

(2) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327 or tape, G50789 to meet new flammability/flame propagation requirements. Wrap the tape, G50327 or tape, G50789 across 100% of the brown hypalon insulation surface on the polyimide foam insulation, G02470.

B. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK

D. Prepare for the Repair

SUBTASK 21-20-02-840-104

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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 with polyimide foam insulation, G02470 (Tape Replacement - Foam Wrapped Insulated Duct, TASK 21-20-02-330-810).

(5) Rework the duct insulated with polyimide (Tape Replacement - Foam Wrapped Insulated Duct, TASK 21-20-02-330-810).

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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.

B. References

Reference	Title
36-00-00-860-806	Remove Pressure from 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: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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 joint.

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) 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.

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SUBTASK 21-20-02-340-069

(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 21-20-02-340-070

(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 21-20-02-340-071

(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 21-20-02-340-072

(3) Soak the Fiberglass fabric with the applicable resin.

SUBTASK 21-20-02-340-073

(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 21-20-02-340-074

(5) Remove the plastic sheet from the Fiberglass fabric piece and remove any unwanted resin with a wiping cloth.

SUBTASK 21-20-02-340-075

(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 21-20-02-340-076

(7) Allow the resin to cure for 24 hours at room temperature.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-410-001

(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 ———

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STRUCTURAL REPAIR - REINFORCED THERMOPLASTIC LAMINATE - OVERHEAD VIEW

STRUCTURAL REPAIR - REINFORCED THERMOPLASTIC LAMINATE - CROSS-SECTION VIEW

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Structural Repair - Reinforced Thermoplastic Laminate Duct
Figure 805/21-20-02-990-806

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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
36-00-00-860-806	Remove Pressure from 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)
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
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 21-20-02-010-003

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-20-02-010-004

(2) Gain access to the damaged air conditioning duct.

SUBTASK 21-20-02-010-005

(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).

(c) Use sandpaper to prepare the surface of the duct an additional 0.50 inches (12.7 mm) from the repair area.

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(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 21-20-02-350-001

(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 21-20-02-350-002

(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 21-20-02-340-077

(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 21-20-02-340-078

(1) Apply a thin, smooth layer of resin, G50400 to the plastic sheet in the opening in the duct.

SUBTASK 21-20-02-340-079

(2) Place a piece of the Fiberglass fabric in the opening over the plastic sheet so that it covers the opening completely.

SUBTASK 21-20-02-340-080

(3) Soak the Fiberglass fabric with the applicable resin.

SUBTASK 21-20-02-340-081

(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 21-20-02-340-082

(5) Remove the plastic sheet from the patch and remove unwanted resin with a cotton wiper, G00034.

SUBTASK 21-20-02-340-083

(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 21-20-02-340-084

(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 21-20-02-340-085

(8) Wipe the duct around the patch with a cotton wiper, G00034 and solvent, B00148 to remove unwanted resin.

SUBTASK 21-20-02-340-086

(9) Allow the resin to cure for 24 hours at room temperature.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-410-003

(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 ———

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
36-00-00-860-806	Remove Pressure from 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)
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
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 21-20-02-040-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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.

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SUBTASK 21-20-02-120-003

(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 21-20-02-350-003

(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 21-20-02-340-087

(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, G003160.50 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.

E. Repair the Air Conditioning Duct

SUBTASK 21-20-02-340-088

(1) Apply a thin, smooth layer of resin, G50400 to the plastic sheet in the opening in the duct.

SUBTASK 21-20-02-340-089

(2) Place a piece of the Fiberglass fabric in the opening over the plastic sheet so that it covers the opening completely.

SUBTASK 21-20-02-340-090

(3) Soak the Fiberglass fabric with the applicable resin.

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SUBTASK 21-20-02-340-091

(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 21-20-02-340-092

(5) Remove the plastic sheet from the patch and remove unwanted resin with a cotton wiper, G00034.

SUBTASK 21-20-02-340-093

(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 21-20-02-340-094

(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 21-20-02-340-095

(8) Wipe the duct around the patch with a cotton wiper, G00034 and solvent, B00148 to remove unwanted resin.

SUBTASK 21-20-02-340-096

(9) Allow the resin to cure for 24 hours at room temperature.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-010-008

(1) If insulation was removed from the duct joint, install new insulation.

SUBTASK 21-20-02-010-009

(2) Replace the panels or other airplane structure removed to gain access to the duct joint.

——— END OF TASK ———

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GROUND CONDITIONED AIR CONNECTION DUCT AND CHECK VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the ground conditioned air connection duct

(2) An installation of the ground conditioned air connection duct

(3) A removal of the ground conditioned air check valve.

(4) An installation of the ground conditioned air check valve.

(5) A removal of the cooling exchange check valve.

(6) An installation of the cooling exchange check valve.

B. The ground conditioned air connection duct is installed below the mix bay. The function of the duct is to provide a connection for a supply of external conditioned air. To gain access to the duct, do this step:

Open this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

C. The check valve is installed in the mix bay just forward of the air conditioning bays. The function of the check valve is to let conditioned air from an external source to be put into the distribution system and also to seal the distribution system when external conditioned air is not being used.

D. The check valve is a component of the lower mix manifold. It is necessary to remove the mix manifold to get access to the check valve.

TASK 21-21-01-000-803-002

2. Ground Conditioned Air Connection Duct Removal

(Figure 401)

A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)

B. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
191E	Low Pressure ECS Panel - Forward
821	Forward Cargo Door

D. Preparation for the Removal

SUBTASK 21-21-01-860-009-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

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SUBTASK 21-21-01-860-010-002

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

SUBTASK 21-21-01-010-009-002

(3) Open this access panel:

Number	Name/Location
821	Forward Cargo Door

SUBTASK 21-21-01-010-010-002

(4) Remove the center aft bulkhead liner in the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

E. Ground Conditioned Air Connection Duct Removal

SUBTASK 21-21-01-010-011-002

(1) Remove the bolts [4] and washers [5], at fifteen locations, that attach the ground conditioned air connection duct [1] to the airplane skin.

SUBTASK 21-21-01-010-012-002

(2) Remove the bolts [6] and washers [7] that attach the clamps [6] to the ground conditioned air connection duct [1].

(a) Make a record of the locations for the bolts [7], the washers and the clamps [6] to make sure they are installed in the same positions.

SUBTASK 21-21-01-010-013-002

(3) To get access to the ground conditioned air connection duct [1], do this step:

Open this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

SUBTASK 21-21-01-970-002-002

(4) Make a record of the correct position that the air connection duct [1] is installed so that it can be reinstalled the same way.

SUBTASK 21-21-01-020-003-002

(5) Remove the air connection duct [1].

SUBTASK 21-21-01-410-006-002

(6) To prevent the entry of unwanted materials into the check valve duct, do this step:

Close this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

——— END OF TASK ———

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Ground Conditioned Air Connection Duct Installation
Figure 401/21-21-01-990-802-002 (Sheet 1 of 2)

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Ground Conditioned Air Connection Duct Installation
Figure 401/21-21-01-990-802-002 (Sheet 2 of 2)

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TASK 21-21-01-400-803-002

3. Ground Conditioned Air Connection Duct Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)
51-31-00-160-801	Prepare For Sealing (P/B 201)
51-31-00-390-801	Non-Removable Faying (Mated) Surface Seal Application (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	Air connection duct	21-21-01-01-560	AKS ALL

D. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
191E	Low Pressure ECS Panel - Forward
821	Forward Cargo Door

F. Preparation for the Installation

SUBTASK 21-21-01-010-014-002

(1) Open this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

SUBTASK 21-21-01-140-002-002

(2) Prepare the surfaces for the application of sealant. To prepare the surfaces, do this task: Prepare For Sealing, TASK 51-31-00-160-801.

SUBTASK 21-21-01-390-002-002

(3) Apply a layer of the sealant, A00247 to the faying surface between the doubler [3] on the airplane skin and the air connection duct [1]. To apply the sealant, A00247, do this task: Non-Removable Faying (Mated) Surface Seal Application, TASK 51-31-00-390-801.

G. Ground Conditioned Air Connection Duct Installation

SUBTASK 21-21-01-420-004-002

(1) Install the air connection duct [1] in its position:

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(a) Make sure the air connection duct [1] is installed in the same position as when it was removed.

SUBTASK 21-21-01-420-005-002

(2) Install the bolts [7] and the washers [8] for the clamps [6].

(a) Make sure they are installed in the positions they were before the removal.

SUBTASK 21-21-01-420-006-002

(3) Install the bolts [4] and the washers [5] at 15 locations.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-21-01-410-007-002

(1) Install the center aft bulkhead liner in the forward cargo compartment. To install the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-17-400-801.

SUBTASK 21-21-01-010-015-002

(2) Close this access panel:

Number	Name/Location
821	Forward Cargo Door

SUBTASK 21-21-01-410-008-002

(3) Close this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

SUBTASK 21-21-01-860-011-002

(4) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

TASK 21-21-01-000-804-002

4. Ground Conditioned Air Check Valve Removal

(Figure 402)

A. General

(1) The check valve is a component of the lower mix manifold. It is necessary to remove the mix manifold to get access to the check valve.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)

C. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

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D. Access Panels

Number	Name/Location
821	Forward Cargo Door

E. Preparation for the Removal

SUBTASK 21-21-01-860-012-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-21-01-860-013-002

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

SUBTASK 21-21-01-860-014-002

(3) Put these switches on the P5-10 Air Conditioning Panel to the OFF position and attach DO-NOT-OPERATE tags:

(a) L and R RECIRC FAN

(b) L and R PACK

(c) BLEED 1, 2 and APU

SUBTASK 21-21-01-010-016-002

(4) Open this access panel:

Number	Name/Location
821	Forward Cargo Door

SUBTASK 21-21-01-010-017-002

(5) Remove the center aft bulkhead liner in the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

F. Mix Manifold Removal

SUBTASK 21-21-01-010-018-002

(1) To remove the check valves for the two recirculation fans, do these steps:

(a) Hold the check valve while you remove the couplings [37] and the sleeves [38].

(b) Remove the check valve [39].

SUBTASK 21-21-01-010-019-002

(2) To remove the forward muffler in the mix bay, do these steps:

(a) Remove the clamp [46] that is installed at the rear bulkhead of the mix bay.

(b) Remove the nut [47], the washer [48], and the spacer [49] that are below the bracket.

(c) Remove the screw [51] and the washers [50][48] from the clamp [52].

(d) Remove the coupling [35] and the sleeve [36] from the upper duct of the forward muffler.

(e) Carefully remove the forward muffler [41].

SUBTASK 21-21-01-010-020-002

(3) To remove the upper mix manifold [31], do these steps:

(a) Disconnect the electrical connectors [32] from the mix manifold temperature sensors.

(b) Remove the clamps [33] and the sleeve [34], at three locations.

(c) Remove the screw [56] and the washer [55], at 18 locations.

(d) Carefully remove the upper mix manifold [31].

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SUBTASK 21-21-01-010-021-002

(4) Remove the collector ring [54] and the two gaskets [53].

SUBTASK 21-21-01-010-022-002

(5) Remove the two couplings [40] from the lower ducts of the mix manifold.

SUBTASK 21-21-01-020-004-002

(6) To disconnect the drain tubes from the lower mix manifold [43]:

(a) Remove the clamps [42] at four locations.

(b) Pull the four drain tubes off the lower mix manifold [43].

(c) Make a record of the locations of the drain lines and the clamps [42] to make sure they are installed in the same positions.

SUBTASK 21-21-01-020-005-002

(7) To remove the lower mix manifold [43] from the mix bay, do these steps:

(a) Remove the two screws [44] and the washers [45] that attach support brackets of the lower mix manifold [43] to the airplane structure.

(b) Remove the bolts [62] and the washers [61] that attach the clamps [60] to the lower mix manifold [43].

1) Make a record of the locations of the bolts [62], the washers [61] and the clamps [60] to make sure they are installed in the same positions.

(c) Remove the bolts [64] and the washers [62] at fifteen locations that attach the lower mix manifold [43] to the spacer on the airplane skin.

(d) Carefully remove the lower mix manifold [43] from the mix bay.

(e) Remove the gasket [58] that was below the rear duct of the lower mix manifold [43].

G. Ground Conditioned Air Check Valve Removal

SUBTASK 21-21-01-020-006-002

(1) To remove the ground conditioned air check valve [59] from the lower mix manifold do these steps:

(a) Remove the bolts [63] and the washers [64].

(b) Remove the check valve [59] from its position in the lower mix manifold [43].

——— END OF TASK ———

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Ground Conditioned Air Check Valve Installation
Figure 402/21-21-01-990-803-002 (Sheet 1 of 5)

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Ground Conditioned Air Check Valve Installation
Figure 402/21-21-01-990-803-002 (Sheet 2 of 5)

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Ground Conditioned Air Check Valve Installation
Figure 402/21-21-01-990-803-002 (Sheet 3 of 5)

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Ground Conditioned Air Check Valve Installation
Figure 402/21-21-01-990-803-002 (Sheet 4 of 5)

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Ground Conditioned Air Check Valve Installation
Figure 402/21-21-01-990-803-002 (Sheet 5 of 5)

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TASK 21-21-01-400-804-002

5. Ground Conditioned Air Check Valve Installation

(Figure 402)

A. General

(1) The hinge on the check valve has a spring which holds the check valve almost open when the air conditioning system is off. When the air conditioning system is on, the pressure in the mix manifold causes the swing check valve to close. Before you install the lower mix manifold, you must do a check of the check valve and adjust the hinge if it is necessary. The check valve must open and close correctly.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
53	Gasket	21-21-01-01-380	AKS ALL
58	Gasket	21-21-01-01-550	AKS ALL
59	Check valve	21-21-01-01-430	AKS ALL

D. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
191E	Low Pressure ECS Panel - Forward
821	Forward Cargo Door

F. Ground Conditioned Air Check Valve Installation

SUBTASK 21-21-01-420-007-002

(1) Do these steps to install the check valve [59] in the lower mix manifold [43]:

(a) Put the check valve [59] in its position in the lower mix manifold [43].

(b) Loosely install the bolts [63] and the washers [64].

(c) Adjust the check valve [59] so that the bolts [63] are in the center of the adjustment slots.

(d) Fully tighten the bolts [63] and the washers [64].

G. Ground Conditioned Air Check Valve Adjustment

SUBTASK 21-21-01-710-004-002

(1) Do this check of the check valve [59]:

(a) Put a straight edge on the flange of the rear duct of the lower mix manifold.

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(b) Move the straight edge to the end of the check valve [59] opposite the hinge.

(c) Make sure the end of the check valve [59] touches the straight edge.

(d) Move the straight edge to the end of the check valve [59] below the hinge.

(e) Make sure there is a small clearance between the edge of the check valve [59] and the straight edge.

(f) If there is no clearance, adjust the hinge as follows:

1) Loosen the hinge adjustment bolts [63].

2) Move the hinge up as necessary.

3) Tighten the hinge adjustment bolts [63].

(g) Push down on the check valve [59] at the hinge.

(h) Make sure that the clearance in the above step closes without too much downward force.

(i) Release the pressure on the check valve [59].

(j) Make sure that there is clearance again between the edge of the check valve [59] and the straight edge.

(k) If too much force is necessary to remove the clearance when you push down on the check valve [59], adjust the hinge as follows:

1) Loosen the hinge adjustment bolts [63].

2) Move the hinge down as necessary.

3) Tighten the hinge adjustment bolts [63].

(l) Do this check again to make sure the check valve [59] operates correctly.

H. Mix Manifold Installation

SUBTASK 21-21-01-420-008-002

(1) To install the gasket [58] that was below the rear duct of the mix manifold, do these steps:

(a) Make sure the gasket [58] is not damaged. Replace the gasket if it is damaged.

(b) When you install the gasket [58], align the slot in the gasket with the slot on the spacer.

SUBTASK 21-21-01-420-009-002

(2) Install the lower mix manifold [43] in the mix bay:

(a) Carefully move the mix manifold to its position.

(b) Make sure the ducts on the mix manifold are aligned with the other ducts in the mix bay.

(c) Install the bolts [61] and the washers [62] for the clamps.

1) Make sure the bolts [61] and the washers [62] are installed in the positions they were before the removal.

(d) Install the bolts [65] and the washers [62] that attach the lower mix manifold to the spacer on the airplane skin.

(e) Install the two screws [44] and the washers [45] that attach support brackets of the lower mix manifold [43] to the airplane structure.

SUBTASK 21-21-01-010-023-002

(3) Install the two couplings [40] for the lower ducts of the mix manifold.

(a) Tighten the nut on the couplings to 20 to 25 pound-inches (2.3 to 2.8 newton-meters).

SUBTASK 21-21-01-010-024-002

(4) Install the collector ring [54] and the gaskets [53]:

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(a) Make sure the gaskets are not damaged. Replace the gaskets if they are damaged.

(b) Put one of the gaskets [53] on the lower mix manifold [43].

(c) Put the collector ring [54] on the lower mix manifold [43].

(d) Put the other gasket [53] on the collector ring [54]. Make sure the holes in the gaskets [53], the collector ring [54], and the lower mix manifold are aligned.

SUBTASK 21-21-01-010-025-002

(5) To install the upper mix manifold [31], do these steps:

(a) Put the upper mix manifold [31] on the lower mix manifold. Make sure the holes in the manifolds, the gaskets, and the collector ring are aligned.

(b) Install the screw [56] and the washer [55], at 18 locations.

(c) Install the electrical connectors [32] on the mix manifold temperature sensors.

(d) Install the clamps [33] and the sleeve [34], at three locations.

SUBTASK 21-21-01-020-007-002

(6) To connect the drain tubes to the lower mix manifold [43]:

(a) Push the four drain tubes on the mix manifold [43].

1) Make sure the drain tubes and the clamps [42] are installed in the positions they were before the removal.

(b) Install the clamps [42] on the drain tubes.

SUBTASK 21-21-01-010-026-002

(7) To install the forward muffler in the mix bay, do these steps:

(a) Carefully move the forward muffler [41] to its location in the mix bay.

(b) Install the clamp [46] at the rear bulkhead of the mix bay.

1) Tighten the nut on the clamp 55 to 60 pound-inches (6.2 to 6.8 newton-meters).

(c) Move the clamp [52] to its position on the bracket.

(d) Put the two washers [48] under the clamp [52] at two locations.

(e) Install the screw [51] and the washer [48].

(f) Install the spacer [49], the washer [48] and the nut [47] below the bracket.

NOTE: Make sure the spacer [49] is in the slot on the bracket.

(g) Install the coupling [35] and the sleeve [36] for the top duct of the forward muffler.

SUBTASK 21-21-01-010-027-002

(8) To install the check valves for the recirculation fans, do these steps for each of the two check valves:

(a) Hold the check valve [39] in its position.

NOTE: Make sure the flow arrow on the check valve points inboard.

(b) Install the couplings [37] and the sleeves [38].

I. Check Valve Duct Installation Test

SUBTASK 21-21-01-860-015-002

(1) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-21-01-860-016-002

(2) Supply conditioned air to the air conditioning system. To supply conditioned air, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

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SUBTASK 21-21-01-790-002-002

(3) Make sure that there are no leaks at any of the ducts or hoses you disconnected for this installation.

SUBTASK 21-21-01-010-028-002

(4) Open this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

SUBTASK 21-21-01-710-005-002

(5) Make sure air flows out the drain hole.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-21-01-860-017-002

(1) Remove the conditioned air from the air conditioning system. To remove the conditioned air, do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-21-01-710-006-002

(2) Make sure the swing check valve is not completely closed.

SUBTASK 21-21-01-410-009-002

(3) Install the center liner in the aft bulkhead in the forward cargo compartment. To install the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-17-400-801.

SUBTASK 21-21-01-410-010-002

(4) Close this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

SUBTASK 21-21-01-410-011-002

(5) Close this access panel:

Number	Name/Location
821	Forward Cargo Door

SUBTASK 21-21-01-860-018-002

(6) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

TASK 21-21-01-000-808-002

6. Cooling Exchange Check Valve Removal

Figure 403

A. General

(1) This task includes the steps to remove the Cooling Exchange Check Valve.

(2) You must remove electrical power from the airplane before you remove the cooling exchange 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
12-15-21-600-803-002	Crew Oxygen Cylinder Replacement (P/B 301)

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(Continued)

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Removal

SUBTASK 21-21-01-860-029-002

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.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 21-21-01-010-039-002

(2) To get access to the cooling exchange check valve, do this step:

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-21-01-010-040-002

(3) Remove the access panel on the top of the raised platform just aft and right of the aircraft center line as follows:

(a) Remove the 9 screws that attach the access panel to the top of the raised platform.

(b) Remove the raised platform.

SUBTASK 21-21-01-010-041-002

(4) Remove the crew oxygen system cylinder. To remove the oxygen cylinder, do this task: Crew Oxygen Cylinder Replacement, TASK 12-15-21-600-803-002.

F. Cooling Exchange Check Valve Removal

SUBTASK 21-21-01-010-042-002

(1) Remove the strap [4].

SUBTASK 21-21-01-020-014-002

(2) Remove the sleeve [3].

SUBTASK 21-21-01-020-015-002

(3) Loosen the coupling [2].

SUBTASK 21-21-01-020-016-002

(4) Remove the cooling exchange check valve [1]:

(a) Put covers on the duct openings to prevent the entry of unwanted material.

END OF TASK

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TASK 21-21-01-400-808-002

7. Cooling Exchange Check Valve Installation

Figure 403

A. General

(1) This task includes the steps to install the Cooling Exchange Check Valve.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-10-000-801	Cargo Floor Panel Removal (P/B 401)
25-52-10-400-801	Cargo Floor Panel - Installation (P/B 401)
52-31-00-580-802	Close the Cargo 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
COM-3923	Tool - Installation, Tie Strap Part #: GS2BL Supplier: 06383 Part #: GS4H Supplier: 06383 Part #: GTS Supplier: 06383 Part #: PPTS Supplier: 06383

D. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

E. Cooling Exchange Check Valve Installation

SUBTASK 21-21-01-420-012-002

(1) Install the Cooling Exchange Check Valve:

(a) Remove the duct covers.

(b) Put the cooling exchange check valve [1] in its position.

NOTE: INSTALL THE COOLING EXCHANGE CHECK VALVE SO DIRECTION OF THE FLOW IS FROM THE E/E COMPARTMENT TO THE FORWARD CARGO COMPARTMENT.

(c) Install the coupling [2].

(d) Tighten the coupling [2].

(e) Move the sleeve [3] on to the cooling exchange check valve [1] and the duct flanges.

(f) Put the strap [4] around the sleeve [3].

(g) Tighten the strap [4].

NOTE: TO APPLY CORRECT TENSION, SET THE SELECTOR KNOB ON HEAVY AND THE TENSION INDICATOR TO 8. USE PANDUIT tie strap installation tool, COM-3923 (WITH BLUE HANDLE).

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F. Cooling Exchange Check Valve Installation Test

SUBTASK 21-21-01-860-030-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-21-01-860-031-002

(2) Make sure these switches, on the P5 Overhead Panel, are in the NORMAL position:

(a) EQUIP COOLING, EXHAUST

(b) EQUIP COOLING, SUPPLY

SUBTASK 21-21-01-710-011-002

(3) Make sure there is no air leakage at the coupling [2] and the strap [4].

SUBTASK 21-21-01-010-043-002

(4) Remove the forward cargo compartment forward floor panel. To remove the forward floor panel, do this task: Cargo Floor Panel Removal, TASK 25-52-10-000-801.

SUBTASK 21-21-01-710-012-002

(5) Make sure there is air flow out of the forward cargo heat duct port.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-21-01-410-016-002

(1) Install the forward cargo compartment forward cargo floor panel. To install the forward floor panel, do this task: Cargo Floor Panel - Installation, TASK 25-52-10-400-801.

SUBTASK 21-21-01-860-032-002

(2) Put these switches in the AUTO position:

(a) L PACK

(b) R PACK

(c) L RECIRC FAN

(d) R RECIRC FAN

SUBTASK 21-21-01-410-017-002

(3) Close the forward cargo door. To close the forward cargo door, do this task: Close the Cargo Door, TASK 52-31-00-580-802.

SUBTASK 21-21-01-860-033-002

(4) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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Cooling Exchange Check Valve Installation
Figure 403/21-21-01-990-808-002 (Sheet 1 of 2)

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COOLING EXCHANGE CHECK VALVE
(OXYGEN BOTTLE INSTALLATION IS NOT SHOWN)

B

2433438 S0000563779_V2

Cooling Exchange Check Valve Installation
Figure 403/21-21-01-990-808-002 (Sheet 2 of 2)

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Distribution Bay Mix Manifold - Removal/Installation

1. General

A. The mix manifold receives cold air from the packs and mixes it with hot pneumatic air and then distributes this conditioned air to the flight deck and the passenger compartment.

B. This procedure contains the tasks that follow:

(1) Distribution Bay Mix Manifold Removal

(2) Distribution Bay Mix Manifold Installation.

TASK 21-21-05-000-801

2. Distribution Bay Mix Manifold Removal

Figure 401

A. References

Reference	Title
21-25-03-000-801	Recirculation Fan Check Valve Removal (P/B 401)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Preparation for the Removal

SUBTASK 21-21-05-860-001

(1) Make sure that the L PACK and R PACK switches on the P5-10 air conditioning panel are set to off.

SUBTASK 21-21-05-860-002

(2) Stop the supply of any source of pneumatic air to the pneumatic system:

(a) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-21-05-010-001

(3) Open the forward cargo compartment door.

SUBTASK 21-21-05-010-002

(4) Remove the bulkhead liners in the aft bulkhead of the forward cargo compartment to gain access to the air conditioning distribution mix bay:

(a) Do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

D. Removal

SUBTASK 21-21-05-020-003

(1) Reposition the duct [1] between the elbow duct [9] and the upper mix manifold [2] as follows:

(a) Loosen the two clamps [17] that secure the sleeve [18] to the right side elbow duct [9] and duct [1].

(b) Loosen the clamp [16] that secures the duct [1] to structure.

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(c) Remove the coupling [10] that attaches the duct [1] to the upper mix manifold [2].

(d) Slide the duct [1] outboard so that the duct is free of the upper mix manifold.

(e) If necessary, remove the clamp [16] so that the duct [1] can be removed from the distribution mix bay.

SUBTASK 21-21-05-020-004

(2) Reposition the duct [3] between the elbow duct [9) and the upper mix manifold [2] as follows:

(a) Loosen the two clamps [17] that secure the sleeve [18] to the left side elbow duct [9] and duct [3].

(b) Loosen the clamp [16] that secures the duct [3] to structure.

(c) Remove the coupling [10] that attaches the duct [3] to the upper mix manifold [2].

(d) Slide the duct [3] outboard so that the duct is free of the upper mix manifold.

(e) If necessary, remove the clamp [16] so that the duct [3] can be removed from the distribution mix bay.

SUBTASK 21-21-05-020-005

(3) Remove the recirculation valve check valve [8]. To remove the check valve, do this task: Recirculation Fan Check Valve Removal, TASK 21-25-03-000-801.

SUBTASK 21-21-05-020-006

(4) Disconnect the duct assemblies [4] and [11] from the left and right packs as follows:

(a) Loosen the couplings [5] and [12] that connect the duct assemblies [4] and [11] to the distribution bay mix manifold [7].

(b) Move the couplings [5] and [12] onto the duct assemblies [4] and [11] so that the duct assemblies are free from the mix manifold [7].

SUBTASK 21-21-05-020-007

(5) Disconnect the mix manifold [7] from the ground service connection as follows:

(a) Remove the two band clamps [15].

(b) Remove the flexible hose [14] from the mix manifold [7].

SUBTASK 21-21-05-020-008

(6) Disconnect the mix manifold [7] from the airplane structure as follows:

(a) Disconnect the condensate drain hose [20] from the bottom of the mix manifold.

(b) Remove the four screws and washers [19] that attach the brackets on the bottom of the mix manifold to floor structure.

SUBTASK 21-21-05-020-009

(7) Remove the mix manifold from the distribution mix bay.

SUBTASK 21-21-05-390-001

(8) Put covers on all open ducts to prevent the entry of unwanted material.

END OF TASK

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Distribution Bay Mix Manifold Installation
Figure 401/21-21-05-990-801 (Sheet 1 of 2)

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LOWER MIX MANIFOLD

E

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Distribution Bay Mix Manifold Installation
Figure 401/21-21-05-990-801 (Sheet 2 of 2)

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TASK 21-21-05-400-801

3. Distribution Bay Mix Manifold Installation

Figure 401

A. References

Reference	Title
21-25-03-400-801	Recirculation Fan Check Valve Installation (P/B 401)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic 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. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Installation

SUBTASK 21-21-05-840-001

(1) Remove the covers from the ducts.

E. Distribution Bay Mix Manifold Installation

SUBTASK 21-21-05-420-001

(1) Put the distribution bay mix manifold [7] in its installed position.

SUBTASK 21-21-05-420-002

(2) Install the screws and washers [19] that attach the brackets on the bottom of the mix manifold to airplane structure.

SUBTASK 21-21-05-420-003

(3) Connect the mix manifold [7] to the ground service connection as follows:

(a) Connect the condensate drain hose [20] to the bottom of the mix manifold.

(b) Position the flexible hose [14] between the ground service connection and mix manifold so that it is equally positioned on the ground service connection and the mix manifold.

(c) Position the band clamps [15] and tighten.

SUBTASK 21-21-05-420-004

(4) Install the couplings [5] and [12] that connect the pack output duct assemblies [4] and [11] to the lower mix manifold as follows:

(a) Spray dry film lubricant, D00386 on inside clamp surface and over the entire length of the T-bolt threads.

NOTE: The dry film lubricant should be allowed to air dry for 24 hours.

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(b) Determine the running torque.

NOTE: The running torque is the torque required to tighten the locknut on the T-bolt without tightening the clamp.

(c) Make sure that the alignment between the inlet duct on the mix manifold and the output duct assembly [4] or [11] from the pack is satisfactory.

1) If the alignment is not satisfactory, adjust the alignment as necessary.

(d) Install the coupling [5] or [12] on the joint between the mix manifold and the output duct assembly from the pack.

(e) Tighten the coupling locknut to 5 inch-pounds above the running torque.

(f) Tighten the locknut on the coupling T-bolt to 75 (+5/-0) inch-pounds.

SUBTASK 21-21-05-420-005

(5) Install the recirculation fan check valve [8] as follows:

(a) Do this task: Recirculation Fan Check Valve Installation, TASK 21-25-03-400-801.

SUBTASK 21-21-05-420-006

(6) Install ducts [1] and [3] between the upper mix manifold [2] and the elbow ducts [9] as follows:

(a) Move ducts [1] and [3] into position next to the couplings [10].

(b) Install the couplings [10].

(c) Position the sleeves [18] between the ducts [1] and [3] and the elbow ducts [9].

(d) Install and tighten the clamps [17].

F. Post Installation Test of the Distribution Bay Mix Manifold

SUBTASK 21-21-05-860-003

(1) Supply pneumatic pressure to the pneumatic system as follows:

(a) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-21-05-860-004

(2) Set the L PACK and R PACK switches on the P5-10 air conditioning panel to AUTO.

SUBTASK 21-21-05-790-001

(3) Make sure that there are no leaks at any of the connections on the mix manifold and associated ducts:

(a) Repair any leaks that you find.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-21-05-410-001

(1) Install the bulkhead liners in the aft bulkhead of the forward cargo compartment:

(a) Do this task: Forward Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-17-400-801.

SUBTASK 21-21-05-860-005

(2) Remove the pneumatic pressure to the pneumatic system:

(a) Do this task Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-21-05-860-006

(3) Set the L PACK and R PACK switches on the P5-10 air conditioning panel to OFF.

END OF TASK

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WINDSHIELD AND FOOT AIR OUTLET VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the windshield and foot air outlet valve.

(2) An installation of the windshield and foot air outlet valve.

B. There is one windshield and foot air outlet valve for the captain and one for the first officer. The valves control the flow of air to the foot air outlets and the windshield defoggers. The valves are installed behind the display units on the captains instrument panel, P1, and the first officers instrument panel, P3.

TASK 21-22-01-000-801

2. Windshield and Foot Air Outlet Valve Removal

(Figure 401)

A. References

Reference	Title
31-62-11-000-801	Display Unit Removal (P/B 401)
31-62-13-000-801	Lighting Control Module Removal (P/B 401)

B. Location Zones

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

C. Prepare for the Removal

SUBTASK 21-22-01-860-007

(1) Make sure the L and R RECIRC FAN switches, on the P5-10 air conditioning panel, are set to the OFF position.

SUBTASK 21-22-01-860-002

(2) Make sure that the L and R PACK switches, on the P5-10 air conditioning panel, are set to the OFF position.

SUBTASK 21-22-01-010-001

(3) To get access to the captain's foot outlet valve, do this step:

(a) Remove the display units on the captain's instrument panel (P1). To remove the display units, do this task: Display Unit Removal, TASK 31-62-11-000-801.

SUBTASK 21-22-01-010-002

(4) To get access to the first officer's foot outlet valve, do these steps:

(a) Remove the display units on the first officer's instrument panel (P3). To remove the display units, do this task: Display Unit Removal, TASK 31-62-11-000-801.

(b) Remove the backplate assemblies [16]:

1) If necessary remove the screws [15] that attach the electrical connector to each backplate assembly [16].

NOTE: It can not be necessary to remove the electrical connector. If the backplate assembly [16] can be moved sufficiently to get access to the cable connections on the air outlet valve.

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2) Remove the screws [17] that attach each backplate assembly [16] to the box assembly [14].

3) Remove the clamps [10] that attach each backplate assembly [16] to the cooling ducts [11].

(c) Remove the clamps [13] and the cooling ducts [11].

(d) Put a protective cover on the openings of the manifold [12].

(e) Remove the lighting control module on the first officer's instrument panel (P3) if necessary. To remove the lighting control module, do this task: Lighting Control Module Removal, TASK 31-62-13-000-801.

D. Windshield and Foot Air Outlet Valve Removal

SUBTASK 21-22-01-020-001

(1) Disconnect the cable assemblies [9] from the windshield and foot air outlet valve [4] as follows:

(a) Remove the cotter pins [2], the washers [3], and the pins [1].

SUBTASK 21-22-01-010-003

(2) Remove the strap [8] that holds the inlet flex duct to the valve [4].

SUBTASK 21-22-01-010-004

(3) Remove the strap [5] that holds the flex duct for the windshield air outlet to the valve [4].

SUBTASK 21-22-01-010-005

(4) Slide the inlet duct and the two outlets ducts away from the valve [4].

SUBTASK 21-22-01-010-006

(5) Remove the windshield and foot air outlet valve [4] from the wire tray bracket:

(a) Remove the screws [6] and the washers [7].

SUBTASK 21-22-01-020-003

(6) Remove the windshield and foot air outlet valve [4].

END OF TASK

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FLIGHT COMPARTMENT

(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

A

NOTE:

LCD PANELS REMOVED

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Windshield and Foot Air Outlet Valve Installation
Figure 401/21-22-01-990-801 (Sheet 1 of 3)

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WINDSHIELD AND FOOT AIR OUTLET VALVE

B

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Windshield and Foot Air Outlet Valve Installation
Figure 401/21-22-01-990-801 (Sheet 2 of 3)

I

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(EXAMPLE)

C

(EXAMPLE)

D

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Windshield and Foot Air Outlet Valve Installation
Figure 401/21-22-01-990-801 (Sheet 3 of 3)

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TASK 21-22-01-400-801

3. Windshield and Foot Air Outlet 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)
21-22-02-820-801	Air Outlet Valve Control Cables Adjustment and Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)
31-62-11-400-801	Display Unit Installation (P/B 401)
31-62-13-400-801	Lighting Control Module Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Cotter pin	21-22-01-03-015	AKS ALL
4	Valve	21-22-01-03-025	AKS ALL
		21-22-01-03-030	AKS ALL
5	Strap	21-22-51-03A-060	AKS ALL
8	Strap	21-22-51-03A-070	AKS ALL

C. Location Zones

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

D. Windshield and Foot Air Outlet Valve Installation

SUBTASK 21-22-01-210-001

(1) Make sure there is no unwanted material or contamination in the inlet duct to the valve [4] or the outlet ducts from the valve [4].

SUBTASK 21-22-01-420-001

(2) Install the windshield and foot air outlet valve [4] on the wire tray bracket as follows:

(a) Put the valve [4] in its installed location.

(b) Install the washers [7] and the screws [6].

SUBTASK 21-22-01-410-001

(3) Install the inlet duct and the two outlet ducts on the valve [4] as follows:

(a) Slide the ends of the inlet duct and the outlet ducts onto the valve [4].

(b) Install the strap [5], and the strap [8] to hold the ducts onto the valve [4].

SUBTASK 21-22-01-420-002

(4) Attach the cable assemblies [9] to the valve [4] as follows:

(a) Put the control cable for the windshield air on the applicable valve body of the valve [4].

(b) Put the control cable for the foot air on the applicable valve body of the valve [4].

(c) Install the pins [1], the washers [3], and the cotter pins [2].

E. Air Outlet Valve Installation Test

SUBTASK 21-22-01-710-001

(1) Do a check of the valve [4] as follows:

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

(b) Operate the FOOT AIR or WINDSHIELD AIR knob, as applicable, to close the valve [4].

(c) Make sure no air flow is detected at the windshield defogger outlet or at the foot air outlet, as applicable.

(d) If air flow is detected, adjust the applicable cable assembly. To adjust the cable assembly, do this task: Air Outlet Valve Control Cables Adjustment and Test, TASK 21-22-02-820-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-22-01-420-003

(1) Install the lighting control module on the first officer's instrument panel (P3). Do this task: Lighting Control Module Installation, TASK 31-62-13-400-801.

SUBTASK 21-22-01-010-007

(2) Remove the protective covers from the manifold [12].

SUBTASK 21-22-01-420-004

(3) Install the cooling ducts [11] with the clamps [13] at the lower end.

SUBTASK 21-22-01-420-005

(4) Install the backplate assemblies [16]:

(a) Attach the top end of the cooling ducts [11] to each backplate assembly [16] with the clamps [10].

(b) Attach each backplate assembly [16] to the box assembly [14] with the screws [17].

(c) If the electrical connectors were removed, attach the electrical connectors to each backplate assembly [16] with the screws [15].

SUBTASK 21-22-01-410-002

(5) Install the display units for the captains instrument panel (P1) or the first officers instrument panel, as applicable. To install the display units, do this task: Display Unit Installation, TASK 31-62-11-400-801.

SUBTASK 21-22-01-860-009

(6) Set the L and R RECIRC FAN switches to the AUTO position.

SUBTASK 21-22-01-410-003

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

SUBTASK 21-22-01-860-004

(8) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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AIR OUTLET VALVE CONTROL CABLES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the air outlet valve control cables.

(2) An installation of the air outlet valve control cables.

B. There are two control cables that go to each windshield and foot air outlet valve. One of the cables controls the flow of air to the foot air outlet for the captain (first officer). The other cable controls the flow of air to the windshield defogger.

TASK 21-22-02-000-801

2. Air Outlet Valve Control Cables Removal

(Figure 401)

A. References

Reference	Title
31-62-11-000-801	Display Unit Removal (P/B 401)
31-62-13-000-801	Lighting Control Module Removal (P/B 401)

B. Location Zones

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

C. Prepare for the Removal

SUBTASK 21-22-02-010-001

(1) To get access to the control cables for the outlet valve, do these steps:

(a) Remove the display units on the captain's instrument panel (P1) or the first officer's instrument panel (P3), as applicable. To remove the display units, do this task: Display Unit Removal, TASK 31-62-11-000-801.

(b) Remove each display unit backplate assembly [18]. To remove the backplate assembly, do these steps:

1) If required, remove the screws [17] that attach the electrical connector to each backplate assembly [18].

NOTE: It may not be necessary to remove the electrical connector if the backplate assembly can be moved enough to get access to the cable connections on the air outlet valve.

2) Remove the screws [19] that attach each backplate assembly [18] to the box assembly [16].

3) Remove the clamps [12] that attach each backplate assembly [18] to the cooling ducts [13].

(c) Remove the clamps [15] from the lower end of the cooling ducts [13].

(d) Put a protective cover on the openings of the manifold [14].

(e) Remove the lighting control module on the captain’s instrument panel (P1) or the first officer's instrument panel (P3), as applicable. To remove the lighting control module, do this task: Lighting Control Module Removal, TASK 31-62-13-000-801

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D. Removal

SUBTASK 21-22-02-020-001

(1) Remove the spring pin [10] from the knob [11].

SUBTASK 21-22-02-010-003

(2) Remove the knob [11].

SUBTASK 21-22-02-020-002

(3) Remove the nut [9] from the end of the cable assembly [1] or the cable assembly [2].

SUBTASK 21-22-02-020-003

(4) Remove the cotter pin [6], the washer [7], and the pin [5] that attach the end of the cable assembly [1] or the cable assembly [2] to the tab on the outlet valve for the windshield or foot air.

SUBTASK 21-22-02-020-004

(5) Loosen the nut [3] or the nut [8] to release the cable assembly [1] or the cable assembly [2] from the bracket.

SUBTASK 21-22-02-020-005

(6) Remove the cable assembly [1] or the cable assembly [2].

——— END OF TASK ———

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FLIGHT COMPARTMENT

(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

NOTE:

LCD PANELS REMOVED

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Air Outlet Valve Control Cables Installation
Figure 401/21-22-02-990-801 (Sheet 1 of 3)

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AIR OUTLET VALVE CONTROL CABLES

B

WINDSHIELD AND FOOT AIR OUTLET VALVE POSITION

C

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Air Outlet Valve Control Cables Installation
Figure 401/21-22-02-990-801 (Sheet 2 of 3)

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(TYPICAL)

D

(TYPICAL)

E

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Air Outlet Valve Control Cables Installation
Figure 401/21-22-02-990-801 (Sheet 3 of 3)

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TASK 21-22-02-400-801

3. Air Outlet Valve Control Cables Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
31-62-11-400-801	Display Unit Installation (P/B 401)
31-62-13-400-801	Lighting Control Module Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Cable assembly	21-22-02-02A-020	AKS ALL
2	Cable assembly	21-22-02-02A-025	AKS ALL
6	Cotter pin	21-22-01-03-015	AKS ALL

C. Location Zones

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

D. Air Outlet Valve Control Cables Installation

SUBTASK 21-22-02-210-001

(1) Put the cable assembly [1] or the cable assembly [2] in its installed position.

SUBTASK 21-22-02-420-001

(2) Install the nut [9] on the two sides of the panel assembly.

SUBTASK 21-22-02-420-002

(3) Put the knob [11] on the cable assembly [1] or the on the cable assembly [2] and install the spring pin [10].

SUBTASK 21-22-02-410-001

(4) Tighten the nut [3] and the nut [8] to firmly hold the on the cable assembly [1] or the on the cable assembly [2] in the bracket.

SUBTASK 21-22-02-860-001

(5) Make sure that the windshield and/or foot air outlet ports on the valve are fully closed.

NOTE: The tabs on the valve will be centered on the seam on the valve between the two halves of the valve when the outlet ports are fully closed.

SUBTASK 21-22-02-860-002

(6) Push the knob [11] fully forward to put the on the cable assembly [1] or the on the cable assembly [2] in the closed position.

SUBTASK 21-22-02-820-001

(7) Adjust the nut [3] and the nut [8] until the hole in the end of the on the cable assembly [1] or the on the cable assembly [2] aligns with the hole in the tab on the windshield and foot air outlet valve.

SUBTASK 21-22-02-420-003

(8) Install the pin [5], the washer [7], and a new cotter pin [6].

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E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-22-02-410-002

(1) Install the lighting control module on the captain’s instrument panel (P1) or the first officer’s instrument panel (P3) as applicable. To install the lighting control module, do this task: Lighting Control Module Installation, TASK 31-62-13-400-801.

SUBTASK 21-22-02-010-008

(2) Remove the protective covers from the manifold [14].

SUBTASK 21-22-02-420-005

(3) Install the cooling ducts [13] with the clamps [15] at the lower end.

SUBTASK 21-22-02-420-006

(4) Install each display unit backplate assembly [18]. To install the backplate assembly [18], do these steps:

(a) Attach the top end of the cooling ducts [13] to each backplate assembly [18] with the clamps [12].

(b) Attach each backplate assembly [18] to the box assemblies [16] with the screws [19].

(c) If the electrical connectors were removed, attach the electrical connectors to each backplate assembly [18] with the screws [17].

SUBTASK 21-22-02-410-003

(5) Install the display units for the captain's instrument panel (P1) or the first officer's instrument panel (P3), as applicable. To install the display units, do this task: Display Unit Installation, TASK 31-62-11-400-801.

SUBTASK 21-22-02-860-003

(6) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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AIR OUTLET VALVE CONTROL CABLES - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

(1) An adjustment of the control cables for the outlet valve for the windshield and foot air.

B. There are two control cables for each outlet valve for the windshield and foot air. The adjustment nuts on the control cables are installed behind the display units on the captain's instrument panel (P1) or the first officer's instrument panel (P3).

TASK 21-22-02-820-801

2. Air Outlet Valve Control Cables Adjustment and Test

(Figure 501)

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)
24-22-00-860-812	Remove Electrical Power (P/B 201)
31-62-11-000-801	Display Unit Removal (P/B 401)
31-62-11-400-801	Display Unit Installation (P/B 401)

B. Location Zones

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

C. Prepare for the Adjustment

SUBTASK 21-22-02-010-004

(1) To get access to the control cables for the captain's foot outlet and windshield outlet, do this step:

(a) Remove the display units on the captain's instrument panel (P1). To remove the display units, do this task: Display Unit Removal, TASK 31-62-11-000-801.

SUBTASK 21-22-02-010-005

(2) To get access to the control cables for the first officer's foot outlet and windshield outlet, do this step:

(a) Remove the display units on the first officer's instrument panel (P3). To remove the display units, do this task: Display Unit Removal, TASK 31-62-11-000-801.

D. Air Outlet Valve Control Cables Adjustment

SUBTASK 21-22-02-020-006

(1) Disconnect the cable assembly [1] or the cable assembly [2] from the outlet valve [8] as follows:

(a) Remove the cotter pin [6], washer [7] and the pin [5].

SUBTASK 21-22-02-860-004

(2) Make sure that the outlet port on the valve [8] that the cable controls is fully closed.

NOTE: The port on the valve is fully closed when the tab on the valve for the control cable is centered on the seam of the valve. Refer to Figure 501, View C.

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SUBTASK 21-22-02-860-005

(3) Push the knob [10] on the cable assembly [1] or the cable assembly [2] fully forward.

NOTE: When the knob is pushed fully forward, the valve is in the fully closed position.

SUBTASK 21-22-02-820-002

(4) Adjust the nuts [3] and [9] until the hole in the end of the cable assembly [1] or the cable assembly [2] aligns with the hole in the tab on the outlet valve [8].

SUBTASK 21-22-02-420-004

(5) Install the pin [5], the washer [7], and the cotter pin [6].

E. Air Outlet Valve Control Cables Test

SUBTASK 21-22-02-710-001

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

SUBTASK 21-22-02-860-006

(2) Pull out the knob [10] for the cable assembly that was adjusted.

SUBTASK 21-22-02-710-002

(3) Make sure that air comes out of the foot air outlet or at the base of the windshield, as applicable.

SUBTASK 21-22-02-710-003

(4) Push the knob fully in for the cable that was adjusted.

SUBTASK 21-22-02-710-004

(5) Make sure that the flow of air stops.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-22-02-860-007

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

SUBTASK 21-22-02-010-006

(2) Install the display units on the captains's instrument panel (P1) if applicable. To install the display units, do this task: Display Unit Installation, TASK 31-62-11-400-801.

SUBTASK 21-22-02-010-007

(3) Install the display units on the first officer's instrument panel (P3) if applicable. To install the display units, do this task: Display Unit Installation, TASK 31-62-11-400-801.

SUBTASK 21-22-02-860-008

(4) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812

END OF TASK

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FLIGHT COMPARTMENT

(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

NOTE:

LCD PANELS REMOVED

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Air Outlet Valve Control Cables Adjustment
Figure 501/21-22-02-990-802 (Sheet 1 of 2)

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AIR OUTLET VALVE CONTROL CABLES

B

WINDSHIELD AND FOOT AIR OUTLET VALVE POSITION

C

G07927 S0006562435_V2

Air Outlet Valve Control Cables Adjustment
Figure 501/21-22-02-990-802 (Sheet 2 of 2)

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FLIGHT DECK AIR DISTRIBUTION SYSTEM MUFFLER/DUCT ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flight deck air distribution system muffler/duct assembly.

(2) An installation of the flight deck air distribution system muffler/duct assembly.

B. The flight deck air distribution system muffler/duct assembly is located in the left portion of the air distribution mix bay.

C. The muffler is bonded to two elbow ducts to form the muffler/duct assembly.

TASK 21-22-05-000-801

2. Flight Deck Air Distribution System Muffler/Duct Assembly Removal

A. References

Reference	Title
21-25-02-000-801	Recirculation Fan Removal (P/B 401)
25-52-09-000-801	Cargo Compartment Ceiling Liner - Removal (P/B 401)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)

B. Location Zones

Zone	Area
121	Forward Cargo Compartment - Left
125	Air Conditioning Distribution Bay - Left
212	Flight Compartment - Right

C. Preparation for the Removal

SUBTASK 21-22-05-860-001

(1) Make sure the L and R PACK switches on the P5-10 air conditioning panel are set to OFF.

SUBTASK 21-22-05-860-004

(2) Make sure that the L and R RECIRC FAN switches are set to OFF.

SUBTASK 21-22-05-010-001

(3) Open the forward cargo compartment door.

SUBTASK 21-22-05-010-002

(4) Remove the center and left aft bulkhead liners from the forward cargo compartment. To remove the aft bulkhead liners, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

SUBTASK 21-22-05-010-003

(5) Remove the left, aft ceiling liner from the forward cargo compartment. To remove the ceiling liner, do this task: Cargo Compartment Ceiling Liner - Removal, TASK 25-52-09-000-801.

D. Flight Deck Air Distribution System Muffler/Duct Assembly Removal

(Figure 401)

SUBTASK 21-22-05-020-003

(1) Remove the muffler/duct assembly [9] as follows:

(a) Remove the left recirculation fan. To remove the fan, do this task: Recirculation Fan Removal, TASK 21-25-02-000-801.

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(b) Remove the fasteners that attach the duct support [7] to the filter housing.

(c) Remove the fasteners that attach the bracket assemblies [2] and [8] to the filter housing.

(d) Remove the strap [13] that connects the muffler/duct assembly [9] to the filter housing.

(e) Remove the straps [11], [12], and [15] that connect the muffler/duct assembly [9] to the ducts that are forward and aft of the muffler/duct assembly.

(f) Remove the screw [5] and the washer [6].

(g) Remove the screws [3] and the washers [4].

(h) Remove the filter housing from the mix bay.

(i) Move the sleeves [10] and [16] away from the ends of the elbow ducts.

(j) Remove the muffler/duct assembly [9] from the mix bay.

SUBTASK 21-22-05-400-001

(2) Put covers over the open ducts to prevent the entry of unwanted materials.

——— END OF TASK ———

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Flight Deck Air Distribution System Muffler/Duct Assembly Installation
Figure 401/21-22-05-990-801 (Sheet 1 of 3)

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FILTER HOUSING
(DUCTS NOT SHOWN)

B

N87968 S0006562453_V2

Flight Deck Air Distribution System Muffler/Duct Assembly Installation
Figure 401/21-22-05-990-801 (Sheet 2 of 3)

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MUFFLER/DUCT ASSEMBLY

C

N88026 S0006562454_V2

Flight Deck Air Distribution System Muffler/Duct Assembly Installation
Figure 401/21-22-05-990-801 (Sheet 3 of 3)

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TASK 21-22-05-400-801

3. Flight Deck Air Distribution System Muffler/Duct Assembly Installation

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)
21-25-02-400-801	Recirculation Fan Installation (P/B 401)
25-52-09-400-801	Cargo Compartment Ceiling Liner - Installation (P/B 401)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)

B. Tools/Equipment

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

Reference	Description
COM-3923	Tool - Installation, Tie Strap Part #: GS2BL Supplier: 06383 Part #: GS4H Supplier: 06383 Part #: GTS Supplier: 06383 Part #: PPTS Supplier: 06383

C. Location Zones

Zone	Area
121	Forward Cargo Compartment - Left
125	Air Conditioning Distribution Bay - Left

D. Flight Deck Air Distribution System Muffler/Duct Assembly Installation

(Figure 401)

SUBTASK 21-22-05-000-001

(1) Remove the duct covers from the connecting ducts.

SUBTASK 21-22-05-080-001

(2) Install the muffler/duct assembly [9] as follows:

NOTE: The muffler/duct assembly comes with two elbow ducts bonded to the muffler.

(a) Put the muffler/duct assembly [9] in its position in the left side of the mix bay.

(b) Connect the sleeves [10] and [16] to the muffler/duct assembly [9].

(c) Install the straps [11] and [15] that secure the sleeves [10] and [16] with a tie strap installation tool, COM-3923.

(d) Install the strap [12] and secure it with the tie strap installation tool, COM-3923.

(e) Install the filter housing as follows:

1) Put the filter housing into the left side of the mix bay.

2) Install the washer [6] and screw [5].

3) Install the washers [4] and screws [3].

4) Attach the duct support [7] to the filter housing.

5) Attach the bracket assemblies [8] and [2] to the filter housing.

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6) Install the strap [13] and secure it with the tie strap installation tool, COM-3923 to the filter housing.

7) Install the left recirculation fan. To install the recirculation fan, do this task: Recirculation Fan Installation, TASK 21-25-02-400-801.

(f) Connect the drain tube [14] to the muffler/duct assembly [9].

SUBTASK 21-22-05-420-001

(3) Supply conditioned air to the flight deck. To supply conditioned air, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-22-05-790-001

(4) Make sure that there are no leaks at the interfaces at the ends of the muffler/duct assembly.

(a) Repair any leaks that you find.

SUBTASK 21-22-05-420-002

(5) Operate the flight deck air conditioning outlets to make sure that an adequate supply of conditioned air is available to the flight deck.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-22-05-860-006

(1) Remove the conditioned air to the flight deck. do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804

SUBTASK 21-22-05-860-007

(2) Install the center and left aft bulkhead panels in the forward cargo compartment. do this task: Forward Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-17-400-801

SUBTASK 21-22-05-410-001

(3) Install the forward cargo compartment ceiling liner that was removed. To install the ceiling liner, do this task: Cargo Compartment Ceiling Liner - Installation, TASK 25-52-09-400-801.

SUBTASK 21-22-05-860-008

(4) Close the forward cargo compartment door.

END OF TASK

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FLIGHT DECK DUCT ASSEMBLY SCREEN - CLEANING

1. General

A. This procedure has these tasks:

(1) A removal of the flight deck duct assembly with the screen

(2) A cleaning of a wire mesh screen assembly in a duct assembly in the flight deck air distribution system.

(3) An installation of the flight deck duct assembly with the screen.

B. The duct assembly is located along the lower left side of the flight deck compartment to the left of the nose landing gear wheel well.

C. The duct assembly with the wire mesh screen must be removed from the ducts that are connected to it and then the screen can be cleaned.

TASK 21-22-07-020-801

2. Flight Deck Duct Assembly Removal

Figure 701

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

B. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

C. Preparation for Duct Assembly Screen Removal

SUBTASK 21-22-07-861-003

(1) Supply electrical power to the airplane. Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-22-07-864-005

(2) Make sure that the L and R PACK switches on the P5-10 air conditioning panel are set to OFF.

SUBTASK 21-22-07-864-006

(3) Make sure the L and R RECIRC FAN switches on the P5-10 air conditioning panel are set to OFF.

SUBTASK 21-22-07-010-002

(4) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

D. Duct Assembly Screen Removal

SUBTASK 21-22-07-010-003

(1) Get access to the duct assembly [1] with the wire mesh cone assembly in the compartment to the left of the nose landing gear wheel well.

SUBTASK 21-22-07-020-002

(2) Remove the duct assembly [1] as follows:

(a) Remove the tape [2] at three locations where duct assembly [1] connects to duct assembly [3], duct assembly [5] and duct assembly [6].

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(b) Remove the clamp [4] as follows:

1) Remove nuts [12], washers [13] and screws [14] that attach clamp [4] to structure.

2) Remove the clamp [4].

(c) Try to remove duct assembly [1].

(d) If you find that there is not enough clearance in the installation of the duct assemblies to allow the removal of duct assembly [1], then continue with the steps that follow:

NOTE: The ends of the duct assemblies overlap and clearance must be obtained so that duct assembly [1] can be removed.

1) Remove the tape [2] between duct assemblies [5] and [8].

2) Loosen hose clamps [15].

3) Loosen the hose clamps [18] or remove the plastic tie straps [18] that retain the flex sleeve hose [10] between duct assemblies [6] and [11].

4) Loosen the screws [16] on the clamp [9] that retains the duct assembly [8].

5) Slide duct assemblies [5] and [6] as far aft as possible so that duct assembly [1] can be removed.

(e) Remove duct assembly [1].

(f) Inspect the duct assembly:

1) If the duct assembly or the wire mesh screen is damaged, get a serviceable duct assembly.

SUBTASK 21-22-07-913-001

(3) Put covers on the open ends of duct assemblies [5], [6] and [3] so that unwanted material will not get into the ducts.

END OF TASK

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Flight Deck Duct Assembly Screen Cleaning
Figure 701/21-22-07-990-802 (Sheet 1 of 2)

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Flight Deck Duct Assembly Screen Cleaning
Figure 701/21-22-07-990-802 (Sheet 2 of 2)

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TASK 21-22-07-100-801

3. Flight Deck Duct Assembly Screen Cleaning

A. Tools/Equipment

Reference	Description
STD-1057	Air Source - Regulated, Dry Filtered, Compressed 60-105 PSIG (414-723.9 KPa)(22 SCFM)

B. Duct Assembly Screen Cleaning

Figure 701

SUBTASK 21-22-07-020-003

(1) If not already done, remove the duct assembly [1] with the wire mesh cone assembly as follows:

(a) Do this task: Flight Deck Duct Assembly Removal, TASK 21-22-07-020-801.

SUBTASK 21-22-07-560-002

(2) Move the duct assembly [1] to a location where there is a source of compressed 60-105 PSIG dry filtered regulated air source, STD-1057.

SUBTASK 21-22-07-160-001

(3) Remove all debris that is accumulated on the screen inside the duct assembly:

(a) Remove all debris from the wire mesh screen with the use of compressed 60-105 PSIG dry filtered regulated air source, STD-1057.

SUBTASK 21-22-07-210-002

(4) Visually inspect that all debris has been removed from the wire mesh cone assembly.

SUBTASK 21-22-07-420-001

(5) Install the duct assembly [1] with the screen as follows:

(a) Do this task: Flight Deck Duct Assembly Installation, TASK 21-22-07-420-801.

END OF TASK

TASK 21-22-07-420-801

4. Flight Deck Duct Assembly Installation

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. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other 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

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C. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	ASTM D-3735 Type III
B00130	Alcohol - Isopropyl	TT-I-735
G50262	Wiper - Cleaning	BMS15-5

D. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Flight Deck Duct Assembly Installation

Figure 701

SUBTASK 21-22-07-420-002

(1) Install the duct assembly [1] as follows:

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

1) Make sure that there is a minimum of 0.5 inch overlap between the duct walls of duct assembly [1] and duct assembly [3].

(b) Move the duct assemblies [5] and [6] forward into their position and connect them with duct assembly [1] as follows:

1) Make sure that there is a minimum of 0.5 inch overlap between the duct walls of duct assembly [1] and duct assembly [5].

2) Make sure that there is a minimum of 0.5 inch overlap between the duct walls of duct assembly [1] and duct assembly [6].

(c) Move duct assembly [8] forward so that there is a minimum of 0.5 inch overlap between the duct walls of duct assemblies [5] and [8].

(d) Install the flex sleeve hose [10] as follows:

1) Move the flex sleeve hose [10] so that there is a minimum of 1.5 inches of overlap between duct assemblies [6] and [11].

2) If using hose clamps [18], position the hose clamps [18] 0.35 (± 0.1) inch from the ends of the flex sleeve hose [10]. If using plastic tie strap [18], secure it with tie strap installation tool, COM-3923.

3) Tighten the hose clamps [18] at 10 to 12 inch-pounds.

(e) Make sure that the ends of duct assemblies [1] and [3], [1] and [5], [1] and [6], and [5] and [8] overlap a minimum of 0.5 inch at each joint where tape [2] is to be installed.

(f) Clean the duct surfaces that are to be taped as follows:

1) Wet a wiper, G50262 with alcohol, B00130 or solvent, B00083 and wipe the duct surfaces until all traces of the removed tape are gone.

2) Use a clean, dry wiper, G50262 and remove any excess alcohol or solvent from the cleaned surfaces.

(g) Apply two to four laps of fiberglass tape, G50344 [2] or two-inch wide, vinyl plastic tape (Venture Tape No. 3959, Venture Tape Corp., 30-T Commerce Road, Rockland, MA 02370) to the center of the joint as follows:

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1) Keep the tape taut and smooth as you apply it.
2) Apply the tape so that it is within the dimensions shown on Figure 701 , View B.

(h) Install the clamp [4] with the screws [14], washers [13] and nuts [12].

(i) Tighten the screws [16] for clamp [9] that holds duct assembly [8].

(j) Tighten hose clamps [15] at 10 to 12 inch-pounds.

SUBTASK 21-22-07-863-001

(2) Supply conditioned air to the flight compartment as follows: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-22-07-710-002

(3) Make sure that the conditioned air outflow from the flight compartment outlets is satisfactory.

SUBTASK 21-22-07-790-001

(4) Make sure that there are no leaks at the joints of the duct assemblies that were disturbed.

(a) If there are leaks, repair the duct assembly joint to stop the leak.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-22-07-410-002

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-22-07-864-007

(2) Do this task to remove conditioned air from the airplane: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

——— END OF TASK ———

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FLIGHT COMPARTMENT GASPER AIR OUTLETS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the gasper air outlets installed in the control cabin.

(2) An installation of the gasper air outlets installed in the control cabin.

B. The gasper air outlet is referred to as the gasper in this procedure.

TASK 21-22-09-000-801

2. Gasper Air Outlet Removal

Figure 401

A. References

Reference	Title
25-11-21 P/B 201	FLIGHT COMPARTMENT PANELS - MAINTENANCE PRACTICES

B. Location Zones

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

C. Prepare for the Removal

SUBTASK 21-22-09-010-001

(1) Remove the flight compartment panel for the applicable gasper (FLIGHT COMPARTMENT PANELS - MAINTENANCE PRACTICES, PAGEBLOCK 25-11-21/201).

D. Gasper Air Outlet Removal

SUBTASK 21-22-09-030-001

(1) For airplanes with the plastic strap, do this step:

(a) Remove the plastic strap that holds the hose to the gasper.

(b) Remove the hose from the gasper.

(c) Discard the plastic strap.

SUBTASK 21-22-09-030-002

(2) Remove the screws that attach the gasper to the panel.

SUBTASK 21-22-09-020-002

(3) Remove the gasper.

END OF TASK

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Gasper Air Outlet Installation
Figure 401/21-22-09-990-801

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TASK 21-22-09-400-801

3. Gasper Air Outlet Installation

Figure 401

A. References

Reference	Title
25-11-21 P/B 201	FLIGHT COMPARTMENT PANELS - MAINTENANCE PRACTICES

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-3923	Tool - Installation, Tie Strap Part #: GS2BL Supplier: 06383 Part #: GS4H Supplier: 06383 Part #: GTS Supplier: 06383 Part #: PPTS Supplier: 06383

C. Consumable Materials

Reference	Description	Specification
G50625	Strap - Plastic, Adjustable, Self-locking, 14.40 Inches (365.76 mm) Long	BACS38K3

D. Location Zones

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

E. Gasper Air Outlet Installation

SUBTASK 21-22-09-400-001

(1) Put the gasper in the panel.

SUBTASK 21-22-09-420-001

(2) Install the screws that attach the gasper to the panel.

SUBTASK 21-22-09-420-003

(3) Install the hose on the gasper as follows:

(a) Loosely put an adjustable plastic strap, G50625 around the hose.

(b) Install the hose onto the gasper.

(c) Position the head of the adjustable plastic strap, G50625 towards the panel assembly to prevent head contact with wiring or wire bundles.

(d) Tighten the adjustable plastic strap, G50625 with a tie strap installation tool, COM-3923.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-22-09-410-001

(1) Install the flight compartment panel for the applicable gasper (FLIGHT COMPARTMENT PANELS - MAINTENANCE PRACTICES, PAGEBLOCK 25-11-21/201).

END OF TASK

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OVERHEAD DISTRIBUTION DUCT - MAINTENANCE PRACTICES

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.

(3) A repair of the insulation for the overhead distribution duct.

B. 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 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. BMS8-385 Type 4 is the preferred foam insulation material that meets the flame propagation requirement. BMS 8-385 Type 6 and BMS 8-300 Type VIII insulation are new, qualified materials optional to BMS 8-385 Type 4.

E. If BMS8-300, Type 1 foam insulation material is used, it must be completely covered with tape that meets the flame propagation requirement.

F. Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

G. 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 MPVF and BMS 5-157 MPEEK are qualified tapes used to secure insulation to ducts.

TASK 21-23-01-000-801

2. Overhead Distribution Duct Removal

(Figure 201)

A. Consumable Materials

Reference	Description	Specification
G50344	Tape - Nitto P-212HD (Formerly Permacel) Glass Cloth	
G50625	Strap - Plastic, Adjustable, Self-locking, 14.40 Inches (365.76 mm) Long	BACS38K3

B. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

C. Prepare for the Removal

SUBTASK 21-23-01-860-007

(1) Make sure these switches, on the P5-10 air conditioning panel, are set to the OFF position:

(a) L PACK

(b) R PACK

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(c) L RECIRC FAN

(d) R RECIRC FAN

SUBTASK 21-23-01-010-007

(2) Remove the ceiling panels as required to get access to the duct.

SUBTASK 21-23-01-010-003

(3) As required, remove the interior furnishings.

D. Overhead Distribution Duct Removal

AKS 001-017

SUBTASK 21-23-01-020-001

(1) Disconnect the flex hoses [10] between the distribution duct [1] and the plenum/nozzle assembly [13] as follows:

(a) Loosen the clamps [11] that hold the flex hoses [10] to the distribution duct [1].

(b) Remove the ends of the flex hoses [10] from the distribution duct [1].

(c) Keep the orifice assemblies [12] for use on the replacement duct assembly.

(d) Make a record of the location of the orifice assemblies [12] so that the correct orifice assembly [12] can be installed in the correct location.

AKS ALL

SUBTASK 21-23-01-030-001

(2) Remove the adjustable plastic straps, G50625 [14] that are on the tape [3] at the joints between the diffuser/hose assemblies and the spuds on the distribution duct [1].

SUBTASK 21-23-01-020-002

(3) Remove the Nitto P-212HD tape, G50344 [3] that connects the diffuser/hose assembly [2] to the distribution duct [1].

SUBTASK 21-23-01-020-003

(4) Remove the strap [4] that hold the distribution duct [1] to the bracket assemblies.

SUBTASK 21-23-01-020-004

(5) Loosen the clamp [5] at each end of the distribution duct [1] that secure the flex sleeves [6] to the duct.

SUBTASK 21-23-01-020-010

(6) Remove the Nitto P-212HD tape, G50344 [3] that connects the flex sleeve [6] to the duct.

SUBTASK 21-23-01-020-005

(7) Support the distribution duct [1] and slide the flex sleeves [6] away from the ends of the distribution duct [1].

SUBTASK 21-23-01-020-006

(8) Remove the distribution duct.

END OF TASK

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Passenger Cabin Overhead Air Distribution Duct Installation
Figure 201/21-23-01-990-801 (Sheet 1 of 2)

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PASSENGER COMPARTMENT (EXAMPLE)

DISTRIBUTION DUCT (EXAMPLE)

A

2394485 S0000552483_V3

Passenger Cabin Overhead Air Distribution Duct Installation
Figure 201/21-23-01-990-801 (Sheet 2 of 2)

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TASK 21-23-01-400-801

3. Overhead Distribution Duct Installation

(Figure 201)

A. References

Reference	Title
21-00-00-800-805	Supply Conditioned Air with a Ground Air Source (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

B. Consumable Materials

Reference	Description	Specification
B00068	Alcohol - Denatured, Ethyl (Ethanol)	AMS 3002, MIL-E-51454 Type II
B00143	Solvent - Trichlorotrifluorethane (Freon)	MIL-C-81302
G50218	Strap - Plastic, Adjustable, Self-locking, 27.50 Inches (698.50MM) Long	BACS38K6
G50344	Tape - Nitto P-212HD (Formerly Permacel) Glass Cloth	
G50625	Strap - Plastic, Adjustable, Self-locking, 14.40 Inches (365.76 mm) Long	BACS38K3

C. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

D. Overhead Distribution Duct Installation

SUBTASK 21-23-01-980-001

(1) Put the distribution duct [1] in its position above the ceiling panels.

SUBTASK 21-23-01-420-001

(2) Slide the flex sleeves [6] onto the ends of the distribution duct [1] as follows:

(a) Make sure each flex sleeve [6] overlaps the duct end by 1.63 ±0.13 inches (41.4 ±3.3 mm).

(b) Install 2-inch wide Nitto P-212HD tape, G50344 [3] over the end of the diffuser duct [1] and the flex sleeve [6].

1) Clean the area on the duct where you will apply the tape with solvent, B00143.

2) Apply two laps of the Nitto P-212HD tape, G50344 to the center of the joint.

NOTE: Make sure the tape is pulled tight and is smooth.

(c) Loosely position the duct clamps [5] 0.38 ±0.13 inches (9.65 ±3.3 mm) from the ends of the flex sleeves [6].

AKS 001-017

SUBTASK 21-23-01-420-002

(3) Install the orifices [12] in the same locations from which they were removed.

SUBTASK 21-23-01-020-007

(4) Install the flex hoses [10] between the distribution duct and the plenum/nozzle assembly [13] as follows:

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AKS 001-017 (Continued)

(a) Move the ends of the flex hoses [10] over the spuds on the distribution duct with the orifices [12] in position.

(b) Position and tighten the clamps [11] to hold the flex hoses [10] to the distribution duct.

AKS ALL

SUBTASK 21-23-01-020-008

(5) Connect the diffuser/hose assemblies [2] to the distribution duct [1] as follows:

(a) Install the diffuser/hose assemblies [2] over the outlets on the distribution duct.

1) Make sure that there is at least 1/2-inch of overlap between each diffuser/hose assembly and the outlet on the distribution duct.

2) Use alcohol, B00068 to clean the area on the outlet on the distribution duct and the area on the diffuser/hose assembly where you will apply the tape [3].

(b) Install two to four laps of 2-inch wide Nitto P-212HD tape, G50344 [3] to the center of the joint over the ends of the diffuser/hose assemblies [2] and the outlets on the distribution duct as follows:

1) Keep the tape taut and smooth as you apply the two to four laps.

(c) Install an adjustable plastic strap, G50625, around the center portion of the tape to hold the diffuser/hose assembly tightly to the outlet on the distribution duct.

SUBTASK 21-23-01-420-003

(6) Install the adjustable plastic strap, G50218 to secure the distribution duct to the bracket assemblies [9].

SUBTASK 21-23-01-420-004

(7) Tighten the clamps [5] that hold the flex sleeves [6] to the ends of the distribution duct.

E. Overhead Distribution Duct Test

SUBTASK 21-23-01-790-001

(1) Do this check of the overhead distribution duct:

(a) If the packs are operational, do the steps that follow for the test of the overhead distribution test:

1) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

2) Put the L and R PACK switches, on the P5-10 air conditioning panel, to the AUTO position

3) Make sure that there is not excessive leakage of air at the connections on the distribution duct that was replaced.

4) Repair any connection in the overhead distribution ducts where airflow can be felt on a hand a minimum of 2 inches away from the surface of a joint.

(b) If the packs are not operational and a test of the overhead distribution ducts is desired, do these steps:

1) Supply ground conditioned air to the distribution system. Do this task: Supply Conditioned Air with a Ground Air Source, TASK 21-00-00-800-805.

2) Make sure that there is not excessive leakage of air at the connections on the distribution duct that was replaced.

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a) Excessive leakage is airflow that can be felt on a hand a minimum of 2 inches away from the surface of a joint.

3) Repair any connection in the overhead distribution ducts where airflow can be felt on a hand a minimum of 2 inches away from the surface of a joint.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-23-01-410-003

(1) Install any interior furnishings that were removed for access.

SUBTASK 21-23-01-410-001

(2) Install all ceiling panels that were removed for access.

END OF TASK

TASK 21-23-01-300-801

4. Overhead Distribution Duct Insulation Repair

(Figure 201)

A. General

(1) The repair of the duct insulation consists of replacement of the tape that holds the insulation to the duct.

(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 Part 25.856, effective September 2, 2003.

(3) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(4) Melamine foam insulation, G50449, BMS8-385, Type 4, Grade 1 is the preferred foam insulation material that meets the flame propagation requirement. Melamine foam insulation, G51169, BMS 8-385, Type 6 and foam insulation, G51170, BMS 8-300, Type VIII insulation is optional to BMS8-385 Type 4.

(5) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327 or tape, G50789 to meet the flammability/flame propagation requirements. Wrap tape, G50327 or tape, G50789 across 100% of the brown hypalon insulation surface on the polyimide foam insulation, G02470.

(6) Do not use BMS8-39 polyurethane foam insulation for repairs due to the degradation in flammability properties over time.

(7) 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.

B. Consumable Materials

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50449	Foam - Flexible Melamine	BMS8-385 Type 4 Grade 1

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(Continued)

Reference	Description	Specification
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

C. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

D. Insulation Repair for Overhead Distribution Duct

SUBTASK 21-23-01-010-002

(1) Remove ceiling panels as required to get access to the distribution duct.

SUBTASK 21-23-01-010-004

(2) As required, remove the interior furnishings for access.

SUBTASK 21-23-01-020-009

(3) Remove all loose tape from the ends or seams of the insulation blanket on the distribution duct.

SUBTASK 21-23-01-420-006

(4) Apply tape to the seams or ends of the insulation blanket as follows:

(a) Put the edges of the insulation together and apply two-inch wide tape, G50327 or tape, G50789 to the seam of the insulation blanket so that no insulation foam edge can be seen.

(b) Apply a circumferential wrap of two-inch wide tape, G50327 or tape, G50789 on the insulation at the ends of the duct so that the tape extends one inch beyond the end of the insulation blanket.

(c) Apply circumferential wraps of one-inch wide tape, G50327 or tape, G50789 along the length of the duct to secure the insulation blanket to the duct.

SUBTASK 21-23-01-410-002

(5) Install all ceiling panels that were removed for access.

SUBTASK 21-23-01-410-004

(6) Install any interior furnishings removed for access.

END OF TASK

TASK 21-23-01-300-802

5. Insulation Replacement/Repair - Overhead Distribution Duct Sidewall Risers Interface Segment

Figure 202

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)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

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B. Consumable Materials

Reference	Description	Specification
B01011	Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding (AMM 20-30-91/201) - Series 91	
G00834	Cloth - Lint-free Cotton	
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket	BMS5-157 Type I Class 1 Grade B Composition MPVF
G50789	Tape - Adhesive Insulation Blanket	BMS5-157 Type I Class 2 Grade C Composition MPEEK

C. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

D. General

SUBTASK 21-23-01-350-004

(1) This procedure provides instructions for either the replacement or repair of the insulation on the duct segments of the overhead distribution system that connect to the sidewall risers. Some airplanes did not have insulation installed on the production line in the area of the spuds that connect to the sidewall risers. For those airplanes, refer to SB 737-21A1139 for instructions to install this insulation.

E. Preparation for the Replacement/Repair of the Insulation

SUBTASK 21-23-01-864-001

(1) Make sure that the L and R PACK switches on the P5-10 air conditioning panel are set to OFF.

SUBTASK 21-23-01-864-002

(2) Remove the pressure from the pneumatic system. To remove the pressure, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-23-01-010-005

(3) Remove the ceiling panels as required to get access to the duct segment of the overhead distribution system that connects to the sidewall risers.

SUBTASK 21-23-01-020-012

(4) If necessary, remove the overhead distribution system duct segment that connects to the sidewall risers ducts. To remove the duct segment, do this task: Overhead Distribution Duct Removal, TASK 21-23-01-000-801.

SUBTASK 21-23-01-020-011

(5) If applicable, remove all tape and insulation from the area around the riser spuds on the duct segment to be repaired.

SUBTASK 21-23-01-110-001

(6) Clean the area around the riser spuds without the insulation as follows:

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WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Wet a lint-free cloth, G00834 with Series 91 solvent, B01011.

(b) Wipe the area around the riser spuds on the duct segment until all traces of dirt, debris, or tape is removed.

(c) Use a lint-free cloth, G00834 and remove all traces of the solvent.

SUBTASK 21-23-01-350-001

(7) Cut the foam insulation, G02470 insulation into four sections to the approximate size necessary to cover the bare surfaces around the riser spuds.

(a) Refer to Figure 202that illustrates the four sections of foam insulation.

SUBTASK 21-23-01-350-002

(8) Position each section in its place and mark the location on the section where the riser spuds will intersect the section.

SUBTASK 21-23-01-350-003

(9) Make small cuts in the areas of the insulation where the riser spuds will fit so that the insulation will fit around the spuds.

(a) Cut from the center of the semicircle that you marked to the circumference of the marked semicircle.

(b) Make the cuts on each of the four sections of insulation.

SUBTASK 21-23-01-420-007

(10) Position the four sections of foam insulation around the riser spuds on the duct segment.

SUBTASK 21-23-01-420-008

(11) Install tape, G50327 or tape, G50789 on the foam insulation as shown on Figure 202and in accordance with these guidelines:

(a) One-inch wide or 2-inch wide advanced insulation blanket tape, G50327 or tape, G50789 must cover 100% of the brown colored “Hypalon” insulation surface.

(b) Cut the tape, G50327 or tape, G50789 as required to fit around the spuds.

(c) Tape may be installed spiral wrapped or lengthwise depending on the installers' preference.

(d) Tape may be installed in any configuration as long as 100% coverage of the foam insulation is obtained.

(e) The tape must overlap all edges and seams of the insulation by a minimum of 1.00 inch (25.4mm).

(f) Wider tape may be cut into narrower strips or any unique shape if desired to assist in complete foam insulation coverage.

(g) Maintain a minimum of 1/8-inch overlap of the tape.

(h) Avoid compression of the foam insulation.

(i) Wrinkles in the tape are acceptable if the wrinkles are pinched together to remove all voids.

(j) Covering of existing insulation tape is not required.

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(k) Tape may be installed to the foam insulation prior to installation of the duct if desired by the installer.

(l) Tape orientation is optional.

SUBTASK 21-23-01-420-009

(12) Install the repaired overhead distribution system duct segment. To install the duct segment, do this task: Overhead Distribution Duct Installation, TASK 21-23-01-400-801.

SUBTASK 21-23-01-780-001

(13) Do this test of the overhead distribution system:

(a) Supply conditioned air to the overhead distribution system. To supply conditioned air, do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

(b) Make sure that there are no leaks at the joints of the repaired duct segment of the overhead distribution assembly.

(c) Repair any leak that you can feel with your hand when it is 12-inches from the duct.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-23-01-864-003

(1) Remove the conditioned air from the airplane if it is not necessary. To remove conditioned air, do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-23-01-410-005

(2) Install all ceiling panels that were removed for access to the overhead distribution system duct segment.

——— END OF TASK ———

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OVERHEAD DISTRIBUTION DUCT SECTION CONNECTING TO SIDEWALL RISERS

A

FOAM INSULATION INSTALLATION
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

B

U34190 S0000192899_V2

Insulation Repair/Replacement - Overhead Distribution Sidewall Risers Connecting Section
Figure 202/21-23-01-990-802 (Sheet 1 of 3)

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OVERHEAD DISTRIBUTION DUCT SECTION CONNECTING TO SIDEWALL RISERS

A

FOAM INSULATION INSTALLATION
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

B

2408289 S0000557453_V1

Insulation Repair/Replacement - Overhead Distribution Sidewall Risers Connecting Section
Figure 202/21-23-01-990-802 (Sheet 2 of 3)

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TAPE INSTALLATION
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE) (TYPICAL)

C

U34191 S0000192904_V2

Insulation Repair/Replacement - Overhead Distribution Sidewall Risers Connecting Section
Figure 202/21-23-01-990-802 (Sheet 3 of 3)

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SIDEWALL RISER DUCTS/TRANSITION DUCT - MAINTENANCE PRACTICES

1. General

A. This procedure consists of these two tasks:

(1) Inspection of the sidewall risers/transition duct installation

(2) Repair of the sidewall risers/transition duct installation

B. There are two configurations of the installation where the sidewall riser ducts connect to the spuds on the transition duct. One configuration consists of the sidewall riser ducts directly connected to the spuds on the transition duct with a clamp to secure each riser duct and spud together. The other configuration uses a flex sleeve between each riser duct and spud with two clamps to secure the connection.

TASK 21-23-02-212-801

2. Sidewall Riser Ducts/Transition Duct 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)

B. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

C. Sidewall Riser Ducts/Transition Duct Inspection

SUBTASK 21-23-02-010-002

(1) If not already done, remove the applicable cabin sidewall panels that are adjacent to the forward wing-to-body fairing.

SUBTASK 21-23-02-780-001

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

SUBTASK 21-23-02-212-001

(3) Make sure the sidewall riser ducts [3] are securely connected to the spuds [6] on the transition duct [7].

SUBTASK 21-23-02-790-002

(4) Make sure that there is no excessive conditioned air leakage from the sidewall riser ducts/transition duct connections.

NOTE: Excessive leakage is leakage that can be felt with the hand 12 inches away from the joint.

SUBTASK 21-23-02-840-004

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

SUBTASK 21-23-02-360-001

(6) If the sidewall riser ducts [3] have separated from the transition duct [7] or there is excessive leakage, do this task: Sidewall Riser Ducts/Transition Duct Repair, TASK 21-23-02-360-801.

END OF TASK

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SIDEWALL RISER DUCTS/TRANSITION DUCT (TYPICAL)
(SIDEWALL PANELS REMOVED)

A

1 RISER DUCTS SHOWN WITHOUT FLEX SLEEVES

2 RISER DUCTS SHOWN WITH FLEX SLEEVES

U30645 S0000190541_V4

Sidewall Riser Ducts/Transition Duct Installation
Figure 201/21-23-02-990-801

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TASK 21-23-02-360-801

3. Sidewall Riser Ducts/Transition Duct Repair

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)

B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	ASTM D-3735 Type III
B00130	Alcohol - Isopropyl	TT-I-735
G00093	Tape - Fiberglass, Silicone Pressure Sensitive Adhesive - G565	
G50218	Strap - Plastic, Adjustable, Self-locking, 27.50 Inches (698.50MM) Long	BACS38K6
G50262	Wiper - Cleaning	BMS15-5

C. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

D. Sidewall Riser Ducts/Transition Duct Repair

SUBTASK 21-23-02-210-001

(1) Make sure that the bottom of the transition duct [7] is approximately 8 inches above the passenger compartment floor.

SUBTASK 21-23-02-211-001

(2) If necessary, reposition the transition duct [7] so that the bottom of the transition duct is properly positioned 8 inches above the passenger compartment floor.

SUBTASK 21-23-02-430-001

(3) If the sidewall riser ducts [3] need to be moved down to be installed on the transition duct spuds [6], do these steps:

(a) Cut the plastic tie straps [8] from the three supports [1] that hold the riser ducts [3].

(b) Position the riser ducts [3] so that they can be installed on the spuds [6].

SUBTASK 21-23-02-360-002

(4) If the riser ducts are installed without a flex sleeve, then do these steps for the repair:

(a) Make sure there is no contamination in the riser ducts or the transition duct spuds.

(b) Remove all tape from the spuds [6] on the transition duct [7].

(c) Remove all remaining parts of tape from the riser ducts and the spuds with a wiper, G50262 that is wet with alcohol, B00130 or solvent, B00083.

(d) Use a dry wiper, G50262 to remove the remaining alcohol, B00130 or solvent, B00083 from the riser ducts and the spuds.

1) Do not allow the alcohol, B00130 or solvent, B00083 to dry on the riser ducts and the spuds.

(e) Wrap the ends of the spuds [6] on the transition duct [7] with G565 tape, G00093 to build-up the diameter of the spud to match the diameter of the riser duct so that there is a tight fit between the two.

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(f) Slide the riser duct [3] over the transition duct spud [6] so that there is a 1-inch overlap between the spud and the riser duct.

1) Shape the round riser duct as necessary to fit over the oblong spud.

(g) Install the clamps [4] that hold the riser ducts and transition duct spuds together as follows:

1) Position the clamps equally between the end of the riser duct and the transition duct bead (0.25 to 0.45 inch from the end of the riser duct).

2) Position the clamps so that the screw head is 45 degrees forward or aft from the station line.

NOTE: The screw head can interfere with the side panel if it is positioned on the station line.

3) Tighten the clamp at 13 to 17 inch-pounds.

SUBTASK 21-23-02-360-003

(5) If the riser ducts are installed with a flex sleeve, then do these steps for the repair:

(a) Make sure there is no contamination in the riser ducts, the flex sleeves, or the transition duct spuds.

(b) If necessary, clean the riser ducts, the flex sleeves, and the spuds with a wiper, G50262 that is wet with alcohol, B00130 or solvent, B00083.

(c) If necessary, use a dry wiper, G50262 to remove the remaining alcohol, B00130 or solvent, B00083 from the riser ducts, the flex sleeves, and the spuds.

1) Do not allow the alcohol, B00130 or solvent, B00083 to dry on the riser ducts, the flex sleeves, and the spuds.

(d) Slide the flex sleeve [5] over the riser duct [3] or transition duct spud [6] so that there is a 1-inch overlap between the duct or spud and the flex sleeve.

1) Shape the round flex sleeve as necessary to fit over the oblong spud.

(e) Install the clamps [4] that hold the riser ducts, the flex sleeves, and the transition duct spuds together as follows:

1) Position the clamps equally between the end of the flex sleeve and the duct bead (0.25 to 0.45 inch from the end of the flex sleeve).

2) Position the clamps so that the screw head is 45 degrees forward or aft from the station line.

NOTE: The screw head can interfere with the side panel if it is positioned on the station line.

3) Tighten the clamp at 13 to 17 inch-pounds.

SUBTASK 21-23-02-430-003

(6) If the riser ducts were moved down and the plastic tie straps removed, install a new adjustable plastic strap, G50218 to hold each riser duct to the supports [1], as required.

E. Post-Repair Check of the Sidewall Riser Ducts/Transition Duct

SUBTASK 21-23-02-710-001

(1) Supply conditioned air to the passenger cabin. Do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-23-02-790-001

(2) Do a check for any leaks in the sidewall riser ducts/transition duct installation.

(a) Repair any leaks with the installation of tape on the spud.

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SUBTASK 21-23-02-840-003

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

F. Put the Airplane Back to It's Usual Condition

SUBTASK 21-23-02-410-002

(1) Install the applicable cabin sidewall panels that were removed for this repair.

END OF TASK

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RETURN AIR GRILLES (DECOMPRESSION VENTS) - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Return air grille removal.

(2) Return air grille installation.

(3) Return air grille baffle removal.

(4) Return air grille baffle installation.

(5) Return air grille and baffle cleaning.

(6) Return air grille baffle inspection.

B. The return air grilles, which are also called decompression vents, are installed near the floor, in the passenger compartment sidewall. The return air grilles 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 grille will be called the grille throughout this procedure.

TASK 21-23-03-000-801

2. Return Air Grille Removal

(Figure 201)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-22-00 P/B 401	PASSENGER SEATS - REMOVAL/INSTALLATION

B. Tools/Equipment

Reference	Description
STD-726	Punch - Awl

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Prepare for the Procedure

SUBTASK 21-23-03-860-002

(1) If necessary, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 21-23-03-000-001

(2) Remove the passenger seats if necessary to gain access to the panels. Do the applicable task: PASSENGER SEATS - REMOVAL/INSTALLATION, PAGEBLOCK 25-22-00/401.

E. Procedure

SUBTASK 21-23-03-020-001

(1) Do the steps that follow to remove the return air grille [1] with latch assembly:

(a) Insert awl punch, STD-726 in the release hole in top edge of the latch face .

1) Push the handle of awl punch, STD-726 up to release the latch on the right of the panel being removed.

2) Push the handle of awl punch, STD-726 up to release the latches on the two adjacent panels to the right.

a) Carefully slide the two adjacent panels to the left.

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(b) Disengage the spring clip on the right hand edge of the panel to be removed.
  1) Insert a small putty knife, or an equivalent tool, behind the right edge of the panel.
  2) Turn the tool inboard to separate the panel edges.
  3) Carefully slide the adjacent panel to the right until the vertical edge is clear.
  4) Remove the tool.

(c) Insert awl punch, STD-726 in the release hole in the top edge of the latch face.
  1) Push the handle of awl punch, STD-726 up to release the latch on the left of the panel being removed.
  2) Push the handle of awl punch, STD-726 up to release the right latch of the adjacent panel to the left.

(d) Disengage the spring clip on the left hand edge of the panel to be removed.
  1) Insert a small putty knife, or an equivalent tool, behind the right edge of the left adjacent panel.
  2) Turn the tool inboard to separate the panel edges.
  3) Carefully slide the panel being removed to the right until the vertical edge is clear.
  4) Remove the tool.

(e) Pull the lower edge of the return air grille [1] down until clear of the window panel.

(f) Remove the return air grille [1].

SUBTASK 21-23-03-020-005

(2) Do the steps that follow to remove the return air grille [2] with clip assembly:
  (a) Move the return air grille [2] up until the clip disengages from the crease beam.
  (b) Move inboard until the return air grille [2] clears the crease beam then lower to clear the window panel.
  (c) Remove the return air grille [2].

END OF TASK

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Return Air Grille Installation
Figure 201/21-23-03-990-803

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TASK 21-23-03-000-802

3. Return Air Grille Baffle Removal

Figure 202

A. Location Zones

Zone	Area
200	Upper Half of Fuselage

B. Procedure

SUBTASK 21-23-03-020-002

(1) Do the steps that follow to remove the baffle [3] from the return air grille [1]:

(a) To remove the return air grill and baffle assembly, do this task: (Return Air Grille Removal, TASK 21-23-03-000-801).

(b) Remove the retainer clips [4], at 5 locations, which attach the top of the baffle [3] to the return air grille [1].

(c) Slide the baffle [3] over the tabs on the return air grille [1].

(d) Remove the baffle [3].

END OF TASK

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Return Air Grille Baffle Installation
Figure 202/21-23-03-990-801

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TASK 21-23-03-100-801

4. Return Air Grille and Baffle Cleaning

A. Tools/Equipment

Reference	Description
STD-1068	Vacuum - High Capacity

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 21-23-03-160-001

(1) Do the steps that follow to clean the return air grille and baffle assembly:

(a) To remove the return air grille and baffle assembly, do this task: (Return Air Grille Removal, TASK 21-23-03-000-801).

(b) Use the high capacity vacuum, STD-1068 to remove the dust, lint, or unwanted material from the return air grille and baffle assembly.

(c) Use the high capacity vacuum, STD-1068 to remove the dust, lint, or unwanted material from the airplane structure behind the return air grill and baffle assembly.

(d) Wipe the return air grille and baffle assembly with a cotton wiper, G00034 that is moist with water.

(e) To install the return air grille and baffle assembly, do this task: (Return Air Grille Installation, TASK 21-23-03-400-802).

END OF TASK

TASK 21-23-03-400-801

5. Return Air Grille Baffle Installation

Figure 202

A. Location Zones

Zone	Area
200	Upper Half of Fuselage

B. Procedure

SUBTASK 21-23-03-420-001

(1) Do the steps that follow to attach the baffle [3] to the return air grille [1]:

(a) Slide the baffle [3] over the tabs on the return air grille [1].

1) Make sure that all the edges of the baffle [3] are secure to the tabs.

(b) Install the retainer clips [4], at 5 locations, which attach the top of the baffle [3] to the return air grille [1]

(c) To install the return air grille and baffle assembly, do this task: (Return Air Grille Installation, TASK 21-23-03-400-802).

END OF TASK

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TASK 21-23-03-400-802

6. Return Air Grille Installation

(Figure 201)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
25-22-00 P/B 401	PASSENGER SEATS - REMOVAL/INSTALLATION

B. Consumable Materials

Reference	Description	Specification
G50156	Tape - Carpet, Double-sided, 16 oz/sq. yd., Black. Storage Life 18 Months.	BMS5-133 Type II Class 2

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Procedure

SUBTASK 21-23-03-420-002

(1) Do the steps that follow to install the return air grille [1] with latch assembly:

(a) Make sure that the latches are in the full open position on the return air grille [1].

(b) Move the top edge of the return air grille [1] into the window panel clip.

(c) Move the return air grille [1] outboard until the lower edge rests against the inner chord of the crease beam.

(d) Make sure the right hand latch is in the open position and the left hand latch is in the closed position on the adjacent grille [1] to the left.

(e) Engage the spring clip into the adjacent panel.

1) Insert a small putty knife, or an equivalent tool, behind the adjacent panel to the left with the bottom edge of the tool level with the bottom edge of the panel.

2) Turn the tool to separate the spring clip from the adjacent panel.

3) Carefully slide the panel, to be installed, to the left on the outboard side of the tool.

4) Make sure there is a 0.5 in. (1.3 cm) overlap between the vertical edges of the two panels.

5) Remove the tool.

(f) Push the latches to the closed position.

SUBTASK 21-23-03-420-003

(2) Do the steps that follow to install the return air grille [2] with clip assembly:

(a) Use tape, G50156 on the rear side of the most inboard air return grille.

1) Make sure that tape, G50156 is in 0.5 in. (12.7 mm) by 12 in. (304.8 mm) strips.

NOTE: The tape helps to hold the adjacent air return grilles together.

(b) Move the top of the return air grille [2] into the window panel clip as high as possible.

(c) Move the return air grille [2] outboard until it is above the crease beam and move the return air grille [2] down until the clip engages the crease beam.

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E. Put the Airplane Back to its Usual Condition

SUBTASK 21-23-03-410-002

(1) Install the passenger seats if you removed them for access. Do the applicable task: PASSENGER SEATS - REMOVAL/INSTALLATION, PAGEBLOCK 25-22-00/401.

SUBTASK 21-23-03-860-001

(2) If required, do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-23-03-710-001

(3) Do an operational check of the applicable electrical equipment.

——— END OF TASK ———

TASK 21-23-03-200-801

7. Return Air Grille Baffle Inspection

A. General

(1) This task has instructions to inspect, remove, and install the baffles on the backside of the return air grilles.

(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 grilles 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 grilles.

B. References

Reference	Title
25-22-00 P/B 401	PASSENGER SEATS - REMOVAL/INSTALLATION

C. Location Zones

Zone	Area
200	Upper Half of Fuselage

D. Prepare for Inspection

SUBTASK 21-23-03-020-003

(1) Remove the passenger seats as needed to get access to the return air grille [1]. Do the applicable task: PASSENGER SEATS - REMOVAL/INSTALLATION, PAGEBLOCK 25-22-00/401.

(2) Remove the return air grille [1] (Return Air Grille Removal, TASK 21-23-03-000-801).

E. Baffle Inspection

SUBTASK 21-23-03-212-001

(1) If the baffle [3] is missing or has damage (tears, punctures, rips, cuts), install a new baffle [3].

SUBTASK 21-23-03-212-002

(2) If the baffle [3] has become partially or fully detached from the backside of the return air grille [1], reinstall the baffle [3] with the attachment hardware.

SUBTASK 21-23-03-212-003

(3) If the baffle [3] has missing or damaged attachment hardware, install new attachment hardware.

SUBTASK 21-23-03-212-004

(4) Inspect the lower sidewall areas for unwanted materials or missing baffle [3] hardware, and clean the areas as applicable before you reinstall the return air grille [1].

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F. Baffle Removal

SUBTASK 21-23-03-020-004

(1) To remove the baffle on the return air grille [1], do this task: (Return Air Grille Baffle Removal, TASK 21-23-03-000-802).

G. Baffle Installation

SUBTASK 21-23-03-420-004

(1) To install the baffle on the return air grille [1], do this task: (Return Air Grille Baffle Installation, TASK 21-23-03-400-801).

H. Put the airplane back to its usual condition

SUBTASK 21-23-03-420-005

(1) Install the return air grille [1] (Return Air Grille Installation, TASK 21-23-03-400-802).

(2) Install the passenger seats if you removed them for access. Do the applicable task: PASSENGER SEATS - REMOVAL/INSTALLATION, PAGEBLOCK 25-22-00/401.

——— END OF TASK ———

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SIDEWALL RISER DUCTS - REMOVAL/INSTALLATION

1. General

A. This task removes the sidewall riser ducts between the transition duct in the mix bay and the main deck overhead distribution duct.

TASK 21-23-04-000-801

2. Sidewall Riser Ducts - Removal

Figure 401

A. General

(1) This procedure contains the tasks to remove and install the sidewall riser ducts between the distribution bay and the overhead distribution ducts.

(a) The sidewall riser duct installation consists of these components:

1) Six ducts
2) Three support assemblies
3) Six flexible hoses
4) Six flexible sleeves
5) A transition duct assembly.
6) Plastic ties

(2) There are three sets of riser ducts, two on the left side of the passenger cabin and one set on the right side.

(3) Access to the sidewall riser ducts is through the sidewall panels directly above the distribution bay in the main passenger cabin.

(4) There are two configurations of the installation where the sidewall riser ducts connect to the spuds on the transition duct. One configuration consists of the sidewall riser ducts directly connected to the spuds on the transition duct with a tie-strap to secure each riser duct and spud together. The other configuration uses a flex sleeve between each riser duct and transition duct spud with an upper tie strap and lower clamp to secure the connections.

B. References

Reference	Title
25-22-00 P/B 401	PASSENGER SEATS - REMOVAL/INSTALLATION
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
231	Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Left

D. Preparation for the Removal of the Sidewall Riser Ducts

SUBTASK 21-23-04-860-002

(1) Remove pressure from the pneumatic system. To remove pressure do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806

SUBTASK 21-23-04-860-001

(2) Make sure that the L PACK and R PACK switches on the P5-10 air conditioning panel are set to OFF.

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SUBTASK 21-23-04-020-003

(3) As required, remove passenger seats in the area of the sidewall riser ducts. To remove the seats, do the applicable task: PASSENGER SEATS - REMOVAL/INSTALLATION, PAGEBLOCK 25-22-00/401.

SUBTASK 21-23-04-020-001

(4) Remove the cabin sidewall panels that are directly above main distribution outlets in the main distribution manifold to the sidewall riser ducts.

SUBTASK 21-23-04-020-002

(5) If necessary, remove the ceiling panels in the passenger cabin above the sidewall panels that you removed.

E. Sidewall Riser Ducts Removal

SUBTASK 21-23-04-020-006

(1) Do all of the applicable steps that follow to disconnect the six flex hoses [1] or flex hoses [15] from the overhead distribution duct [3]:

(a) Remove the tie straps [11] at six locations that connect the flex hoses [1] or flex hoses [15] and the spuds on the overhead distribution duct [3].

SUBTASK 21-23-04-020-008

(2) Do one of the steps that follow to loosen the riser ducts at the three support locations:

(a) Cut the plastic tie straps [11] from the three supports [14] that hold the sidewall riser ducts [4].

1) Discard the plastic tie straps.

(b) Disconnect the supports [14] from structure.

SUBTASK 21-23-04-020-009

(3) Do one of these steps that follows to loosen the sidewall riser ducts [4] at the transition duct [12]:

(a) Cut the six tie straps [11] that attach the sidewall riser ducts [4] to the transition duct [12].

(b) Cut the six tie-straps (tie straps [11] and loosen the six clamps [5] that attach the flex sleeves [6] to the sidewall riser ducts [4].

SUBTASK 21-23-04-020-005

(4) Do these steps to remove the transition duct [12] from the elbow duct [10] from the mix bay:

NOTE: This step is not necessary if the intent of maintenance is to replace just the round ducts as an assembly or an individual duct.

(a) Remove the screws [8] and washers [9].

(b) Remove the transition duct [12] from the elbow duct [10].

END OF TASK

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SIDEWALL RISER DUCTS/TRANSITION DUCT (SIDEWALL PANELS REMOVED)
(EXAMPLE)

A

1 RISER DUCTS SHOWN WITHOUT FLEX SLEEVES

2 RISER DUCTS SHOWN WITH FLEX SLEEVES

2500322 S0000586990_V1

Sidewall Riser Ducts Installation
Figure 401/21-23-04-990-802

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TASK 21-23-04-400-801

3. Sidewall Riser Ducts - 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)
25-22-00 P/B 401	PASSENGER SEATS - REMOVAL/INSTALLATION

B. Consumable Materials

Reference	Description	Specification
A00027	Adhesive - Silicone Rubber, 1 Part, RTV	BAC5010 Type 60
A50126	Primer - Adhesive Bonding (Formerly Dow Corning 1204 Clear)	
B00083	Solvent - VM&P Naphthas	ASTM D-3735 Type III
B00102	Abrasive - Aluminum Oxide Coated Cloth	
B00130	Alcohol - Isopropyl	TT-I-735
C00580	Primer - Adhesive Bonding, RTV - PR-1200 (Formerly DC 1200)	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G50140	Gloves - Protective, Latex or Nitrile	
G50262	Wiper - Cleaning	BMS15-5
G51142	Strap - Plastic, Adjustable, Self-locking, 7.30 Inches (185.42 mm) Long	BACS38K2

C. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

D. Sidewall Riser Ducts Installation

SUBTASK 21-23-04-160-001

(1) If you removed the transition duct [12] with the sidewall riser ducts [4], then remove all the sealant between the faying surfaces of the transition duct [12] and the elbow duct [10] as follows:

(a) Lightly abrade the surfaces with old adhesive with 320 grit or finer abrasive cloth, B00102 until the old adhesive is removed.

(b) Wet a cotton wiper, G00034, with solvent, B00083, or alcohol, B00130, and wipe all faying surfaces until all traces of the old adhesive are gone.

1) Wet the wiper by pouring the solvent onto the wiper, not by dipping the wiper into the solvent source.

(c) Remove excess solvent with a clean cotton wiper, G00034.

(d) Do a final cleaning of the surfaces with a cotton wiper, G00034, wet with alcohol, B00130.

(e) Immediately wipe all cleaned surfaces with a new cotton wiper, G00034, until all alcohol is removed from the surfaces.

(f) Put on clean protective gloves, G50140, and avoid contact with the cleaned surfaces.

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SUBTASK 21-23-04-390-001

(2) Apply the sealant to the faying surfaces on the elbow duct [10] and the transition duct [12] as follows:

(a) Prime the surfaces as follows:

1) Do not thin the primer or use primer that is cloudy or milky.

2) Brush or spray the surfaces with a thin coat of red or clear PR-1200 primer, C00580 or PR 1204 primer, A50126.

3) Allow the primer to dry at 82.5 ±17.5°F (28.1 ±9.8°C) for a minimum of 30 minutes and 4 hours maximum.

(b) Apply a continuous layer of adhesive, A00027, over both surfaces to be bonded.

NOTE: The inside bottom surface of the transition duct and the outside top surface of the elbow duct are the bonding surfaces.

(c) Install the transition duct [12] over the elbow duct [10] as soon as possible after the application of the adhesive.

(d) Install the four washers [9] and screws [8].

(e) Allow the adhesive to cure for a minimum of 24 hours at 82.5 ±17.5°F (28.1 ±9.8°C).

SUBTASK 21-23-04-210-001

(3) Make sure that the bottom of the transition duct [12] is approximately 8 in. (20 cm) above the passenger compartment floor.

SUBTASK 21-23-04-210-002

(4) If necessary, reposition the transition duct [12] so that the bottom of the transition duct is approximately 8 in. (20 cm) above the passenger compartment floor.

SUBTASK 21-23-04-420-012

(5) Position the sidewall riser ducts [4] in their installed position.

SUBTASK 21-23-04-420-009

(6) Do these steps for the sidewall riser duct installations without the flex sleeves [6]:

(a) Make sure there is no contamination in the riser ducts or the transition duct spuds [7].

(b) If necessary, clean the riser ducts and clean the transition duct spuds with a wiper, G50262, that is wet with alcohol, B00130, or solvent, B00083.

(c) Use a dry wiper, G50262, to remove the remaining alcohol, B00130, or solvent, B00083.

(d) Do not allow the alcohol, B00130, or solvent, B00083, to dry on the riser ducts and the transition duct spuds.

(e) Position the riser ducts over the spuds on the transition duct until there is a 1 in. (3 cm) overlap between the ends of the riser ducts and the spuds on the transition duct.

1) Shape the round riser ducts as necessary to fit over the oblong spuds.

(f) Install the tie straps [11] that hold the riser ducts and transition duct spuds together as follows:

1) Position the tie straps [11] equally between the end of the riser duct and the transition duct bead (0.35 ±0.10 in. (0.89 ±0.26 cm) from the end of the riser duct.

2) Position the tie straps [11] so that the locking head is 45 degrees forward or aft from the station line.

NOTE: The locking head can interfere with the sidewall panel if it is positioned on the station line.

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SUBTASK 21-23-04-420-010

(7) Do these steps for the sidewall riser duct installations with the flex sleeves [6]:

(a) Make sure there is no contamination in the riser ducts, the flex sleeves, or the transition duct spuds.

(b) If necessary, clean the riser ducts, the flex sleeves, and the spuds with a wiper, wiper, G50262, that is wet with alcohol, B00130, or solvent,solvent, B00083.

(c) If necessary, use a dry wiper, wiper, G50262, to remove the remaining alcohol, B00130, or solvent, B00083, from the riser ducts, the flex sleeves, and the spuds.

1) Do not allow the alcohol, B00130 or solvent, B00083, to dry on the riser ducts, the flex sleeves, and the spuds.

(d) Slide the flex sleeves [6] over the sidewall riser ducts [4] or transition duct spuds [7] so that there is a 1 in. (3 cm) overlap between the duct or spud and the flex sleeve.

1) Shape the round flex sleeves as necessary to fit over the oblong transition duct spuds.

(e) Install the tie straps [11] (adjustable plastic strap, G51142), upper end and clamps [5], lower end, that hold the riser ducts, the flex sleeves, and the transition duct spuds together as follows:

1) Position the straps and clamps equally between the end of the flex sleeve and the duct bead (0.35 ±0.10 in. (0.89 ±0.26 cm) from the end of the flex sleeve).

2) Position the straps/clamps so that the locking head is 45 degrees forward or aft from the station line.

NOTE: The locking head can interfere with the sidewall panel if it is positioned on the station line.

3) Tighten the clamps [5] at 15 ±2 in-lb (17 ±3 kg-cm).

SUBTASK 21-23-04-420-007

(8) If removed, install the riser duct supports [14].

SUBTASK 21-23-04-410-002

(9) Position the sidewall riser ducts [4] so that they are in the riser duct supports [14].

SUBTASK 21-23-04-420-003

(10) Install the tie straps [11] (adjustable plastic strap, G51142), to hold the sidewall riser ducts [4] in position in the riser duct supports [14].

SUBTASK 21-23-04-420-008

(11) To secure the flex hoses [1] or flex hoses [15] to the overhead distribution duct [3], do these steps:

(a) Make sure that there is no contamination in the flexible hoses or the overhead distribution duct.

(b) If necessary clean the flex hoses and the overhead distribution duct spuds with a wiper, G50262, that is wet with alcohol, B00130, or solvent, B00083.

(c) If necessary, use a dry wiper, G50262, to remove the remaining alcohol, B00130, or solvent, B00083, from the flex hoses and the overhead distribution duct spuds.

(d) Install the flex hoses [1] or flex hoses [15] on the spuds on the overhead distribution duct [3] with at least ½ in. (1 cm) of overlap.

(e) Install the tie straps [11] (adjustable plastic strap, G51142) that hold the flex hoses, and the overhead distribution duct spuds together as follows:

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1) Position the straps equally between the end of the flex hose and the duct bead (0.35 ±0.10 in. (0.89 ±0.26 cm) from the end of the flex hose).

2) Position the straps so that the locking head is 45 degrees forward or aft from the station line.

3) Make sure that the joints are tight and do not slip.

E. Sidewall Riser Ducts Post-Installation Test

SUBTASK 21-23-04-860-003

(1) Supply conditioned air to the passenger cabin. To supply conditioned air, do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-23-04-790-001

(2) Make sure there are no leaks in the sidewall riser ducts as follows:

(a) Do a check for leaks at all the joints in the sidewall risers.

(b) A leak exists if airflow can be felt on a hand a minimum of 2 in. (5 cm) away from a joint or surface.

(c) Make sure there is no whistling, vibration or other excessive air noise from the riser ducts.

(d) Repair any leaks that are found.

SUBTASK 21-23-04-860-004

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

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-23-04-410-001

(1) Install the sidewall panels that were removed for access.

SUBTASK 21-23-04-410-003

(2) Install any ceiling panels that were removed.

SUBTASK 21-23-04-410-004

(3) As required, install passenger seats in the area of the sidewall riser ducts. To install the seats, do the applicable task: PASSENGER SEATS - REMOVAL/INSTALLATION, PAGEBLOCK 25-22-00/401.

END OF TASK

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PASSENGER CABIN 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 Service Units (PSU).

(2) An installation of the gasper air outlets installed in the Passenger Service Units (PSU).

(3) A removal of the gasper air outlets installed in the Lavatory Service Units (LSU).

(4) An installation of the gasper air outlets installed in the Lavatory Service Units (LSU).

B. The gasper air outlet is referred to as the gasper in this procedure.

TASK 21-24-04-000-801

2. Gasper Air Outlet (PSU) Removal

(Figure 401)

A. Location Zones

Zone	Area
200	Upper Half of Fuselage

B. Prepare for the Removal

C. Gasper Air Outlet Removal

SUBTASK 21-24-04-860-003

(1) Get a different gasper and turn the finger grips clockwise to fully retract the air guide.

SUBTASK 21-24-04-860-004

(2) Put the four tabs of the retracted gasper in the four holes of the gasper being removed.

SUBTASK 21-24-04-020-003

(3) Turn the gasper counterclockwise to remove the gasper.

END OF TASK

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PASSENGER COMPARTMENT
(EXAMPLE)

PASSENGER SERVICE UNIT (PSU)
(EXAMPLE)

A

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Gasper Air Outlets (PSU) Installation
Figure 401/21-24-04-990-801 (Sheet 1 of 2)

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Gasper Air Outlets (PSU) Installation
Figure 401/21-24-04-990-801 (Sheet 2 of 2)

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TASK 21-24-04-400-801

3. **Gasper Air Outlet (PSU) Installation**
(Figure 401)

A. **Location Zones**

Zone	Area
200	Upper Half of Fuselage

B. **Gasper Air Outlet Installation**

SUBTASK 21-24-04-420-005

(1) Loosely install the gasper into the PSU gasper panel.

SUBTASK 21-24-04-860-001

(2) Get a different gasper and turn the finger grips clockwise to fully retract the air guide.

SUBTASK 21-24-04-860-002

(3) Put the four tabs of the retracted gasper in the four holes of the new gasper.

SUBTASK 21-24-04-420-004

(4) Use your hand to turn the gasper clockwise and tighten.

C. **Put the Airplane Back to Its Usual Condition**

——— END OF TASK ———

TASK 21-24-04-000-802

4. **Gasper Air Outlet (LSU) Removal**
(Figure 402)

A. **References**

Reference	Title
25-23-13 P/B 401	ATTENDANT/LAVATORY SERVICE UNITS - REMOVAL/INSTALLATION

B. **Location Zones**

Zone	Area
200	Upper Half of Fuselage

C. **Prepare for the Removal**

SUBTASK 21-24-04-010-002

(1) Lower the applicable (LSU) gasper panel from the lavatory ceiling (ATTENDANT/LAVATORY SERVICE UNITS - REMOVAL/INSTALLATION, PAGEBLOCK 25-23-13/401).

D. **Gasper Air Outlet Removal**

SUBTASK 21-24-04-020-002

(1) Do these steps to remove the gasper from the panel.
   (a) Loosen the clamp that holds the hose to the gasper.
   (b) Remove the hose from the gasper.
   (c) Hold the gasper while you remove the retaining ring.
   (d) Remove the gasper from the (LSU) gasper panel.

——— END OF TASK ———

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Gasper Air Outlet Installation
Figure 402/21-24-04-990-802

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TASK 21-24-04-400-802

5. Gasper Air Outlet (LSU) Installation

(Figure 402)

A. References

Reference	Title
25-23-13 P/B 401	ATTENDANT/LAVATORY SERVICE UNITS - REMOVAL/INSTALLATION

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Gasper Air Outlet Installation

SUBTASK 21-24-04-420-003

(1) Do these steps to install the gasper to the panel.

(a) Put the gasper into the (LSU) gasper panel.

(b) Install the retaining ring on the gasper.

(c) Put the clamp on the hose and connect the hose to the gasper.

(d) Tighten the hose clamp.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-24-04-410-002

(1) Install the applicable (LSU) gasper panel (ATTENDANT/LAVATORY SERVICE UNITS - REMOVAL/INSTALLATION, PAGEBLOCK 25-23-13/401).

END OF TASK

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RECIRCULATION SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Recirculation System - Deactivation

(2) Recirculation System - Activation

TASK 21-25-00-800-801

2. Recirculation System - Deactivation

(Figure 201)

A. General

(1) This task will deactivate this component in the recirculation system.

- Recirculation Fan

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
821	Forward Cargo Door

E. Procedure

SUBTASK 21-25-00-010-005

(1) Open this door:

Number	Name/Location
821	Forward Cargo Door

SUBTASK 21-25-00-010-006

(2) Remove the aft center bulkhead liner in the forward cargo compartment. To remove the liner, do this task: (Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801).

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SUBTASK 21-25-00-860-049

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR
E	9	C01156	A/C RECIRC FAN LEFT CONT

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	2	C01023	A/C RECIRC FAN RIGHT CONT.
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR

F. Tryout

NOTE: This tryout is to make sure the recirculation system is in a zero energy state.

SUBTASK 21-25-00-860-050

(1) Do this task: (Supply Electrical Power, TASK 24-22-00-860-811).

SUBTASK 21-25-00-860-051

(2) Make sure that the CAB/UTIL switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

SUBTASK 21-25-00-860-053

(3) Set these switches, on the P5-10 Air Conditioning Panel, to the OFF position:

(a) L PACK

(b) R PACK

(c) L RECIRC FAN

(d) R RECIRC FAN

SUBTASK 21-25-00-860-054

(4) Do this task: (Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801).

SUBTASK 21-25-00-860-055

(5) Make sure the BLEED 1 switch on the P5-10 air conditioning panel is set to ON.

SUBTASK 21-25-00-860-057

(6) Set the L and R RECIRC FAN switches to the AUTO position.

SUBTASK 21-25-00-860-059

(7) Set the L PACK switch and the R PACK switch to the positions shown below and make sure the recirculation fans are off:

NOTE: Put your hand on the fan to feel for vibration. If you do not feel vibration, the fan is off.

Table 201/21-25-00-993-804

L PACK Switch Position	R PACK Switch Position	L Fan Condition	R Fan Condition
OFF	OFF	OFF	OFF
OFF	AUTO	OFF	OFF
OFF	HIGH	OFF	OFF
AUTO	OFF	OFF	OFF
AUTO	AUTO	OFF	OFF

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Table 201/21-25-00-993-804 (Continued)

L PACK Switch Position	R PACK Switch Position	L Fan Condition	R Fan Condition
AUTO	HIGH	OFF	OFF
HIGH	OFF	OFF	OFF
HIGH	AUTO	OFF	OFF
HIGH	HIGH	OFF	OFF

SUBTASK 21-25-00-860-060

(8) Set the L and R PACK switches to the OFF position.

SUBTASK 21-25-00-860-062

(9) Make sure the L RECIRC FAN and R RECIRC FAN switches are in the AUTO position.

SUBTASK 21-25-00-860-063

(10) Make sure the BLEED 1 switch on the P5-10 air conditioning panel is set to OFF.

SUBTASK 21-25-00-860-064

(11) Do this task: (Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806).

SUBTASK 21-25-00-860-065

(12) Do this task: (Remove Electrical Power, TASK 24-22-00-860-812).

END OF TASK

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FLIGHT COMPARTMENT

AIR CONDITIONING
MODULE

A

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Recirculation System
Figure 201/21-25-00-990-803 (Sheet 1 of 2)

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FORWARD CARGO COMPARTMENT

B

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Recirculation System
Figure 201/21-25-00-990-803 (Sheet 2 of 2)

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TASK 21-25-00-800-802

3. **Recirculation System - Activation**

(Figure 201)

A. **General**

(1) This task will activate this component in the recirculation system.

- Recirculation Fan

B. **References**

Reference	Title
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)

C. **Location Zones**

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. **Access Panels**

Number	Name/Location
821	Forward Cargo Door

E. **Procedure**

SUBTASK 21-25-00-860-066

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR
E	9	C01156	A/C RECIRC FAN LEFT CONT

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	2	C01023	A/C RECIRC FAN RIGHT CONT.
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR

SUBTASK 21-25-00-410-005

(2) Install the aft center bulkhead liner in the forward cargo compartment. To install the liner, do this task: (Forward Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-17-400-801).

SUBTASK 21-25-00-410-006

(3) Close this door:

Number	Name/Location
821	Forward Cargo Door

——— END OF TASK ———

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RECIRCULATION SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure does an operational test of the recirculation system.

TASK 21-25-00-710-802-002

2. Recirculation System - Operational Test

(Figure 501)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

C. Prepare for Procedure

SUBTASK 21-25-00-860-008-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-25-00-860-046

(2) Make sure that the CAB/UTIL switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

SUBTASK 21-25-00-860-009-002

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR
E	9	C01156	A/C RECIRC FAN LEFT CONT

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
E	2	C01023	A/C RECIRC FAN RIGHT CONT.
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR

SUBTASK 21-25-00-010-003-002

(4) Open the forward cargo door.

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SUBTASK 21-25-00-010-004-002

(5) Remove the aft center bulkhead liner in the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

D. Procedure

SUBTASK 21-25-00-860-010-002

(1) Set these switches, on the P5-10 Air Conditioning Panel, to the OFF position:

(a) L PACK

(b) R PACK

(c) L RECIRC FAN

(d) R RECIRC FAN

SUBTASK 21-25-00-210-003-002

(2) Make sure the recirculation fans are off.

NOTE: Put your hand on the fan to feel for vibration. If you do not feel vibration, the fan is off.

SUBTASK 21-25-00-910-003-002

(3) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-25-00-860-043-002

(4) Make sure the BLEED 1 switch on the P5-10 air conditioning panel is set to ON.

SUBTASK 21-25-00-210-004-002

(5) Set the L and R RECIRC FAN switches to the AUTO position.

(a) Set the L PACK switch and the R PACK switch to the positions shown below and make sure the applicable fan condition occurs:

NOTE: Put your hand on the fan to feel for vibration. If you feel vibration, the fan is on.

Table 501/21-25-00-993-802-002

L PACK Switch Position	R PACK Switch Position	L Fan Condition	R Fan Condition
OFF	OFF	ON	ON
OFF	AUTO	ON	ON
OFF	HIGH	ON	ON
AUTO	OFF	ON	ON
AUTO	AUTO	ON	ON
AUTO	HIGH	ON	ON
HIGH	OFF	ON	ON
HIGH	AUTO	ON	ON
HIGH	HIGH	OFF	ON

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-00-860-011-002

(1) Set the L and R PACK switches to the OFF position.

SUBTASK 21-25-00-860-012-002

(2) Set the L and R RECIRC FAN switches to the AUTO position.

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SUBTASK 21-25-00-410-003-002

(3) Install the aft center bulkhead liner in the forward cargo compartment. To install the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-17-400-801.

SUBTASK 21-25-00-410-004-002

(4) Close the forward cargo door.

SUBTASK 21-25-00-860-044-002

(5) Make sure the BLEED 1 switch on the P5-10 air conditioning panel is set to OFF.

SUBTASK 21-25-00-910-004-002

(6) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-25-00-860-013-002

(7) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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FLIGHT COMPARTMENT

AIR CONDITIONING
MODULE

A

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Recirculation System Test
Figure 501/21-25-00-990-802-002 (Sheet 1 of 2)

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Recirculation System Test
Figure 501/21-25-00-990-802-002 (Sheet 2 of 2)

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RECIRCULATION 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 recirculation air filter

(2) An installation of the recirculation air filter.

C. There are two recirculation air filters installed behind the end wall lining at the aft end of the forward cargo compartment. The air filters are in filter housings on the left and the right side of the mix manifold bay.

TASK 21-25-01-000-801

2. Recirculation Air Filter Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)

B. Tools/Equipment

Reference	Description
STD-421	Goggles - Eye Protection
STD-739	Respirator
STD-1129	Coveralls - Tyvek/Saranex 23-p (Approved Cotton Substitute), No Pockets

C. Consumable Materials

Reference	Description	Specification
G00624	Bag - Plastic, General Purpose	
G50140	Gloves - Protective, Latex or Nitrile	

D. Location Zones

Zone	Area
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

E. Prepare for the Removal

SUBTASK 21-25-01-860-003

(1) Put the L RECIRC FAN and the R RECIRC FAN switches, on the P5-10 panel, to the OFF position.

SUBTASK 21-25-01-865-001

(2) To prevent inadvertent recirculation fan operation during removal of the recirculation filter,

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR

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(Continued)

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	9	C01156	A/C RECIRC FAN LEFT CONT

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	2	C01023	A/C RECIRC FAN RIGHT CONT.
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR

SUBTASK 21-25-01-010-001

(3) Open the forward cargo compartment door.

SUBTASK 21-25-01-010-006

(4) Remove the left and right aft bulkhead liners in the forward cargo compartment. To remove the liners, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

SUBTASK 21-25-01-941-001

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.

(5) Before you touch the filter, put on the personal protective equipment listed below:

(a) coverall (approved cotton substitute), STD-1129

(b) eye protection goggles, STD-421

(c) respirator, STD-739

(d) protective gloves, G50140.

F. Recirculation Air Filter Removal

SUBTASK 21-25-01-020-011

(1) Remove the left recirculation air filter as follows:

(a) Remove the two screws [6] from the retainer [7] on the filter housing.

(b) Remove the retainer [7] from the filter housing.

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.

CAUTION: DO NOT LET THE RECIRCULATION FILTER TOUCH THE WIRE BUNDLE THAT IS IMMEDIATELY FORWARD OF THE FILTER. THE FORWARD AND AFT LOWER OUTBOARD CORNERS OF THE FILTER HAVE SHARP EDGES. THE SHARP EDGES CAN CUT THE INSULATION ON THE WIRE BUNDLE.

(c) Remove the recirculation air filter [3] from the filter housing [8].

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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.

(d) Put the filter in a disposable, plastic bag, G00624, and discard in accord with airline, local health, safety and regulatory procedures for disposal of material.

SUBTASK 21-25-01-020-012

(2) Remove the right recirculation air filter as follows:

(a) Release the quarter-turn fasteners [1] which attach the access panel [2] to the filter housing.

(b) Remove the access panel [2].

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.

(c) Remove the recirculation air filter [3] from the filter housing [4].

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.

(d) Put the filter in a disposable, plastic bag, G00624, bag and discard in accord with airline, local health, safety and regulatory procedures for disposal of material.

G. Post-Filter Removal Cleanup

SUBTASK 21-25-01-020-020

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 disposable, plastic bag, G00624, and discard them in accord with airline, local health, safety and regulatory procedures for disposal of material.

SUBTASK 21-25-01-110-001

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 CARGO COMPARTMENT
(LEFT AND RIGHT AFT BULKHEAD LINER REMOVED)

A

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Recirculation Air Filter Installation
Figure 401/21-25-01-990-803 (Sheet 1 of 3)

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Recirculation Air Filter Installation
Figure 401/21-25-01-990-803 (Sheet 2 of 3)

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G44451 S0006562539_V3

Recirculation Air Filter Installation
Figure 401/21-25-01-990-803 (Sheet 3 of 3)

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TASK 21-25-01-400-801

3. Recirculation Air Filter Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Filter	21-25-01-01-465	AKS ALL

C. Location Zones

Zone	Area
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

D. Recirculation Air Filter Installation

SUBTASK 21-25-01-420-007

(1) Install the left recirculation air filter as follows:

(a) Make sure there is no unwanted material or contamination in the filter housing [8] which could cause damage to the recirculation fan.

CAUTION: DO NOT LET THE RECIRCULATION FILTER TOUCH THE WIRE BUNDLE THAT IS IMMEDIATELY FORWARD OF THE FILTER. THE FORWARD AND AFT LOWER OUTBOARD CORNERS OF THE FILTER HAVE SHARP EDGES. THE SHARP EDGES CAN CUT THE INSULATION ON THE WIRE BUNDLE.

(b) Put the new recirculation air filter [3] in the filter housing [8].

(c) Do these checks of the spring clips:

1) Make sure that the spring clips apply pressure to keep the filter in position.

2) Make sure that all spring clips are installed and not damaged.

(d) Hold the retainer [7] in its position on the filter housing.

(e) Install the two screws [6] for the retainer [7] on the filter housing.

SUBTASK 21-25-01-420-008

(2) Install the right recirculation air filter as follows:

(a) Make sure there is no unwanted material or contamination in the filter housing [4] which could cause damage to the recirculation fan.

(b) Put the new recirculation air filter [3] in the filter housing [4].

(c) Do these checks of the spring clips:

1) Make sure that the spring clips apply pressure to keep the filter in position.

2) Make sure that all spring clips are installed and not damaged.

(d) Put the access panel [2] in its position and turn the quarter-turn fasteners [1] to attach the access panel [2] to the filter housing [4].

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E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-01-010-010

(1) Install the left and right aft bulkhead liners in the forward cargo compartment. To install the liners, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-17-400-801.

SUBTASK 21-25-01-410-003

(2) Close the forward cargo compartment door.

SUBTASK 21-25-01-865-002

(3) To restore recirculation fan operation after installation of the recirculation filter,

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR
E	9	C01156	A/C RECIRC FAN LEFT CONT

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	2	C01023	A/C RECIRC FAN RIGHT CONT.
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR

SUBTASK 21-25-01-860-007

(4) Put the RECIRC FAN switches in the AUTO position.

——— END OF TASK ———

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RECIRCULATION FAN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the recirculation fan.

(2) An installation of the recirculation fan.

B. There are two recirculation fans installed behind the liner at the aft end of the forward cargo compartment.

TASK 21-25-02-000-801

2. Recirculation Fan Removal

(Figure 401)

A. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)

B. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 21-25-02-860-007

(1) To remove the left recirculation fan, do this step:

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR

SUBTASK 21-25-02-860-008

(2) To remove the right recirculation fan, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR

SUBTASK 21-25-02-010-001

(3) Open the forward cargo door.

SUBTASK 21-25-02-010-002

(4) Remove the aft center bulkhead liner in the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

D. Recirculation Fan Removal

SUBTASK 21-25-02-020-001

(1) Disconnect the electrical connector [4] from the recirculation fan [1].

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SUBTASK 21-25-02-020-002

(2) Remove the nut [10], washer [9], and washer [8].

SUBTASK 21-25-02-020-003

(3) Remove the jumper [5] from the recirculation fan [1].

SUBTASK 21-25-02-020-004

(4) Remove the coupling [2] and the sleeve [3].

SUBTASK 21-25-02-020-005

(5) Remove the coupling [6] and the sleeve [7].

SUBTASK 21-25-02-020-006

(6) Remove the recirculation fan [1].

END OF TASK

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Recirculation Fan Installation
Figure 401/21-25-02-990-801 (Sheet 1 of 2)

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RIGHT RECIRCULATION FAN
(LEFT RECIRCULATION FAN IS OPPOSITE)

B

BONDING JUMPER

C

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Recirculation Fan Installation
Figure 401/21-25-02-990-801 (Sheet 2 of 2)

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TASK 21-25-02-400-801

3. Recirculation Fan Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Recirculation fan	21-25-02-08-100	AKS ALL

C. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

D. Recirculation Fan Installation

SUBTASK 21-25-02-980-001

(1) Put the recirculation fan [1] in its position:

(a) Position the recirculation fan [1] so the flow arrow points inboard.

(b) Turn the recirculation fan [1] so you can install the electrical connector [4] and the jumper [5].

SUBTASK 21-25-02-420-001

(2) Install the coupling [6] and the sleeve [7].

SUBTASK 21-25-02-420-002

(3) Install the coupling [2] and the sleeve [3].

SUBTASK 21-25-02-020-007

(4) Put the jumper [5] on the stud of the recirculation fan [1].

SUBTASK 21-25-02-020-008

(5) Install the washer [8], washer [9], and nut [10].

SUBTASK 21-25-02-420-003

(6) Install the electrical connector [4] on the recirculation fan [1].

E. Recirculation Fan Installation Test

SUBTASK 21-25-02-860-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-25-02-860-041

(2) Make sure that the CAB/UTIL switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

SUBTASK 21-25-02-860-009

(3) If you replaced the left recirculation fan, do this step:

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR

SUBTASK 21-25-02-860-010

(4) If you replaced the right recirculation fan, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR

SUBTASK 21-25-02-860-004

(5) Make sure the L PACK and R PACK switches on the P5-10 Air Conditioning Panel are in the OFF position.

SUBTASK 21-25-02-860-011

(6) Put the applicable RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

SUBTASK 21-25-02-710-001

(7) Make sure the recirculation fan operates.

NOTE: Put your hand on the fan to feel for vibration. If you feel vibration, the fan is on.

SUBTASK 21-25-02-790-001

(8) Make sure there are no leaks around the fan connections.

(a) If you find a leak you must repair it.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-02-010-003

(1) Close the forward cargo door.

SUBTASK 21-25-02-410-001

(2) Install the aft center bulkhead liner in the forward cargo compartment. To install the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-17-400-801.

SUBTASK 21-25-02-860-006

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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RECIRCULATION FAN CHECK VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the recirculation fan check valve.

(2) An installation of the recirculation fan check valve.

B. There are two recirculation fan check valves installed behind the liner at the aft end of the forward cargo compartment.

TASK 21-25-03-000-801

2. Recirculation Fan Check Valve Removal

(Figure 401)

A. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)

B. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 21-25-03-860-042

(1) Put the L RECIRC FAN and the R RECIRC FAN switches on the P5-10 air conditioning panel to OFF.

SUBTASK 21-25-03-860-008

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR

SUBTASK 21-25-03-860-002

(3) Make sure the L PACK and R PACK switches on the P5-10 Air Conditioning Panel are in the OFF position.

SUBTASK 21-25-03-010-001

(4) Open the forward cargo door.

SUBTASK 21-25-03-010-002

(5) Remove the aft center bulkhead liner in the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

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D. Recirculation Fan Check Valve Removal

SUBTASK 21-25-03-020-001

(1) Remove the coupling [2] and sleeve [3], at two locations.

SUBTASK 21-25-03-020-002

(2) Remove the recirculation fan check valve [1].

——— END OF TASK ———

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Recirculation Fan Check Valve Installation
Figure 401/21-25-03-990-801 (Sheet 1 of 2)

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RIGHT RECIRCULATION FAN CHECK VALVE
(LEFT RECIRCULATION FAN CHECK VALVE IS OPPOSITE)

B

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Recirculation Fan Check Valve Installation
Figure 401/21-25-03-990-801 (Sheet 2 of 2)

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TASK 21-25-03-400-801

3. Recirculation Fan Check Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Check valve	21-25-03-01-015	AKS ALL

C. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

D. Recirculation Fan Check Valve Installation

SUBTASK 21-25-03-420-001

(1) Put the recirculation fan check valve [1] in its position.

NOTE: Make sure the flow arrow points inboard.

SUBTASK 21-25-03-420-002

(2) Install the coupling [2] and sleeve [3] at two locations.

E. Recirculation Fan Check Valve Leakage Test

SUBTASK 21-25-03-860-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-25-03-860-034

(2) Make sure that the CAB/UTIL switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

SUBTASK 21-25-03-860-009

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR

SUBTASK 21-25-03-860-005

(4) Make sure the L PACK and R PACK switches on the P5-10 Air Conditioning Panel are in the OFF position.

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SUBTASK 21-25-03-860-010

(5) Put the applicable L or R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

SUBTASK 21-25-03-790-001

(6) Make sure there are no leaks around the check valve connections.

(a) If you find a leak you must repair it.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-03-410-001

(1) Install the aft center bulkhead liner in the forward cargo compartment. To Install the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-17-400-801.

SUBTASK 21-25-03-010-004

(2) Close the forward cargo door.

SUBTASK 21-25-03-860-007

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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RECIRCULATION FAN CHECK VALVE - INSPECTION/CHECK

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has one task. The task contains the information to do an inspection/check of the recirculation fan check valve.

TASK 21-25-03-200-801

2. Recirculation Fan Check Valve Inspection

Figure 601 or Figure 602

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
21-25-03-000-801	Recirculation Fan Check Valve Removal (P/B 401)
21-25-03-400-801	Recirculation Fan Check Valve Installation (P/B 401)

B. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right

C. Preparation for Recirculation Fan Check Valve Inspection

SUBTASK 21-25-03-860-036

(1) Make sure the L PACK and R PACK switches on the P5-10 Air Conditioning Panel are in the OFF position.

SUBTASK 21-25-03-860-038

(2) Put the L RECIRC FAN and R RECIRC FAN switches on the P5-10 Air Conditioning Panel in the OFF positions.

SUBTASK 21-25-03-860-039

(3) Open these circuit breakers to prevent inadvertent recirculation fan operation when you remove the recirculation fan check valve:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR

D. Recirculation Fan Check Valve Removal

SUBTASK 21-25-03-020-004

(1) Remove the recirculation fan check valve. To remove the recirculation fan check valve, do this task: Recirculation Fan Check Valve Removal, TASK 21-25-03-000-801.

E. Recirculation Fan Check Valve Inspection

SUBTASK 21-25-03-210-002

(1) Examine the recirculation fan check valve as follows:

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(a) Use your finger or a pencil to push on each flapper to open them.

(b) Make sure that each flapper opens freely and moves smoothly to the stop tube.

(c) Make sure that each flapper closes smoothly and touches fully on the face of the check valve body.

(d) Make sure that there is no damage to the flappers:

1) Measure the thickness of the area on the flappers where the flappers contact the stop tube.

2) Make sure that the stop tube contact area on the flappers is a minimum of 0.020 inch thick (0.508 mm).

3) Repair or replace check valves that do not meet the minimum thickness.

(e) Make sure that there is no corrosion or lint on the flappers or the hinge pin.

F. Recirculation Fan Check Valve Installation

SUBTASK 21-25-03-420-003

(1) Install the recirculation fan check valve. To install the recirculation fan check valve, do this task: Recirculation Fan Check Valve Installation, TASK 21-25-03-400-801.

——— END OF TASK ———

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Recirculation Fan Check Valve Installation
Figure 601/21-25-03-990-804 (Sheet 1 of 2)

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RIGHT RECIRCULATION FAN CHECK VALVE
(LEFT RECIRCULATION FAN CHECK VALVE IS OPPOSITE)

B

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Recirculation Fan Check Valve Installation
Figure 601/21-25-03-990-804 (Sheet 2 of 2)

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Recirculation Fan Check Valve Inspection
Figure 602/21-25-03-990-805

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GALLEY VENTILATION MUFFLER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the forward and aft galley ventilation mufflers.

(2) An installation of the forward and aft galley ventilation mufflers.

B. There is a galley ventilation muffler installed above the lowered ceiling panels in the forward and aft entry ways.

TASK 21-26-01-100-801

2. Galley Ventilation Muffler Removal

(Figure 401, Figure 402)

A. Location Zones

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

B. Prepare for the Removal

SUBTASK 21-26-01-010-001

(1) Lower the forward or aft entry light assembly to get access to the forward or aft galley ventilation muffler, as applicable.

C. Galley Ventilation Muffler Removal

SUBTASK 21-26-01-010-002

(1) Do these steps to remove the forward galley ventilation muffler [1] from above the forward lowered ceiling:

(a) Loosen the clamp [3].

(b) Remove the strap [6].

(c) Slide the flex hoses [2] and [5] away from the ends of the muffler [1].

(d) Remove the clamp [4].

(e) Remove the muffler [1].

SUBTASK 21-26-01-020-001

(2) Do these steps to remove the aft galley ventilation muffler [23] from above the aft lowered ceiling:

(a) Remove the straps [22] that attach the flex hose [21] to the muffler [23].

(b) Remove the strap [25] that attaches the flex sleeve [24] to the muffler [23].

(c) Remove the straps [22] that attach the muffler [23] to the support structure.

(d) Remove the muffler [23].

END OF TASK

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Forward Galley Ventilation Muffler Installation
Figure 401/21-26-01-990-801 (Sheet 1 of 2)

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FORWARD GALLEY VENTILATION MUFFLER

B

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Forward Galley Ventilation Muffler Installation
Figure 401/21-26-01-990-801 (Sheet 2 of 2)

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VIEW THROUGH
PASSENGER DOOR NO. 3

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Aft Galley Ventilation Muffler Installation
Figure 402/21-26-01-990-802

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TASK 21-26-01-400-801

3. **Galley Ventilation Muffler Installation**
(Figure 401, Figure 402)

A. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Muffler	21-26-01-10-010	AKS ALL
6	Strap	25-21-71-57-050	AKS 007, 008, 011, 012, 014, 019, 026, 028-999
		25-21-71-71-050	AKS 001-006, 009, 010, 013, 015-018, 020-025, 027
22	Strap	21-26-51-09-055	AKS ALL
23	Muffler	21-26-51-09-090	AKS ALL
25	Strap	21-26-51-09-060	AKS ALL

B. **Location Zones**

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

C. **Galley Ventilation Muffler Installation**

SUBTASK 21-26-01-420-001

(1) Do these steps to install the forward galley ventilation muffler [1]:
   (a) Put the muffler [1] in position on the lowered ceiling.
   (b) Install the clamp [4].
   (c) Slide the flex hoses [2] and [5] onto the ends of the muffler [1].
   (d) Position the clamp [3] and tighten.
   (e) Install the strap [6].

SUBTASK 21-26-01-420-002

(2) Do these steps to install the aft galley ventilation muffler [23]:
   (a) Put the muffler [23] into its position on the support structure.
   (b) Install the straps [22] to attach the muffler [23] to the support structure.
   (c) Slide the flex hose [21] and the flex sleeve [24] onto the ends of the muffler [23].
   (d) Install the straps [22] to attach the flex hose [21] to the muffler [23].
   (e) Install the strap [25] to attach the flex sleeve [24] to the muffler [23].

SUBTASK 21-26-01-410-001

(3) Close the forward or aft entry light assembly, as applicable.

——— END OF TASK ———

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GALLEY CEILING VENTILATION GRILL - MAINTENANCE PRACTICES

1. **General**

A. This procedure has these tasks:

(1) A removal of the galley ceiling ventilation grill

(2) A cleaning of the galley ceiling ventilation grill.

(3) An installation of the galley ceiling ventilation grill.

TASK 21-26-03-000-801

2. **Galley Ceiling Ventilation Grill Removal**

Figure 201

A. Location Zones

Zone	Area
200	Upper Half of Fuselage

B. Galley Ceiling Ventilation Grill Removal

SUBTASK 21-26-03-210-001

(1) Locate the galley ventilation grill in the ceiling of either the forward passenger door entry way or the aft passenger door entry way.

SUBTASK 21-26-03-030-001

(2) Remove the two screws that retain the ventilation grill to the plenum above the ceiling.

SUBTASK 21-26-03-020-001

(3) Remove the ventilation grill from the ceiling.

END OF TASK

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Galley Ceiling Ventilation Grill Removal
Figure 201/21-26-03-990-802 (Sheet 1 of 2)

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GALLEY VENTILATION GRILL
(EXAMPLE)

C

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Galley Ceiling Ventilation Grill Removal
Figure 201/21-26-03-990-802 (Sheet 2 of 2)

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TASK 21-26-03-100-801

3. Galley Ceiling Ventilation Grill Cleaning

A. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
B00541	Cleaner - General Purpose Household Detergent	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

B. Preparation for Galley Ceiling Ventilation Grill Cleaning

SUBTASK 21-26-03-000-001

(1) Remove the ventilation grill to be cleaned from the ceiling of the forward passenger entry way or the aft passenger entry way. To remove the ventilation grill, do this task: Galley Ceiling Ventilation Grill Removal, TASK 21-26-03-000-801.

C. Galley Ceiling Ventilation Grill Cleaning

SUBTASK 21-26-03-100-001

(1) Do these steps to clean the ventilation grill:

(a) Prepare a cleaning solution of a general purpose household detergent cleaner, B00541 diluted with water in accordance with the instructions on the detergent container.

(b) Clean the grill with a cotton wiper cotton wiper, G00034 that is moist with the cleaning solution.

(c) If the cotton wiper, G00034 with the cleaning solution did not remove all dirt deposits or contamination from the grill, clean the grill with a cotton wiper, G00034 that is moist with alcohol, B00130.

(d) Flush the grill with clean water until all traces of the detergent solution or alcohol are removed.

(e) Dry the grill with a dry, clean cotton wiper, G00034.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-26-03-420-001

(1) Install the ventilation grill in the entry way ceiling. To install the ventilation grill, do this task: Galley Ceiling Ventilation Grill Installation, TASK 21-26-03-400-801.

——— END OF TASK ———

TASK 21-26-03-400-801

4. Galley Ceiling Ventilation Grill Installation

Figure 201

A. Location Zones

Zone	Area
200	Upper Half of Fuselage

B. Galley Ceiling Ventilation Grill Installation

SUBTASK 21-26-03-420-002

(1) Put the ventilation grill in its position in the ceiling in either the forward or aft passenger entry way.

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SUBTASK 21-26-03-420-003

(2) Install the two screws to retain the ventilation grill to the plenum above the ceiling.

——— END OF TASK ———

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EQUIPMENT COOLING SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Equipment Cooling System - Deactivation

(2) Equipment Cooling System - Activation

TASK 21-27-00-800-801

2. Equipment Cooling System - Deactivation

(Figure 201)

A. General

(1) This task will deactivate these components in the equipment cooling system.

- Equipment Cooling Supply Fan
- Equipment Cooling Exhaust Fan
- Equipment Cooling Overboard Exhaust Valve

B. References

Reference	Title
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Procedure

SUBTASK 21-27-00-010-007

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-27-00-860-370

CAUTION: OBEY THE SPECIFIED TIME LIMIT. IF YOU IGNORE THE TIME LIMIT, DAMAGE TO EQUIPMENT WILL OCCUR.

(2) Make sure if you operate the electrical/electronic equipment in the electrical/electronic equipment bay that you close the fan circuit breaker in less than 5 minutes after you open it.

NOTE: Electrical/electronic equipment can become too hot.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
A	8	C00935	EQPT CLG SPLY FAN PWR-ALTN
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM
D	12	C00837	EQPT CLG EXH FAN PWR-ALTN

F. Tryout

NOTE: This tryout is to make sure these components in the equipment cooling system are in a zero energy state.

- Equipment Cooling Supply Fan
- Equipment Cooling Exhaust Fan
- Equipment Cooling Overboard Exhaust Valve

NOTE: Wait a minimum of 60 seconds after deactivation before you do the tryout steps.

SUBTASK 21-27-00-860-371

(1) For the equipment cooling supply and exhaust fans, do these steps:

(a) Do this task: (Supply Electrical Power, TASK 24-22-00-860-811).

(b) Make sure that the EQUIP COOLING SUPPLY switch on the equipment cooling panel is in the NORM position.

(c) Make sure that the EQUIP COOLING EXHAUST switch on the equipment cooling panel is in the NORM position.

(d) Make sure that the EQUIP COOLING SUPPLY OFF light is on.

(e) Make sure that the EQUIP COOLING EXHAUST OFF light is on.

(f) Put the EQUIP COOLING SUPPLY switch in the ALTN position.

(g) Put the EQUIP COOLING EXHAUST switch in the ALTN position.

(h) Wait a minimum of 60 seconds.

(i) Make sure that the EQUIP COOLING SUPPLY OFF light is on.

(j) Make sure that the EQUIP COOLING EXHAUST OFF light is on.

(k) Do this task: (Remove Electrical Power, TASK 24-22-00-860-812).

SUBTASK 21-27-00-860-372

(2) For the equipment cooling overboard exhaust valve, do these steps:

(a) Do this task: (Supply Electrical Power, TASK 24-22-00-860-811).

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

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(c) Make sure that these switches, on the P5-10 Air Conditioning Panel, are in the AUTO position:

1) L RECIRC FAN
2) R RECIRC FAN

(d) Make sure that these switches, on the P5 Overhead Panel, are in the NORM position:

1) EQUIP COOLING, EXHAUST
2) EQUIP COOLING, SUPPLY

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.

(e) Do this task: (Put the Airplane in the Air Mode, TASK 32-09-00-860-801).

(f) Put these switches to the HIGH position:

1) L PACK
2) R PACK

(g) Put the L RECIRC FAN switch to the OFF position.

(h) Put the R RECIRC FAN switch to the OFF position.

(i) Make sure that the equipment cooling overboard exhaust valve is in the NORMAL position.

NOTE: Look at the indicator on the valve actuator to see the position of the valve.

(j) Make sure that the equipment cooling overboard exhaust valve is NOT in the SMOKE position.

NOTE: Look at the indicator on the valve actuator to see the position of the valve.

(k) Do this task: (Remove Electrical Power, TASK 24-22-00-860-812).

END OF TASK

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FLIGHT COMPARTMENT

EQUIPMENT COOLING PANEL

A

AIR CONDITIONING MODULE

B

CABIN PRESSURE CONTROL MODULE

C

M08354 S0006562586_V2

Equipment Cooling System
Figure 201/21-27-00-990-802

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TASK 21-27-00-800-802

3. **Equipment Cooling System - Activation**
(Figure 201)

A. **General**

(1) This task will activate these components in the equipment cooling system.

- Equipment Cooling Supply Fan
- Equipment Cooling Exhaust Fan
- Equipment Cooling Overboard Exhaust Valve

B. **Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. **Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

D. **Procedure**

SUBTASK 21-27-00-860-373

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
A	8	C00935	EQPT CLG SPLY FAN PWR-ALTN
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM
D	12	C00837	EQPT CLG EXH FAN PWR-ALTN

SUBTASK 21-27-00-410-012

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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) Equipment Cooling Operational Tests
         NOTE: You need to do these tasks to do a complete system test of the equipment cooling system.
         (a) Equipment Cooling Low Flow Sensors Operational Test
         (b) Equipment Cooling Fans Operational Test
         (c) Equipment Cooling Overboard Exhaust Valve Operational Test.
         (d) Flight Compartment Display Unit Air Flow Test
      (2) Equipment Cooling Scheduled Maintenance Tests for Task Cards
         NOTE: You do not need to do the scheduled maintenance tests for task cards to do a complete system test of the equipment cooling system.
         (a) Alternate Equipment Cooling Supply Fan Operational Test
         (b) Alternate Equipment Cooling Exhaust Fan Operational Test
         (c) Equipment Cooling Overboard Exhaust Valve Smoke Clearance Mode Operational Test.

TASK 21-27-00-700-801

2. Equipment Cooling Low Flow Sensors - Operational Test
   (Figure 501)

   A. General
      (1) This task does a test of the equipment cooling supply and exhaust low flow sensors.

   B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (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 24-22-00-860-811.

SUBTASK 21-27-00-860-002

(2) Make sure the equipment cooling supply and exhaust OFF lights on the equipment cooling panel are not on.

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SUBTASK 21-27-00-710-001

CAUTION: MAKE SURE THAT YOU CLOSE THE FAN CIRCUIT BREAKER WITHIN 5 MINUTES AFTER YOU OPEN IT. IF YOU LEAVE THE CIRCUIT BREAKER OPEN MORE THAN 5 MINUTES, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(3) Do these steps to do a check of the equipment cooling supply low flow sensor:

(a) Open this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

(b) Make sure the equipment cooling supply OFF light comes on after 20 to 60 seconds.

(c) Close this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

(d) Make sure the equipment cooling supply OFF light goes out within 20 seconds.

SUBTASK 21-27-00-710-002

CAUTION: MAKE SURE THAT YOU CLOSE THE FAN CIRCUIT BREAKER WITHIN 5 MINUTES AFTER YOU OPEN IT. IF YOU LEAVE THE CIRCUIT BREAKER OPEN MORE THAN 5 MINUTES, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(4) Do these steps to do a check of the equipment cooling exhaust low flow sensor:

(a) Open this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

(b) Make sure the equipment cooling exhaust OFF light comes on after 20 to 60 seconds.

(c) Close this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

(d) Make sure the equipment cooling exhaust OFF light goes out within 20 seconds.

(e) If the MASTER CAUTION or AIR COND annunciator lights are on, push and release one of the two MASTER CAUTION lights.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-00-860-003

(1) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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FLIGHT COMPARTMENT

EQUIPMENT COOLING PANEL

A

AIR CONDITIONING MODULE

B

CABIN PRESSURE CONTROL MODULE

C

M08354 S0006562586_V2

Equipment Cooling System - Adjustment/Test
Figure 501/21-27-00-990-801

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TASK 21-27-00-700-802

3. **Equipment Cooling Fans - Operational Test**
(Figure 501)

A. **General**

(1) This task does a test of these fans:

(a) Equipment cooling normal supply fan

(b) Equipment cooling alternate supply fan

(c) Equipment cooling normal exhaust fan

(d) Equipment cooling alternate exhaust fan

B. **References**

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. **Location Zones**

Zone	Area
212	Flight Compartment - Right

D. **Procedure**

SUBTASK 21-27-00-860-004

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-00-860-005

(2) Make sure the equipment cooling supply and exhaust OFF lights on the equipment cooling panel are not on.

SUBTASK 21-27-00-860-006

(3) Make sure the EQUIP COOLING SUPPLY switch on the equipment cooling panel is in the NORMAL position.

SUBTASK 21-27-00-860-007

(4) Make sure the EQUIP COOLING EXHAUST switch on the equipment cooling panel is in the NORM position.

SUBTASK 21-27-00-860-008

CAUTION: MAKE SURE THAT YOU CLOSE THE FAN CIRCUIT BREAKER WITHIN 5 MINUTES AFTER YOU OPEN IT. IF YOU LEAVE THE CIRCUIT BREAKER OPEN MORE THAN 5 MINUTES, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(5) Open this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

SUBTASK 21-27-00-710-003

(6) Make sure the equipment cooling supply OFF light comes on after 20 to 60 seconds.

SUBTASK 21-27-00-860-009

(7) Put the EQUIP COOLING SUPPLY switch in the ALTN position.

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SUBTASK 21-27-00-710-004

(8) Make sure the equipment cooling supply OFF light goes out within 20 seconds.

SUBTASK 21-27-00-860-010

(9) Close this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

SUBTASK 21-27-00-860-011

(10) Put the EQUIP COOLING SUPPLY switch in the NORM position.

SUBTASK 21-27-00-860-012

CAUTION: MAKE SURE THAT YOU CLOSE THE FAN CIRCUIT BREAKER WITHIN 5 MINUTES AFTER YOU OPEN IT. IF YOU LEAVE THE CIRCUIT BREAKER OPEN MORE THAN 5 MINUTES, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(11) Open this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

SUBTASK 21-27-00-710-005

(12) Make sure the equipment cooling exhaust OFF light comes on after 20 to 60 seconds.

SUBTASK 21-27-00-860-013

(13) Put the EQUIP COOLING EXHAUST switch in the ALTN position.

SUBTASK 21-27-00-710-006

(14) Make sure the equipment cooling exhaust OFF light goes out within 20 seconds.

SUBTASK 21-27-00-860-014

(15) Close this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

SUBTASK 21-27-00-860-113

(16) Put the EQUIP COOLING EXHAUST switch in the NORM position.

SUBTASK 21-27-00-860-015

(17) If the MASTER CAUTION or AIR COND annunciator lights are on, push and release one of the two MASTER CAUTION lights.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-00-860-016

(1) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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TASK 21-27-00-700-803

4. Equipment Cooling Overboard Exhaust Valve - Functional Test

(Figure 501)

A. General

(1) This task does a functional test of the equipment cooling overboard exhaust valve. The interfaces of the exhaust fans, supply fans and recirculation fans with the overboard exhaust valve system are also tested.

B. References

Reference	Title
12-15-21-600-803-002	Crew Oxygen Cylinder Replacement (P/B 301)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Preparation for the Functional Test of the Overboard Exhaust Valve

SUBTASK 21-27-00-010-001

(1) Get access to the equipment cooling overboard exhaust valve, the equipment cooling supply fans and the equipment cooling exhaust fans as follows:

(a) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(b) Remove the access panel on the top of the raised platform that is just aft and outboard of the electronic equipment access door.

(c) Remove the crew oxygen system cylinder. To remove the oxygen cylinder, do this task: Crew Oxygen Cylinder Replacement, TASK 12-15-21-600-803-002.

SUBTASK 21-27-00-010-003

(2) Get access to the recirculation fan in the mix bay at the aft end of the forward cargo compartment as follows:

(a) Open the forward cargo compartment door.

(b) Remove the aft bulkhead liner in the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

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F. Functional Test of the Overboard Exhaust Valve

SUBTASK 21-27-00-861-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-00-860-198

(2) Make sure that the CAB/UTIL switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

SUBTASK 21-27-00-860-212

(3) Make sure that the airplane is in the ground mode.

SUBTASK 21-27-00-860-200

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR
E	9	C01156	A/C RECIRC FAN LEFT CONT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	15	C01355	LANDING GEAR AIR/GND SYS 2
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	12	C01116	EQPT COOLING SUPPLY FAN CONT-NORMAL
C	13	C01117	EQPT COOLING SUPPLY FAN CONTROL-ALTN
C	14	C01435	EQPT COOLING EXHAUST FAN CONT NORMAL
C	15	C01436	EQPT COOLING EXHAUST FAN CONT ALTN
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT
E	2	C01023	A/C RECIRC FAN RIGHT CONT.
E	4	C00884	AC RECIRC FAN RIGHT CABIN AIR
F	3	C01270	PRESSURIZATION CONTROL AUTO 1

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
A	8	C00935	EQPT CLG SPLY FAN PWR-ALTN
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM
D	12	C00837	EQPT CLG EXH FAN PWR-ALTN

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Make sure that this circuit breaker is open and has safety tag:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	6	C01269	PRESSURIZATION CONTROL MANUAL

SUBTASK 21-27-00-860-186

(5) Set the EQUIP COOLING SUPPLY and EXHAUST switches on the equipment cooling panel to the NORM positions.

SUBTASK 21-27-00-860-171

(6) Set these switches on the P5-10 Air Conditioning Panel to the AUTO position:

(a) L PACK

(b) R PACK

(c) R RECIRC FAN

SUBTASK 21-27-00-720-001

(7) Make sure that the position indicator on the overboard exhaust valve actuator is in the NORMAL position.

SUBTASK 21-27-00-860-172

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.

(8) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-27-00-860-174

(9) Set the R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the OFF position.

SUBTASK 21-27-00-720-002

(10) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-860-176

(11) Set the R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

SUBTASK 21-27-00-860-177

(12) Set the L PACK switch on the P5-10 Air Conditioning Panel to the HIGH position.

SUBTASK 21-27-00-720-003

(13) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-860-178

(14) Set the L PACK switch on the P5-10 Air Conditioning Panel to the AUTO position.

SUBTASK 21-27-00-860-179

(15) Set the R PACK switch on the P5-10 Air Conditioning Panel to the HIGH position.

SUBTASK 21-27-00-720-004

(16) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-860-180

(17) Set the L PACK switch on the P5-10 Air Conditioning Panel to the HIGH position.

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SUBTASK 21-27-00-720-005

(18) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-720-007

(19) Make sure that equipment cooling normal exhaust fan,M98, is operating.

(a) Put your hand on the fan case to feel that it operates.

SUBTASK 21-27-00-720-008

(20) Make sure that equipment cooling normal supply fan, M1322, is operating.

(a) Put your hand on the fan case to feel that it operates.

SUBTASK 21-27-00-860-189

(21) Put the EQUIP COOLING SUPPLY and EXHAUST fan switches to the ALTN positions.

SUBTASK 21-27-00-720-019

(22) Make sure that equipment cooling alternate exhaust fan, M99, is operating.

(a) Put your hand on the fan case to feel that it operates.

SUBTASK 21-27-00-720-020

(23) Make sure that the equipment cooling alternate supply fan, M1323, is operating.

(a) Put your hand on the fan case to feel that it operates.

SUBTASK 21-27-00-720-006

(24) Do these steps to send an OEV close enable signal to the overboard exhaust valve:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1

(b) Unlatch and lower the P5 forward overhead panel to get access to the back of the P5-6 pressurization control panel.

(c) Disconnect connector D10726 from the P5-6 cabin pressurization control panel.

(d) Connect a jumper between pins 26 and 27 of connector D10726 on wire bundle W2510.

SUBTASK 21-27-00-720-009

(25) Make sure that the position indicator on the overboard exhaust valve actuator is in the NORMAL position.

SUBTASK 21-27-00-720-010

(26) Do these steps to send an OEV open enable signal (OEV position indicator at the SMOKE position) to the overboard exhaust valve:

(a) Make a record of the time immediately after you do the next step.

(b) Remove the jumper between pins 26 and 27 of connector D10726 on wire bundle W2510.

(c) Reconnect connector D10726 to the P5-6 cabin pressurization control panel.

(d) Raise and latch the P5 forward overhead panel.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1

(f) Make sure that after 4-1/2 to 5-1/2 minutes that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

NOTE: This does a check of the 5 minute delay on relay R649.

SUBTASK 21-27-00-860-188

(27) Set the R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the OFF position.

(a) Make a record of the time when you do this step.

SUBTASK 21-27-00-720-011

(28) Make sure the equipment cooling alternate M1323 supply fan is not operating.

SUBTASK 21-27-00-720-012

(29) Make sure the equipment cooling alternate M99 exhaust fan is operating.

SUBTASK 21-27-00-720-014

(30) Make sure that the EQUIP COOLING SUPPLY OFF light is not on after 30 seconds since the R RECIRC FAN was set to OFF.

SUBTASK 21-27-00-720-016

(31) Make sure that the equipment cooling alternate M1323 supply fan is operating within 4-1/2 to 5-1/2 minutes of when the R RECIRC FAN was set to OFF.

SUBTASK 21-27-00-720-017

(32) Make sure that the exhaust fan is operating.

SUBTASK 21-27-00-720-044

(33) Make sure that the EQUIP COOLING SUPPLY and EXHAUST OFF lights are not on.

SUBTASK 21-27-00-860-213

(34) Do these steps:

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	16	C01523	CARGO FIRE FWD DET B
C	17	C01522	CARGO FIRE FWD DET A
C	18	C01525	CARGO FIRE AFT DET B
C	19	C01524	CARGO FIRE AFT DET A

SUBTASK 21-27-00-720-018

(35) Push and hold the TEST switch on the P8 Cargo Fire Control Panel until the FWD and AFT red cargo fire lights come on.

(a) Make a record of the time when you do this step.

SUBTASK 21-27-00-860-220

(36) Set the R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

SUBTASK 21-27-00-860-222

(37) Set the R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the OFF position.

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SUBTASK 21-27-00-720-021

(38) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-720-022

(39) Make sure the alternate M1323 supply fan is not operating.

(a) Put your hand on the fan case to feel that it is not operating.

SUBTASK 21-27-00-720-023

(40) Make sure the alternate M99 exhaust fan is not operating.

(a) Put your hand on the fan case to feel that it is not operating.

SUBTASK 21-27-00-860-190

(41) Put the EQUIP COOLING EXHAUST switch to the NORM position.

SUBTASK 21-27-00-720-025

(42) Make sure the normal exhaust fan M98 is not operating.

(a) Put your hand on the fan case to feel that it is not operating.

SUBTASK 21-27-00-720-026

(43) Make sure that the EQUIP COOLING SUPPLY OFF light is not on after 30 seconds since the recirculation fan switch was set to OFF.

SUBTASK 21-27-00-720-028

(44) Make sure that the EQUIP COOLING EXHAUST OFF light is not on after 30 seconds since the RECIRC FAN was set to OFF.

SUBTASK 21-27-00-720-024

(45) Make sure that after 4-1/2 to 5-1/2 minutes that the equipment cooling alternate supply fan M1323 is operating.

(a) Put your hand on the fan case to feel that it is operating.

SUBTASK 21-27-00-860-191

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

SUBTASK 21-27-00-860-192

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

(a) Make a record of the time when you do this step.

SUBTASK 21-27-00-720-031

(48) Make sure the equipment cooling alternate supply fan M1323 is not operating:

(a) Put your hand on the fan case to feel that it is not operating.

SUBTASK 21-27-00-720-032

(49) Make sure the equipment cooling normal exhaust fan M98 is operating:

(a) Put your hand on the fan case to that it is operating.

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SUBTASK 21-27-00-720-033

(50) Make sure that 30 seconds from when circuit breaker C01444 was closed that the EQUIP COOLING SUPPLY OFF light is not on.

SUBTASK 21-27-00-720-034

(51) Make sure that 4-1/2 to 5-1/2 minutes from when circuit breaker C01444 was closed that the equipment cooling alternate supply fan M1323 is operating.

SUBTASK 21-27-00-860-193

(52) Set the EQUIP COOLING SUPPLY switch to the NORMAL position.

SUBTASK 21-27-00-720-035

(53) Make sure the equipment cooling normal supply fan M1322 is operating:

(a) Put your hand on the fan case to feel that it is operating.

SUBTASK 21-27-00-860-194

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	16	C01523	CARGO FIRE FWD DET B
C	17	C01522	CARGO FIRE FWD DET A

SUBTASK 21-27-00-860-195

(55) Push and hold the TEST switch on the P8 cargo fire control panel located in the aisle stand on the flight deck until the AFT cargo compartment smoke detector light comes on.

SUBTASK 21-27-00-720-036

(56) Make sure the equipment cooling normal supply fan M1322 is operating:

(a) Put your hand on the fan case to feel that it is operating.

SUBTASK 21-27-00-720-037

(57) Make sure the equipment cooling normal exhaust fan M98 is operating:

(a) Put your hand on the fan case to feel that it is operating.

SUBTASK 21-27-00-720-030

(58) Make sure that the overboard exhaust valve position indicator is in the NORMAL position.

SUBTASK 21-27-00-860-218

(59) Open this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

SUBTASK 21-27-00-860-197

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

(a) Make a record of the time you do this step.

SUBTASK 21-27-00-720-039

(61) Make sure the equipment cooling normal supply fan M1322 is not operating:

(a) Put your hand on the fan case to feel that the fan is not operating.

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SUBTASK 21-27-00-720-040

(62) Make sure the equipment cooling normal exhaust fan M98 is operating:

(a) Put your hand on the fan case to feel that the fan is operating.

SUBTASK 21-27-00-720-041

(63) Make sure the overboard exhaust valve position indicator is in the SMOKE position

SUBTASK 21-27-00-720-042

(64) Make sure that after 30 seconds the EQUIP COOLING SUPPLY OFF light is not on.

SUBTASK 21-27-00-720-043

(65) Make sure that after 4-1/2 to 5-1/2 minutes that the equipment cooling normal supply fan M1322 is operating:

(a) Put your hand on the fan case to feel that the fan is operating.

SUBTASK 21-27-00-720-038

(66) Do these checks of the recirculation fan:

(a) Make sure the right recirculation fan is not operating.

(b) Set the R RECIRC FAN switch to AUTO.

(c) Make sure the right recirculation fan is operating.

1) Feel the fan case to make sure the fan is operating.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

(e) Set the R RECIRC FAN switch to OFF.

1) Make a record of the time when you do this step.

(f) Make sure the right recirculation fan is operating.

1) Put your hand on the fan case to feel that it is operating.

(g) Make sure the equipment cooling normal supply fan M1322 is not operating.

1) Put your hand on the fan case to feel that it is not operating.

(h) Make sure the equipment cooling normal exhaust fan is operating.

1) Put your hand on the fan case to feel that it is operating.

(i) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

(j) Make sure that after 30 seconds the EQUIP COOLING SUPPLY OFF light is not on.

(k) Make sure that after 4-1/2 to 5-1/2 minutes that the equipment cooling normal supply fan M1322 is operating.

1) Put your hand on the fan case to feel that it is operating.

SUBTASK 21-27-00-860-205

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	16	C01523	CARGO FIRE FWD DET B
C	17	C01522	CARGO FIRE FWD DET A

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(Continued)

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	18	C01525	CARGO FIRE AFT DET B
C	19	C01524	CARGO FIRE AFT DET A

SUBTASK 21-27-00-720-045

(68) Push and hold the TEST switch on the P8 cargo fire control panel located in the aisle stand on the flight deck until the FWD and AFT cargo compartment smoke detector lights come on.

SUBTASK 21-27-00-720-046

(69) Make sure the equipment cooling normal supply fan M1322 is operating.

(a) Put your hand on the fan case to feel that it is operating.

SUBTASK 21-27-00-720-047

(70) Make sure the equipment cooling normal exhaust fan M98 is operating.

(a) Put your hand on the fan case to feel that it is operating.

SUBTASK 21-27-00-720-048

(71) Make sure that the position indicator on the overboard exhaust valve actuator is in the NORMAL position.

SUBTASK 21-27-00-720-049

(72) Make sure the recirculation fan is not operating.

(a) Put your hand on the fan case to feel that it is operating.

SUBTASK 21-27-00-720-050

(73) Make sure the right recirculation fan is not operating.

(a) Put your hand on the fan case to feel that it is operating.

SUBTASK 21-27-00-860-206

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

SUBTASK 21-27-00-860-207

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

(a) Make a record of the time you do this step.

SUBTASK 21-27-00-720-051

(76) Make sure the equipment cooling normal supply fan M1322 is not operating.

(a) Put your hand on the fan case to feel that it is not operating.

SUBTASK 21-27-00-720-052

(77) Make sure the equipment cooling exhaust fan M98 is operating.

(a) Put your hand on the fan case to feel that it is operating.

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SUBTASK 21-27-00-720-053

(78) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-720-054

(79) Do this check of the recirculation fan:

(a) Make sure that the right recirculation fan is operating.

1) Put your hand on the fan case to feel that the fan is operating.

SUBTASK 21-27-00-720-055

(80) Make sure that 30 seconds from when circuit breaker C01444 was closed that the EQUIP COOLING SUPPLY OFF light is not on.

SUBTASK 21-27-00-720-056

(81) Make sure that 4-1/2 to 5-1/2 minutes after circuit breaker C01444 was closed that the equipment cooling normal supply fan M1322 is operating.

(a) Put your hand on the fan case to feel that the fan is operating.

SUBTASK 21-27-00-860-208

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	16	C01523	CARGO FIRE FWD DET B
C	17	C01522	CARGO FIRE FWD DET A

SUBTASK 21-27-00-720-057

(83) Push and hold the TEST switch on the P8 cargo fire control panel located in the aisle stand on the flight deck until the AFT cargo compartment smoke detector light comes on.

SUBTASK 21-27-00-720-058

(84) Make sure the equipment cooling normal supply fan M1322 is operating.

(a) Put your hand on the fan case to feel that the fan is operating.

SUBTASK 21-27-00-720-059

(85) Make sure the equipment cooling normal exhaust fan M98 is operating.

(a) Put your hand on the fan case to feel that the fan is operating.

SUBTASK 21-27-00-720-060

(86) Make sure that the position indicator on the overboard exhaust valve actuator is in the NORMAL position.

SUBTASK 21-27-00-720-061

(87) Do this check of the recirculation fan:

(a) Make sure that the right recirculation fan is not operating.

1) Put your hand on the fan case to feel that the fan is not operating.

SUBTASK 21-27-00-860-209

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

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SUBTASK 21-27-00-860-210

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

(a) Make a record of the time that you do this step.

SUBTASK 21-27-00-720-062

(90) Make sure the equipment cooling normal supply fan M1322 is not operating.

(a) Put your hand on the fan case to feel that the fan is not operating.

SUBTASK 21-27-00-720-063

(91) Make sure the equipment cooling normal exhaust fan M98 is operating.

(a) Put your hand on the fan case to feel that the fan is operating.

SUBTASK 21-27-00-720-064

(92) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-720-065

(93) Do this check of the recirculation fan:

(a) Make sure that the right recirculation fan is operating.

1) Put your hand on the fan case to feel that the fan is operating.

SUBTASK 21-27-00-720-066

(94) Make sure that 30 seconds after circuit breaker C01444 was closed that the EQUIP COOLING SUPPLY OFF light is not on.

SUBTASK 21-27-00-720-067

(95) Make sure that 4-1/2 to 5-1/2 minutes after circuit breaker C01444 was closed that the equipment cooling normal supply fan M1322 is operating.

(a) Put your hand on the fan case to feel that the fan is operating.

SUBTASK 21-27-00-720-068

(96) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-27-00-720-069

(97) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-860-211

(98) Set the recirculation fan as follows:

(a) Set the R RECIRC FAN switch to AUTO.

SUBTASK 21-27-00-720-070

(99) Make sure that the position indicator on the overboard exhaust valve actuator is in the NORMAL position.

G. Put the Airplane Back to its Usual Condition

SUBTASK 21-27-00-860-023

(1) Put these switches to the AUTO position:

(a) L PACK

(b) R PACK

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(c) R RECIRC FAN

SUBTASK 21-27-00-860-081

(2) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-27-00-410-001

(3) Install the access panel in the electronics equipment bay on the top of the raised platform that you removed.

SUBTASK 21-27-00-410-002

(4) Install the crew oxygen system cylinder. To install the oxygen cylinder, do this task: Crew Oxygen Cylinder Replacement, TASK 12-15-21-600-803-002.

SUBTASK 21-27-00-410-003

(5) Install the forward cargo compartment aft bulkhead liner. To install the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-17-400-801

SUBTASK 21-27-00-410-004

(6) Close the forward cargo compartment door.

SUBTASK 21-27-00-410-005

(7) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-27-00-860-027

(8) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

TASK 21-27-00-700-806

5. Flight Compartment Display Unit Air Flow Test

A. General

(1) This task makes sure that the following display units have sufficient cooling air flow:

(a) Captain's Inboard (ND DU)

(b) Captain's Outboard (PFD DU)

(c) Upper Center (PRI ENGINE DU)

(d) Lower Center (SECONDARY ENGINE DU)

(e) First Officer's Inboard (ND DU)

(f) First Officer's Outboard (PFD DU)

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
31-62-11-000-801	Display Unit Removal (P/B 401)
31-62-11-400-801	Display Unit Installation (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left

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(Continued)

Zone	Area
212	Flight Compartment - Right

D. Procedure

SUBTASK 21-27-00-860-150

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-00-860-151

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	12	C01116	EQPT COOLING SUPPLY FAN CONT-NORMAL
C	13	C01117	EQPT COOLING SUPPLY FAN CONTROL-ALTN

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
A	8	C00935	EQPT CLG SPLY FAN PWR-ALTN
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM
D	12	C00837	EQPT CLG EXH FAN PWR-ALTN

SUBTASK 21-27-00-860-152

(3) Make sure the equipment cooling supply and exhaust OFF lights on the equipment cooling panel are not on.

SUBTASK 21-27-00-860-153

(4) Make sure the EQUIP COOLING SUPPLY switch on the equipment cooling panel is in the NORMAL position.

SUBTASK 21-27-00-860-154

(5) Make sure the EQUIP COOLING EXHAUST switch on the equipment cooling panel is in the NORM position.

SUBTASK 21-27-00-750-001

(6) Do these steps to make sure the display units are receiving sufficient cooling airflow:

(a) Remove the six display units in the flight compartment. To remove the display units, do this task: Display Unit Removal, TASK 31-62-11-000-801.

(b) Make sure you can feel airflow coming out of the cooling duct at the back of the captain's PFD and ND Display Units in the P1 panel.

NOTE: There is sufficient cooling airflow if you can feel air movement with your hand 3 inches (7.6 cm) from the air inlet or outlet.

(c) Make sure you can feel airflow coming out of the cooling duct at the back of the Secondary Engine Display Unit on the P9 panel.

(d) Make sure you can feel airflow going into the cooling duct at the back of the Primary Engine Display Unit on the P2 panel.

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(e) Make sure you can feel airflow going into the cooling ducts at the back of the first officer's PFD and ND Display Units in the P3 panel.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-00-420-001

(1) Install the display units. To install the display units, do this task: Display Unit Installation, TASK 31-62-11-400-801.

SUBTASK 21-27-00-860-155

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

TASK 21-27-00-890-801

6. Alternate Equipment Cooling Supply Fan - Operational Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task does a test of the equipment cooling alternate supply fan.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Procedure

SUBTASK 21-27-00-860-028

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-00-860-029

(2) Make sure the equipment cooling supply OFF light on the equipment cooling panel is not on.

SUBTASK 21-27-00-860-030

(3) Make sure the EQUIP COOLING SUPPLY switch on the Equipment Cooling Panel is in the NORM position.

SUBTASK 21-27-00-860-031

CAUTION: MAKE SURE THAT YOU CLOSE THE FAN CIRCUIT BREAKER WITHIN 5 MINUTES AFTER YOU OPEN IT. IF YOU LEAVE THE CIRCUIT BREAKER OPEN MORE THAN 5 MINUTES, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

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SUBTASK 21-27-00-710-009

(5) Make sure the equipment cooling supply OFF light comes on after 20 to 60 seconds.

SUBTASK 21-27-00-860-032

(6) Put the EQUIP COOLING SUPPLY switch in the ALTN position.

SUBTASK 21-27-00-710-010

(7) Make sure the equipment cooling supply OFF light goes out within 20 seconds.

SUBTASK 21-27-00-860-033

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

SUBTASK 21-27-00-860-118

(9) Put the EQUIP COOLING SUPPLY switch in the NORM position.

SUBTASK 21-27-00-860-034

(10) If the MASTER CAUTION or AIR COND annunciator lights are on, push and release one of the two MASTER CAUTION lights.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-00-860-035

(1) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

TASK 21-27-00-700-804

7. Alternate Equipment Cooling Exhaust Fan - Operational Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task does a test of the equipment cooling alternate exhaust fan.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Procedure

SUBTASK 21-27-00-860-036

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-00-860-037

(2) Make sure the equipment cooling exhaust OFF light on the equipment cooling panel is not on.

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SUBTASK 21-27-00-860-038

(3) Make sure the EQUIP COOLING EXHAUST switch on the Equipment Cooling Panel is in the NORM position.

SUBTASK 21-27-00-860-039

CAUTION: MAKE SURE THAT YOU CLOSE THE FAN CIRCUIT BREAKER WITHIN 5 MINUTES AFTER YOU OPEN IT. IF YOU LEAVE THE CIRCUIT BREAKER OPEN MORE THAN 5 MINUTES, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

SUBTASK 21-27-00-710-011

(5) Make sure the equipment cooling exhaust OFF light comes on after 20 to 60 seconds.

SUBTASK 21-27-00-860-040

(6) Put the EQUIP COOLING EXHAUST switch in the ALTN position.

SUBTASK 21-27-00-710-012

(7) Make sure the equipment cooling exhaust OFF light goes out within 20 seconds.

SUBTASK 21-27-00-860-041

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

SUBTASK 21-27-00-860-042

(9) Put the EQUIP COOLING EXHAUST switch in the NORM position.

SUBTASK 21-27-00-860-119

(10) If the MASTER CAUTION or AIR COND annunciator lights are on, push and release one of the two MASTER CAUTION lights.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-00-860-043

(1) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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TASK 21-27-00-700-805

8. Equipment Cooling Overboard Exhaust Valve Smoke Clearance Mode - Operational Test

(Figure 501)

A. General

(1) This task does a test of the equipment cooling overboard exhaust valve in the smoke removal mode.

(2) When persons are in the airplane during this test, they must be in good physical condition. When a person feels pain during a pressure change, you must make the pressure stable immediately or it must be lowered. Do this until the person can make the pressure equal in their ears, or be removed from the airplane.

B. References

Reference	Title
21-00-00-800-804	Remove Conditioned Air Supplied by a Cooling Pack (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

D. Procedure

SUBTASK 21-27-00-860-044

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-00-860-215

(2) Extend the trailing edge flaps to position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 21-27-00-860-082

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) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-27-00-860-045

WARNING: MAKE SURE YOU OBEY THE PROPER PROCEDURES FOR COMPRESSION AND DECOMPRESSION WHEN YOU USE PERSONS IN A PRESSURIZED AREA. PRESSURE CHANGES THAT CAUSE PAIN MUST NOT BE DONE. IF YOU DO NOT OBEY THE PRECAUTIONS, INJURY TO PERSONS CAN OCCUR.

(4) Do these steps to pressurize the airplane cabin to 2.0 Psi (13.79 kPa) differential pressure:

(a) Close all exterior doors.

(b) Make sure the flight compartment sliding windows are closed.

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(c) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

(d) Set the L PACK and R PACK switches on the P5-10 air conditioning panel to the AUTO position.

(e) Set the R RECIRC FAN switch on the P5-10 air conditioning panel to the AUTO position.

(f) Set the CONT CAB, FWD CAB and AFT CAB temperature selectors on the P5-17 cabin temperature control panel to the AUTO position.

(g) Put the Cabin Pressurization Switch on the Cabin Pressure Control Panel to the MAN position.

(h) Begin to close the cabin pressurization outflow valve with the cabin pressurization valve OPEN and CLOSE switch on the Cabin Pressure Control Panel:

1) Look at the VALVE position indicator to see the position of the valve.

WARNING: DO NOT ALLOW THE INDICATION ON THE CABIN CLIMB GAUGE TO SHOW MORE THAN 1000 FEET PER MINUTE. WHEN YOU ALLOW A RATE OF CABIN CLIMB OF MORE THAN 1000 FEET PER MINUTE, DAMAGE TO THE AIRPLANE STRUCTURE OR INJURY TO PERSONNEL CAN OCCUR.

(i) Slowly increase the cabin pressure with the OPEN/CLOSE toggle switch on the P5-6 panel so that the indication on the CABIN CLIMB gauge shows a rate of approximately 300 feet per minute.

1) Do not change the cabin pressure at a rate of more than 1000 feet per minute.

(j) Increase the cabin pressure until the cabin DIFF PRESS indicator on the Cabin Pressure Control Panel shows a differential pressure of 2.0 psi (13.79 kPa).

SUBTASK 21-27-00-860-083

(5) Make sure the L PACK and R PACK switches on the P5-10 Air Conditioning Panel are in the AUTO position.

SUBTASK 21-27-00-860-084

(6) Make sure the R RECIRC FAN switch, on the P5-10 Air Conditioning Panel, is in the AUTO position.

SUBTASK 21-27-00-710-020

(7) Make sure there is no air flow out of the equipment cooling overboard exhaust valve port:

(a) Put your hand at the valve exhaust port on the bottom of the airplane to feel for airflow.

NOTE: The exhaust port is just aft of the E/E bay access door.

SUBTASK 21-27-00-860-096

WARNING: DO NOT ALLOW THE INDICATION ON THE CABIN CLIMB GAUGE TO SHOW MORE THAN 1000 FEET PER MINUTE. WHEN YOU ALLOW A RATE OF CABIN CLIMB OF MORE THAN 1000 FEET PER MINUTE, DAMAGE TO THE AIRPLANE STRUCTURE OR INJURY TO PERSONNEL CAN OCCUR.

(8) Put the L PACK switch to HIGH.

NOTE: The cabin pressure can increase at more than 1000 feet per minute when the pack is in the high flow mode. Manually opening the outflow valve will reduce the rate of cabin pressurization.

(a) If necessary, operate the OPEN-CLOSE toggle switch on the P5-6 pressurization control panel so that the CABIN CLIMB indication on the P5-16 cabin altitude and rate of climb panel does not exceed 1000 feet per minute.

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SUBTASK 21-27-00-860-181

(9) Put the R PACK switch to OFF.

SUBTASK 21-27-00-860-170

(10) Put the R RECIRC FAN switch to the OFF position.

SUBTASK 21-27-00-710-025

(11) Make sure there is air flow out of the equipment cooling overboard exhaust valve port.

NOTE: The CABIN CLIMB indication on the P5-16 cabin altitude and rate of climb panel will indicate that the cabin pressure is climbing.

SUBTASK 21-27-00-860-182

WARNING: DO NOT ALLOW THE INDICATION ON THE CABIN CLIMB GAUGE TO SHOW MORE THAN 1000 FEET PER MINUTE. WHEN YOU ALLOW A RATE OF CABIN CLIMB OF MORE THAN 1000 FEET PER MINUTE, DAMAGE TO THE AIRPLANE STRUCTURE OR INJURY TO PERSONNEL CAN OCCUR.

(12) Put the R PACK switch to HIGH.

NOTE: The cabin pressure can increase at more than 1000 feet per minute when the pack is in the high flow mode. Manually opening the outflow valve will reduce the rate of cabin pressurization.

(a) If necessary, operate the MANUAL OPEN-CLOSE switch on the P5-6 pressurization control panel so that the CABIN CLIMB indication on the P5-16 cabin altitude and rate of climb panel does not exceed 1000 feet per minute.

SUBTASK 21-27-00-860-183

(13) Put the L PACK switch to OFF.

SUBTASK 21-27-00-710-040

(14) Make sure there is airflow out of the equipment cooling overboard exhaust valve port.

NOTE: The CABIN CLIMB indication on the P5-16 cabin altitude and rate of climb panel will indicate that the cabin pressure is climbing.

E. Put the Airplane Back to its Usual Condition

SUBTASK 21-27-00-860-050

(1) Put these switches to the AUTO position:

(a) L PACK

(b) R PACK

(c) R RECIRC FAN

SUBTASK 21-27-00-860-051

(2) Slowly open the outflow valve to decrease the cabin pressure until the cabin DIFF PRESS indicator shows a differential pressure of 0 psi.

SUBTASK 21-27-00-860-052

(3) Put the Cabin Pressurization Switch to the AUTO position.

SUBTASK 21-27-00-866-001

(4) Retract the trailing edge flaps to the full up position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 21-27-00-860-104

(5) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

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SUBTASK 21-27-00-860-053

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

SUBTASK 21-27-00-860-054

(7) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

TASK 21-27-00-700-807

9. Smoke Clearance Mode - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task does an operational test of the equipment cooling overboard exhaust valve. The interfaces of the exhaust fans, supply fans, recirculation fans, and smoke detection system with the overboard exhaust valve system are also tested.

(2) The equipment cooling overboard exhaust valve will be referred to by the acronym OEV in this test.

(3) In the event of a forward cargo fire, the cargo smoke detectors will detect smoke and annunciate to the flight crew of the forward cargo fire. The flight crew will then take the appropriate action for smoke clearance from the flight deck which results in the following:

(a) Power to the E/E cooling supply normal and alternate fans is removed for 5 minutes

(b) The E/E cooling supply low flow sensor warning is inhibited for 5 minutes

(c) The OEV opens to the SMOKE position for the duration of the flight

(d) Power to the E/E cooling exhaust normal and alternate fans is removed for the duration of the flight

(e) The E/E cooling exhaust low flow sensor warning is inhibited for the duration of the flight.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
32-09-00-840-801	Prepare to Put the Airplane in the Air Mode (P/B 201)
32-09-00-840-802	Return the Airplane Systems Back to Their Normal On Ground Condition (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
FIM 21-25 TASK 802	Left or Right Recirculation Fan Does Not Operate - Fault Isolation
FIM 21-27 TASK 805	EQUIP COOLING EXHAUST OFF Light On With the Switch at ALTERNATE - Fault Isolation
FIM 21-27 TASK 806	EQUIP COOLING EXHAUST OFF Light On With the Switch at NORMAL - Fault Isolation
FIM 21-27 TASK 807	EQUIP COOLING SUPPLY OFF Light On With the Switch at ALTERNATE - Fault Isolation
FIM 21-27 TASK 808	EQUIP COOLING SUPPLY OFF Light On With the Switch at NORMAL - Fault Isolation
FIM 21-27 TASK 809	Equipment Cooling Overboard Exhaust Valve Does Not Open When Commanded - Fault Isolation

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(Continued)

Reference	Title
FIM 21-27 TASK 810	Equipment Cooling Supply Fans Do Not Shut Off When Commanded During a Cargo Compartment Smoke Alert - Fault Isolation
FIM 21-27 TASK 811	Equipment Cooling Exhaust Fans Do Not Shut Off When Commanded During a Cargo Compartment Smoke Alert - Fault Isolation

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
191E	Low Pressure ECS Panel - Forward

E. Operational Test Requirements

SUBTASK 21-27-00-860-377

(1) If the operational test is not satisfactory, do a system fault isolation as follows:

(a) For the left or right recirculating fan, refer to FIM 21-25 TASK 802.

(b) For the alternate exhaust fan, M99, refer to FIM 21-27 TASK 805.

(c) For the normal exhaust fan, M98, see: FIM 21-27 TASK 806.

(d) For the alternate supply fan, M1323, refer to FIM 21-27 TASK 807.

(e) For the normal supply fan, M1322, refer to FIM 21-27 TASK 808.

(f) For the OEV, refer to FIM 21-27 TASK 809.

(g) If the supply fans do not shut off when commanded, refer to FIM 21-27 TASK 810.

(h) If the exhaust fans do not shut off when commanded, refer to FIM 21-27 TASK 811.

(2) Do the operational test again until the test is satisfactory.

F. Preparation for the Operational Test of the OEV Smoke Clearance Mode

SUBTASK 21-27-00-010-004

(1) Get access to the Digital Cabin Pressure Controller (DCPC) No. 2 as follows:

NOTE: The digital cabin pressure controller No. 2 will be used to determine if the OEV is in the NORMAL or SMOKE position.

(a) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

G. Operational Test of the Smoke Clearance Mode of the Overboard Exhaust Valve

SUBTASK 21-27-00-860-223

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-00-860-368

(2) Do one of the steps that follows:

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(a) Make sure that the CAB/UTIL switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

(b) Make sure that the GALLEY switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

SUBTASK 21-27-00-210-005

(3) Make sure the needle on the position indicator gage on the P5-6 pressurization control panel shows that the aft outflow valve is fully open.

SUBTASK 21-27-00-860-225

(4) Make sure that the airplane is in the ground mode.

SUBTASK 21-27-00-860-359

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

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	18	C01434	EQPT COOLING LOW FLOW DETECT EXHAUST

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	14	C01435	EQPT COOLING EXHAUST FAN CONT NORMAL
C	15	C01436	EQPT COOLING EXHAUST FAN CONT ALTN

SUBTASK 21-27-00-860-335

(6) Do this task: Prepare to Put the Airplane in the Air Mode, TASK 32-09-00-840-801.

(a) Do not put the airplane into the air mode.

SUBTASK 21-27-00-860-336

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	15	C01355	LANDING GEAR AIR/GND SYS 2
C	16	C01356	LANDING GEAR AIR/GND SYS 1

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SUBTASK 21-27-00-860-227

(8) Set the EQUIP COOLING SUPPLY and EXHAUST switches on the equipment cooling panel in the middle of the P5 forward overhead panel to the NORM positions.

SUBTASK 21-27-00-210-004

(9) Make sure that pneumatic power is off:

(a) The L and R needle indicators on the DUCT PRESS gauge on the P5-10 air conditioning panel indicate 0 psi.

SUBTASK 21-27-00-860-226

(10) Set these switches on the P5-10 Air Conditioning Panel to the AUTO position:

(a) L PACK

(b) R PACK

(c) L RECIRC FAN

SUBTASK 21-27-00-860-284

(11) Set the R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the OFF position.

SUBTASK 21-27-00-710-067

(12) Do this check that the left recirculation fan is operating:

(a) If air is flowing out of the gaspers just outboard of the captain's and first officer's windshield and foot air controls, the left recirculation fan is operating.

(b) If the airflow out of the gaspers is not sufficient to positively determine left recirculation fan operation, then do the step that follows:

1) Open this access panel:

Open this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

2) Push up on the swing check valve.

3) If air flows out through the swing check valve, the left recirculation fan is operating.

SUBTASK 21-27-00-860-337

(13) Set the L RECIRC FAN switch on the P5-10 Air Conditioning Panel to the OFF position.

SUBTASK 21-27-00-710-073

(14) Do this check that the recirculation fans are not operating:

(a) If air is not flowing out of the gaspers just outboard of the windshield and foot air controls, the recirculation fans are not operating.

SUBTASK 21-27-00-860-338

(15) Set the R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

SUBTASK 21-27-00-710-068

(16) Do this check that the right recirculation fan is operating:

(a) If air is flowing out of the gaspers just outboard of the captain's and first officer's windshield and foot air controls , the right recirculation fan is operating.

(b) If the airflow out of the gaspers is not sufficient to positively determine right recirculation fan operation, then do the steps that follow:

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1) Open this access panel:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

2) Push up on the swing check valve.

3) If air flows out through the swing check valve, the right recirculation fan is operating.

SUBTASK 21-27-00-860-263

(17) Do the steps that follow to prepare the cabin pressure controller to display the OEV position indication:

(a) Set the pressurization mode selector switch on the P5-6 pressurization control panel to AUTO.

NOTE: The AUTO FAIL light may momentarily flash when AUTO is selected.

(b) Push the ON/OFF button on the front of the cabin pressure controller No.2 (M1654) on the E1-1 shelf in the E/E compartment.

(c) Push the MENU button.

(d) Continue to push the ↓ button until the display shows SYSTEM STATUS.

(e) Push the YES button.

(f) Push the ↓ button until the display shows SYSTEM CONFIG.

(g) Push the YES button.

(h) Push the ↓ button until the display shows this message:

1) CARGO HT VLV LOW.

NOTE: This display indicates that the OEV is in the NORMAL position.

SUBTASK 21-27-00-710-069

(18) Make sure that the DCPC display shows CARGO HT VLV LOW.

SUBTASK 21-27-00-860-339

(19) Set the R PACK switch to the HIGH position.

SUBTASK 21-27-00-710-070

(20) Make sure the DCPC display shows CARGO HT VLV HIGH.

SUBTASK 21-27-00-860-340

(21) Set the R PACK switch to the AUTO position.

SUBTASK 21-27-00-710-071

(22) Make sure the DCPC display shows CARGO HT VLV LOW.

SUBTASK 21-27-00-860-341

(23) Set the L PACK switch to the HIGH position.

SUBTASK 21-27-00-710-072

(24) Make sure the DCPC display shows CARGO HT VLV HIGH.

SUBTASK 21-27-00-710-074

(25) Do an audible check that the normal supply fan M1322 is operating.

SUBTASK 21-27-00-860-342

(26) Set this switch on the P5-10 Air Conditioning Panel to the OFF position:

(a) R RECIRC FAN

(b) Make a note of the time when the switch is placed in the OFF position.

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SUBTASK 21-27-00-710-075

(27) Make sure the DCPC display shows CARGO HT VLV HIGH.

NOTE: This display indicates that the OEV is in the SMOKE position.

SUBTASK 21-27-00-710-076

(28) Do an audible check that the normal supply fan M1322 is not operating.

SUBTASK 21-27-00-860-343

(29) Set the EQUIP COOLING SUPPLY and EXHAUST switches on the equipment cooling panel in the middle of the P5 forward overhead panel to the ALTN positions.

SUBTASK 21-27-00-710-077

(30) Do an audible check that the alternate supply fan M1323 is not operating.

SUBTASK 21-27-00-710-078

(31) Do an audible check that the alternate supply fan M1323 is operating within 4 1/2 to 5 1/2 minutes of when the R RECIRC FAN switch was set to OFF.

SUBTASK 21-27-00-860-344

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	16	C01523	CARGO FIRE FWD DET B
C	17	C01522	CARGO FIRE FWD DET A

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-27-00-860-345

(33) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

SUBTASK 21-27-00-710-079

(34) Do an audible check that the alternate supply fan M1323 is not operating.

SUBTASK 21-27-00-710-087

(35) Do this step:

(a) Do this check that the right recirculation fan is operating:

1) If air is flowing out of the gaspers just outboard of the captain's and first officer's windshield and foot air controls, the right recirculation fan is operating.

2) If the air flow out of the gaspers is not sufficient to positively determine recirculation fan operation, then do the steps that follow:

a) Make sure that this access panel is open:

Number	Name/Location
191E	Low Pressure ECS Panel - Forward

b) Push up on the swing check valve.

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c) If air is flowing out through the swing check valve, the right recirculation fan is operating.

SUBTASK 21-27-00-860-378

(36) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	16	C01523	CARGO FIRE FWD DET B
C	17	C01522	CARGO FIRE FWD DET A

SUBTASK 21-27-00-860-346

(37) Push and hold the TEST switch on the P8 Cargo Fire Control Panel until the AFT red cargo fire light comes on.

SUBTASK 21-27-00-860-369

(38) Push the BELL CUTOUT switch on the Engine and APU Fire Control Panel to silence the flight compartment fire bell.

SUBTASK 21-27-00-710-088

(39) Do this check to make sure the recirculation fan is not operating:

(a) If air is not flowing out of the gaspers just outboard of the captain's and first officer's windshield and foot air controls, the right recirculation fan is not operating.

SUBTASK 21-27-00-860-347

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	17	C01433	EQPT COOLING LOW FLOW DETECT SUPPLY

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	12	C01116	EQPT COOLING SUPPLY FAN CONT-NORMAL
C	13	C01117	EQPT COOLING SUPPLY FAN CONTROL-ALTN
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

SUBTASK 21-27-00-860-348

(41) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	18	C01434	EQPT COOLING LOW FLOW DETECT EXHAUST

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	14	C01435	EQPT COOLING EXHAUST FAN CONT NORMAL
C	15	C01436	EQPT COOLING EXHAUST FAN CONT ALTN
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

SUBTASK 21-27-00-710-082

(42) Do an audible check that the alternate exhaust fan M99 is operating:

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SUBTASK 21-27-00-860-349

(43) Set the EQUIP COOLING SUPPLY and EXHAUST switches on the equipment cooling panel in the middle of the P5 forward overhead panel to the NORM positions.

SUBTASK 21-27-00-710-083

(44) Do an audible check that the normal exhaust fan M98 is operating:

SUBTASK 21-27-00-860-350

(45) Push and hold the TEST switch on the P8 Cargo Fire Control Panel until the FWD and AFT red cargo fire lights come on.

SUBTASK 21-27-00-710-084

(46) Do an audible check that the normal exhaust fan M98 is not operating:

SUBTASK 21-27-00-860-351

(47) Set the EQUIP COOLING SUPPLY and EXHAUST switches on the equipment cooling panel in the middle of the P5 forward overhead panel to the ALTN positions.

SUBTASK 21-27-00-710-085

(48) Do an audible check that the alternate exhaust fan M99 is not operating:

SUBTASK 21-27-00-860-352

(49) Close these circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	15	C01355	LANDING GEAR AIR/GND SYS 2
C	16	C01356	LANDING GEAR AIR/GND SYS 1

SUBTASK 21-27-00-710-086

(50) Make sure the DCPC display shows CARGO HT VLV HIGH.

NOTE: This display indicates that the OEV is in the SMOKE position.

SUBTASK 21-27-00-860-353

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

NOTE: The FWD and AFT cargo fire alarm relays R945 and R946 are no longer latched.

SUBTASK 21-27-00-860-355

(52) Do this task to return disabled airplane systems to the normal ground condition: Return the Airplane Systems Back to Their Normal On Ground Condition, TASK 32-09-00-840-802.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-00-860-259

(1) Put these switches to the AUTO position:

(a) R RECIRC FAN

(b) L RECIRC FAN

SUBTASK 21-27-00-860-367

(2) Put these switches to the OFF position:

(a) L PACK

(b) R PACK

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SUBTASK 21-27-00-860-261

(3) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-27-00-860-376

(4) Put these switches on the center panel of the forward overhead panel to the NORM position:

(a) EQUIP COOLING SUPPLY

(b) EQUIP COOLING EXHAUST

SUBTASK 21-27-00-860-366

(5) Close all circuit breakers that were opened.

SUBTASK 21-27-00-410-010

(6) Close these access panels:

Number	Name/Location
117A	Electronic Equipment Access Door
191E	Low Pressure ECS Panel - Forward

SUBTASK 21-27-00-860-262

(7) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— 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.

TASK 21-27-01-000-801

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 airplane before you remove an 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.

B. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-52-16-000-801	Forward Cargo Compartment Forward Bulkhead Liner - Removal (P/B 401)
52-31-00-580-801	Open the Cargo Door (P/B 201)
52-31-00-580-802	Close the Cargo Door (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
122	Forward Cargo Compartment - Right

D. Prepare for the Removal

SUBTASK 21-27-01-860-001

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.

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 21-27-01-010-001

(2) Open the forward cargo compartment door (Open the Cargo Door, TASK 52-31-00-580-801).

SUBTASK 21-27-01-010-002

(3) Remove the forward right bulkhead liner in the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Forward Bulkhead Liner - Removal, TASK 25-52-16-000-801.

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E. Equipment Cooling Air Filter Removal

SUBTASK 21-27-01-010-003

(1) Close the forward cargo compartment door (Close the Cargo Door, TASK 52-31-00-580-802).

NOTE: The cargo door must be lowered to permit the removal of the air filter.

SUBTASK 21-27-01-020-001

(2) Release the latch assemblies [3] that are on the top and the bottom of the filter housing assembly [1].

SUBTASK 21-27-01-020-002

(3) Remove the equipment cooling air filter [2] from the filter housing assembly [1].

SUBTASK 21-27-01-010-004

(4) If necessary, open the forward cargo compartment door (Open the Cargo Door, TASK 52-31-00-580-801).

——— END OF TASK ———

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Equipment Cooling Air Filter Installation
Figure 401/21-27-01-990-801 (Sheet 1 of 2)

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EQUIPMENT COOLING AIR FILTER

B

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Equipment Cooling Air Filter Installation
Figure 401/21-27-01-990-801 (Sheet 2 of 2)

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TASK 21-27-01-400-801

3. Equipment Cooling Air Filter Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
25-52-16-400-801	Forward Cargo Compartment Forward Bulkhead Liner - Installation (P/B 401)
52-31-00-580-801	Open the Cargo Door (P/B 201)
52-31-00-580-802	Close the Cargo Door (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Filter	21-27-51-07C-070	AKS ALL

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
122	Forward Cargo Compartment - Right

D. Preparation for Installation

SUBTASK 21-27-01-010-005

(1) Open the forward cargo compartment door (Open the Cargo Door, TASK 52-31-00-580-801).

E. Equipment Cooling Air Filter Installation

SUBTASK 21-27-01-400-001

(1) Get access to the filter housing assembly [1] at the right, forward bulkhead in the cargo compartment.

SUBTASK 21-27-01-400-002

(2) Close the forward cargo compartment door (Close the Cargo Door, TASK 52-31-00-580-802) to allow access for the installation of the air filter.

SUBTASK 21-27-01-020-003

(3) Put the equipment cooling air filter [2] in its position on the filter housing assembly [1].

SUBTASK 21-27-01-020-004

(4) Close the latch assemblies [3] that are on the top and the bottom of the filter housing assembly [1].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-01-410-001

(1) Install the forward right bulkhead liner in the forward cargo compartment. To install the liner, do this task: Forward Cargo Compartment Forward Bulkhead Liner - Installation, TASK 25-52-16-400-801.

SUBTASK 21-27-01-010-006

(2) Open the cargo compartment door to allow technician to exit.

SUBTASK 21-27-01-410-002

(3) As required, close the forward cargo compartment door.

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.

B. There are two identical equipment cooling supply fans:

(1) The normal fan is installed in the top position

(2) The alternate fan is installed in the bottom position.

TASK 21-27-02-000-801

2. Equipment Cooling Supply Fan Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane 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.

B. References

Reference	Title
20-30-11 P/B 201	ADHESIVES, CEMENTS, AND SEALANTS - MAINTENANCE PRACTICES
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Removal

SUBTASK 21-27-02-860-001

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 24-22-00-860-812.

SUBTASK 21-27-02-010-001

(2) To get access to the equipment cooling supply fans, do this step:

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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F. Equipment Cooling Supply Fan Removal

SUBTASK 21-27-02-020-001

(1) Disconnect the electrical connector [6] from the equipment cooling supply fan [1].

(a) Make a record of the orientation of the electrical connector [6] so that you can install the fan with the electrical connector in the same position.

SUBTASK 21-27-02-020-002

(2) Do the steps that follow to disconnect the bonding jumper [4]:

(a) Remove the nut [5], the washers [3], and the screw [2].

(b) Disconnect and stow the bonding jumper [4].

NOTE: If you are removing the normal supply fan, also disconnect the bonding jumper [4] that connects the normal and the alternate fans together.

SUBTASK 21-27-02-020-003

(3) Loosen the clamp [7].

SUBTASK 21-27-02-020-004

(4) Remove the equipment cooling supply fan [1] and the sleeve [8].

NOTE: If identifying location decals are on the equipment cooling supply fan [1], carefully remove the marker and relocate to ducting nearby to each location per approved standard maintenance practices ADHESIVES, CEMENTS, AND SEALANTS - MAINTENANCE PRACTICES, PAGEBLOCK 20-30-11/201.

END OF TASK

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Equipment Cooling Supply Fan Installation
Figure 401/21-27-02-990-801 (Sheet 1 of 2)

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EQUIPMENT COOLING SUPPLY FAN

B

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Equipment Cooling Supply Fan 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 Supply Fan Installation
(Figure 401)

A. References

Reference	Title
20-30-11 P/B 201	ADHESIVES, CEMENTS, AND SEALANTS - MAINTENANCE PRACTICES
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	21-27-51-07C-115	AKS ALL

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Equipment Cooling Supply Fan Installation

SUBTASK 21-27-02-420-001

(1) Put the equipment cooling supply fan [1] and the sleeve [8] in their position.

(a) Make sure that the fan impeller is aft of the fan check valve flappers so that the flow of air is in the correct direction.

(b) Make sure that the electrical connector is oriented the same as it was on the removed fan.

SUBTASK 21-27-02-420-002

(2) Install the clamp [7] and tighten to 20 to 25 pound-inches (2.3 to 2.8 newton-meters).

SUBTASK 21-27-02-420-003

(3) Do the steps that follow to install the bonding jumper [4]:

NOTE: Make sure the bonding jumper [4], the two washers [3], the nut [5], and the screw [2] are clean.

(a) Put the bonding jumper [4] in its position.

NOTE: If you are installing the normal supply fan, also install the bonding jumper [4] that connects the normal and the alternate fans together.

(b) Install the nut [5], the washers [3], and the screw [2].

SUBTASK 21-27-02-420-004

(4) Connect the electrical connector [6] to the equipment cooling supply fan [1].

NOTE: If identifying location decals are on the equipment cooling supply fan [1], carefully remove the marker and relocate to ducting nearby to each location per approved standard maintenance practices ADHESIVES, CEMENTS, AND SEALANTS - MAINTENANCE PRACTICES, PAGEBLOCK 20-30-11/201.

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F. Equipment Cooling Supply Fan Installation Test

SUBTASK 21-27-02-860-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-02-710-001

(2) Do these steps if you installed the normal supply fan:

(a) Make sure the EQUIP COOLING SUPPLY switch on the Equipment Cooling Panel is in the NORMAL position.

(b) Make sure the normal fan operates.

NOTE: Put your hand on the fan to feel that it operates.

(c) Examine the fan connections for leaks.

NOTE: If you find a leak you must repair it.

SUBTASK 21-27-02-710-002

(3) Do these steps if you installed the alternate supply fan:

(a) Make sure the EQUIP COOLING SUPPLY switch on the Equipment Cooling Panel is in the ALTERNATE position.

(b) Make sure the alternate fan operates.

NOTE: Put your hand on the fan to feel that it operates.

(c) Examine the fan connections for leaks.

NOTE: If you find a leak you must repair it.

(d) Put the EQUIP COOLING SUPPLY switch on the Equipment Cooling Panel to the NORMAL position.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-02-410-001

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-27-02-860-003

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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EQUIPMENT COOLING LOW FLOW SENSORS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling supply or exhaust low flow sensor.

(2) An installation of the equipment cooling supply or exhaust low flow sensor.

(3) A cleaning of the equipment cooling supply or exhaust low flow sensor.

B. The equipment cooling low flow sensors are installed in the forward EE bay.

TASK 21-27-03-000-802

2. Equipment Cooling Low Flow Sensors Removal

(Figure 201)

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
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Prepare for the Removal

SUBTASK 21-27-03-860-006

(1) To get access to the equipment cooling supply or exhaust low flow sensor, do this step:

Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 21-27-03-860-007

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 24-22-00-860-812.

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G. Equipment Cooling Low Flow Sensors Removal

SUBTASK 21-27-03-020-005

(1) Disconnect the electrical connector [3].

SUBTASK 21-27-03-020-006

(2) Remove the MS20995C32 lockwire, G01048 [2].

SUBTASK 21-27-03-020-007

CAUTION: USE TWO WRENCHES WHEN YOU REMOVE THE SENSOR, ONE ON THE BOSS OF THE DUCT AND ONE ON THE SENSOR. IF YOU DO NOT USE TWO WRENCHES WHEN YOU REMOVE THE SENSOR YOU CAN DAMAGE THE DUCT.

(3) Remove the equipment cooling low flow sensor [4].

SUBTASK 21-27-03-020-008

(4) Remove the packing [1] and discard.

——— END OF TASK ———

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Equipment Cooling Low Flow Sensors Installation
Figure 201/21-27-03-990-802 (Sheet 1 of 2)

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EQUIPMENT COOLING LOW FLOW SENSORS

B

LOW FLOW SENSOR (EXAMPLE)

C

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Equipment Cooling Low Flow Sensors Installation
Figure 201/21-27-03-990-802 (Sheet 2 of 2)

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TASK 21-27-03-400-802

3. Equipment Cooling Low Flow Sensors Installation

(Figure 201)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D50004	Compound - Antiseize	BMS3-28
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	Packing	21-27-51-47B-085	AKS ALL
4	Sensor	21-27-51-47B-080	AKS ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Equipment Cooling Low Flow Sensors Installation

SUBTASK 21-27-03-640-002

(1) Apply compound, D50004 to the threads of the equipment cooling low flow sensor [4].

SUBTASK 21-27-03-420-005

(2) Put a new packing [1] on the equipment cooling low flow sensor [4].

SUBTASK 21-27-03-420-006

CAUTION: USE TWO WRENCHES WHEN YOU TIGHTEN THE SENSOR, ONE ON THE BOSS OF THE DUCT AND ONE ON THE SENSOR. IF YOU DO NOT USE TWO WRENCHES WHEN YOU TIGHTEN THE SENSOR YOU CAN DAMAGE THE DUCT.

(3) Install the equipment cooling low flow sensor [4] until the packing [1] makes contact with the duct, then tighten a maximum of 3/4 turn.

SUBTASK 21-27-03-420-007

(4) Install the MS20995C32 lockwire, G01048 [2].

SUBTASK 21-27-03-420-008

(5) Connect the electrical connector [3].

G. Equipment Cooling Low Flow Sensors Installation Test

SUBTASK 21-27-03-860-008

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

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SUBTASK 21-27-03-860-009

(2) Make sure the equipment cooling supply and exhaust OFF lights on the equipment cooling Panel are not on.

SUBTASK 21-27-03-710-003

CAUTION: MAKE SURE THAT YOU CLOSE THE FAN CIRCUIT BREAKER WITHIN 5 MINUTES AFTER YOU OPEN IT. IF YOU LEAVE THE CIRCUIT BREAKER OPEN MORE THAN 5 MINUTES, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(3) Do these steps to do a check of the equipment cooling supply low flow sensor:

(a) Open this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

(b) Make sure the equipment cooling supply OFF light comes on after approximately 20 to 60 seconds.

(c) Close this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

(d) Make sure the equipment cooling supply OFF light goes out within 20 seconds.

SUBTASK 21-27-03-710-004

CAUTION: MAKE SURE THAT YOU CLOSE THE FAN CIRCUIT BREAKER WITHIN 5 MINUTES AFTER YOU OPEN IT. IF YOU LEAVE THE CIRCUIT BREAKER OPEN MORE THAN 5 MINUTES, THE ELECTRICAL/ELECTRONIC EQUIPMENT CAN BECOME TOO HOT. THIS CAN CAUSE DAMAGE TO THE ELECTRICAL/ELECTRONIC EQUIPMENT.

(4) Do these steps to do a check of the equipment cooling exhaust low flow sensor:

(a) Open this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

(b) Make sure the equipment cooling exhaust OFF light comes on after approximately 20 to 60 seconds.

(c) Close this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

(d) Make sure the equipment cooling exhaust OFF light goes out within 20 seconds.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-03-410-002

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 21-27-03-860-010

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

TASK 21-27-03-400-803

4. Equipment Cooling Low Flow Sensors Cleaning

A. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

C. Equipment Cooling Low Flow Sensors Cleaning

SUBTASK 21-27-03-640-003

(1) Remove the equipment cooling low flow sensor. To remove the equipment cooling low flow sensor, do this task: Equipment Cooling Low Flow Sensors Removal, TASK 21-27-03-000-802.

SUBTASK 21-27-03-420-009

(2) Clean the probe of the sensor with a cotton wiper, G00034 that is moist with alcohol, B00130.

SUBTASK 21-27-03-420-010

(3) Install the equipment cooling low flow sensor. To install the equipment cooling low flow sensor, do this task: Equipment Cooling Low Flow Sensors Installation, TASK 21-27-03-400-802.

——— END OF TASK ———

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EQUIPMENT COOLING EXHAUST FAN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling exhaust fans.

(2) An installation of the equipment cooling exhaust fans.

B. There are two identical equipment cooling exhaust fans installed in the electronic equipment center:

(1) The normal exhaust fan is installed in the forward position.

(2) The alternate exhaust fan is installed in the aft position.

TASK 21-27-04-000-801

2. Equipment Cooling Exhaust Fan Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane before you remove an equipment cooling exhaust 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
20-30-11 P/B 201	ADHESIVES, CEMENTS, AND SEALANTS - MAINTENANCE PRACTICES
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Removal

SUBTASK 21-27-04-860-001

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 24-22-00-860-812.

SUBTASK 21-27-04-010-001

(2) To get access to the equipment cooling exhaust fans, do this step:

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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SUBTASK 21-27-04-010-002

(3) Remove the access panel on the top of the raised platform that is just aft and right of this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

F. Equipment Cooling Exhaust Fan Removal

SUBTASK 21-27-04-020-001

(1) Disconnect the electrical connector [6] from the equipment cooling exhaust fan [1].

SUBTASK 21-27-04-020-002

(2) Do the steps that follow to disconnect the bonding jumper [4]:

(a) Remove the nut [5], washers [3], and screw [2].

(b) Disconnect and stow the bonding jumper [4].

NOTE: If you are removing the normal exhaust fan [1], also disconnect the bonding jumper [4] that connects the normal and the alternate exhaust fans together.

SUBTASK 21-27-04-020-003

(3) Loosen the clamp [7].

SUBTASK 21-27-04-020-004

(4) Remove the equipment cooling exhaust fan [1] and the sleeve [8].

NOTE: If identifying location decals are on the equipment cooling exhaust fan [1], carefully remove the marker and relocate to ducting nearby to each location per approved standard maintenance practices ADHESIVES, CEMENTS, AND SEALANTS - MAINTENANCE PRACTICES, PAGEBLOCK 20-30-11/201.

——— END OF TASK ———

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ELECTRICAL AND ELECTRONICS COMPARTMENT

A

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Equipment Cooling Exhaust Fan Installation
Figure 401/21-27-04-990-801 (Sheet 1 of 2)

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EQUIPMENT COOLING EXHAUST FANS

B

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Equipment Cooling Exhaust Fan 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 Exhaust Fan Installation
(Figure 401)

A. References

Reference	Title
20-30-11 P/B 201	ADHESIVES, CEMENTS, AND SEALANTS - MAINTENANCE PRACTICES
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	21-27-04-03-105	AKS ALL

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Equipment Cooling Exhaust Fan Installation

SUBTASK 21-27-04-420-001

(1) Put the equipment cooling exhaust fan [1] and the sleeve [8] in their position.

(a) Make sure that the AIRFLOW arrow on the fan [1] is pointed to the inboard direction.

(b) Make sure that the fan impeller is aft of the fan check valve flappers so that the flow of air is in the correct direction.

(c) Make sure that the electrical connector is oriented the same it was on the removed fan [1].

SUBTASK 21-27-04-420-002

(2) Install the clamp [7] and tighten to 20 to 25 pound-inches (2.3 to 2.8 newton-meters).

SUBTASK 21-27-04-420-003

(3) Do the steps that follow to install the bonding jumper [4]:

NOTE: Make sure the bonding jumper [4], the two washers [3], the nut [5], and the screw [2] are clean.

(a) Put the bonding jumper [4] in its position.

NOTE: If you are installing the normal exhaust fan, also install the bonding jumper [4] that connects the normal and the alternate fans together.

(b) Install the nut [5], washers [3], and screw [2].

SUBTASK 21-27-04-420-004

(4) Connect the electrical connector [6] to the equipment cooling exhaust fan [1].

NOTE: If identifying location decals are on the equipment cooling exhaust fan [1], carefully remove the marker and relocate to ducting nearby to each location per approved standard maintenance practices ADHESIVES, CEMENTS, AND SEALANTS - MAINTENANCE PRACTICES, PAGEBLOCK 20-30-11/201.

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F. Equipment Cooling Exhaust Fan Installation Test

SUBTASK 21-27-04-860-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-04-710-001

(2) Do these steps if you installed the normal exhaust fan [1]:

(a) Make sure the EQUIP COOLING exhaust switch on the Equipment Cooling Panel is in the NORM position.

(b) Make sure the normal exhaust fan operates.

NOTE: Put your hand on the fan to feel that it operates.

(c) Examine the fan connections for leaks.

NOTE: If you find a leak you must repair it.

SUBTASK 21-27-04-710-002

(3) Do these steps if you installed the alternate exhaust fan [1]:

(a) Make sure the EQUIP COOLING exhaust switch on the Equipment Cooling Panel is in the ALTN position.

(b) Make sure the alternate exhaust fan operates.

NOTE: Put your hand on the fan to feel that it operates.

(c) Examine the fan connections for leaks.

NOTE: If you find a leak you must repair it.

(d) Put the EQUIP COOLING exhaust switch on the Equipment Cooling Panel to the NORM position.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-04-410-001

(1) Install the access panel that you removed to its position on the top of the raised platform.

SUBTASK 21-27-04-410-002

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-27-04-860-003

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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Equipment Cooling Exhaust Fan - Cleaning/Painting

1. General

A. This procedure has a task to clean the equipment cooling exhaust fans.

B. There are two identical equipment cooling exhaust fans installed in the electronic equipment center.

(1) The normal exhaust fan is installed in the forward position.

(2) The alternate exhaust fan is installed in the aft position.

TASK 21-27-04-110-801

2. Equipment Cooling Exhaust Fan Cleaning

Figure 21-27-04-990-801

A. General

(1) The equipment cooling exhaust fans may not operate correctly if they are dirty.

(2) This procedure cleans only the impellers of the equipment cooling exhaust fans and the air passages.

(3) You must do an overhaul of the equipment cooling exhaust fans if it is necessary to disassemble them for a more thorough cleaning.

(4) This procedure is applicable for all of the fans in the equipment cooling system.

B. References

Reference	Title
21-27-04-000-801	Equipment Cooling Exhaust Fan Removal (P/B 401)
21-27-04-400-801	Equipment Cooling Exhaust Fan Installation (P/B 401)
21-27-04-990-801	Figure: Equipment Cooling Exhaust Fan Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-123	Brush - Soft Bristle

D. Consumable Materials

Reference	Description	Specification
B00039	Cleaner - Brulin Formula 815MX	
B00074	Solvent - Degreasing	MIL-PRF-680 (Supersedes P-D-680)

E. Preparation for Cleaning

SUBTASK 21-27-04-020-005

(1) Remove the equipment cooling exhaust fan by following this procedure:

(a) Equipment Cooling Exhaust Fan Removal, TASK 21-27-04-000-801

SUBTASK 21-27-04-930-001

(2) Make marks on the impellers so you can reinstall them in the same position they were in when you removed them.

SUBTASK 21-27-04-030-001

(3) Remove the nut and washer at each impeller.

(a) Discard the nuts.

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SUBTASK 21-27-04-020-006

(4) Move the impeller from side to side to remove it from the rotor shaft.

NOTE: You can lightly hit the rotor shaft with a rubber mallet while you pull on the impeller to make it easy to remove.

F. Cleaning the Equipment Cooling Exhaust Fan

SUBTASK 21-27-04-160-001

(1) Soak the impellers in Brulin Formula 815MX cleaner, B00039 or solvent, B00074 until contamination loosens.

NOTE: Use the solvent, B00074 if the Brulin Formula 815MX cleaner, B00039 does not completely clean the impellers.

SUBTASK 21-27-04-160-002

(2) Remove the contamination with a soft bristle brush, STD-123.

SUBTASK 21-27-04-160-003

CAUTION: MAKE SURE TO DRY THE MOTOR FULLY WITH WARM AIR OR IN AN OVEN IF WATER GETS IN IT. IF THE MOTOR IS NOT FULLY DRIED BEFORE IT OPERATES, DAMAGE CAN OCCUR.

(3) Flush the impellers fully with clean water if you used Brulin Formula 815MX cleaner, B00039.

SUBTASK 21-27-04-160-004

(4) Dry the impellers with a soft cloth or with dry, compressed air.

SUBTASK 21-27-04-420-005

(5) Install the keys and the impellers on the motor shaft.

NOTE: Use the marks on the impellers to install them.

SUBTASK 21-27-04-420-006

(6) Make sure the key is correctly engaged in each impeller.

SUBTASK 21-27-04-420-007

CAUTION: USE A NEW NUT TO INSTALL THE IMPELLER. IF YOU DO NOT USE A NEW NUT, THE IMPELLER CAN BECOME LOOSE DURING OPERATION, AND CAUSE DAMAGE TO EQUIPMENT.

(7) Install the washers and the new self-locking nuts.

SUBTASK 21-27-04-430-001

(8) Tighten the nuts to 80–100 pound-inches (9.0 - 11.3 newton-meters) above the run-on torque.

NOTE: The minimum back-off torque is 60 pound-inches (6.8 newton-meters).

SUBTASK 21-27-04-420-008

(9) Install the equipment cooling exhaust fan by following this procedure:

(a) Equipment Cooling Exhaust Fan Installation, TASK 21-27-04-400-801

END OF TASK

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EQUIPMENT COOLING OVERBOARD EXHAUST VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling overboard exhaust valve.

(2) An installation of the equipment cooling overboard exhaust valve.

B. The equipment cooling overboard exhaust valve is installed in the electronic equipment center.

TASK 21-27-05-000-801

2. Equipment Cooling Overboard Exhaust Valve Removal

(Figure 401)

A. General

(1) You must remove electrical power from the airplane before you remove the equipment cooling overboard exhaust 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
12-15-21-600-803-002	Crew Oxygen Cylinder Replacement (P/B 301)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Removal

SUBTASK 21-27-05-860-001

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 24-22-00-860-812.

SUBTASK 21-27-05-010-001

(2) To get access to the equipment cooling overboard exhaust valve, do this step:.

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-27-05-010-003

(3) Remove the access panel on the top of the raised platform just aft and right of the aircraft center line as follows:

(a) Remove the 9 screws that attach the access panel to the top of the raised platform.

(b) Remove the raised platform.

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SUBTASK 21-27-05-020-001

(4) Remove the crew oxygen system cylinder. To remove the oxygen cylinder, do this task: Crew Oxygen Cylinder Replacement, TASK 12-15-21-600-803-002.

F. Equipment Cooling Overboard Exhaust Valve Removal

SUBTASK 21-27-05-020-002

(1) Disconnect the electrical connector [2] from the equipment cooling overboard exhaust valve [1].

SUBTASK 21-27-05-020-003

(2) Loosen the couplings [3].

SUBTASK 21-27-05-020-004

(3) Remove the equipment cooling overboard exhaust valve [1].

END OF TASK

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Equipment Cooling Overboard Exhaust Valve Installation
Figure 401/21-27-05-990-801 (Sheet 1 of 2)

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EQUIPMENT COOLING OVERBOARD EXHAUST VALVE (OXYGEN BOTTLE INSTALLATION NOT SHOWN)

B

VALVE POSITION INDICATOR

C

G12538 S0006562629_V3

Equipment Cooling Overboard Exhaust Valve Installation
Figure 401/21-27-05-990-801 (Sheet 2 of 2)

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TASK 21-27-05-400-801

3. Equipment Cooling Overboard Exhaust Valve Installation
(Figure 401)

A. References

Reference	Title
12-15-21-600-803-002	Crew Oxygen Cylinder Replacement (P/B 301)
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)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-27-05-01-015	AKS ALL

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Equipment Cooling Exhaust valve Installation

SUBTASK 21-27-05-420-001

(1) Put the equipment cooling overboard exhaust valve [1] in its position.

SUBTASK 21-27-05-420-002

(2) Tighten the couplings [3].

SUBTASK 21-27-05-420-003

(3) Connect the electrical connector [2] to the equipment cooling overboard exhaust valve [1].

F. Equipment Cooling Overboard Exhaust Valve Installation Test

SUBTASK 21-27-05-860-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-05-860-003

(2) Operate the air conditioning packs. To operate the pack, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-27-05-860-004

(3) Make sure these switches, on the P5-10 Air Conditioning Panel, are in the AUTO position:

(a) L PACK

(b) R PACK

(c) L RECIRC FAN

(d) R RECIRC FAN

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SUBTASK 21-27-05-860-018

(4) Make sure these switches, on the P5 Overhead Panel, are in the NORMAL position:

(a) EQUIP COOLING, EXHAUST

(b) EQUIP COOLING, SUPPLY

SUBTASK 21-27-05-710-003

(5) Make sure there is no air leakage at the couplings [3].

SUBTASK 21-27-05-710-001

(6) Make sure the equipment cooling overboard exhaust valve is in the NORMAL position.

NOTE: Look at the indicator on the valve actuator to see the position of the valve.

SUBTASK 21-27-05-860-005

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.

(7) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-27-05-860-006

(8) Put these switches to the HIGH position:

(a) L PACK

(b) R PACK

SUBTASK 21-27-05-860-016

(9) Put the R RECIRC FAN switch to the OFF position.

SUBTASK 21-27-05-710-002

(10) Make sure the equipment cooling overboard exhaust valve is in the SMOKE position.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-05-860-008

(1) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-27-05-860-009

(2) Shutdown the air conditioning packs. To shutdown the packs, do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-27-05-860-010

(3) Put these switches in the AUTO position:

(a) L PACK

(b) R PACK

(c) L RECIRC FAN

(d) R RECIRC FAN

SUBTASK 21-27-05-410-001

(4) Install the access panel on the top of the raised platform that you removed.

SUBTASK 21-27-05-410-002

(5) Install the crew oxygen system cylinder. To install the oxygen cylinder, do this task: Crew Oxygen Cylinder Replacement, TASK 12-15-21-600-803-002.

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SUBTASK 21-27-05-410-003

(6) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-27-05-860-011

(7) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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EQUIPMENT COOLING MUFFLER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the equipment cooling muffler.

(2) An installation of the equipment cooling muffler.

B. There is an equipment cooling muffler installed behind galley No. 1. The muffler quiets the air being distributed to the P5 and P6 panels.

TASK 21-27-07-100-801

2. Equipment Cooling Muffler Removal

(Figure 401)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-31-11-000-801	Galley No. 1 - Removal (P/B 401)

B. Location Zones

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00

C. Prepare for the Removal

SUBTASK 21-27-07-860-001

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 24-22-00-860-812.

SUBTASK 21-27-07-010-001

(2) Remove the No. 1 galley. To remove the No. 1 galley, do this task: Galley No. 1 - Removal, TASK 25-31-11-000-801.

D. Equipment Cooling Muffler Removal

SUBTASK 21-27-07-010-002

(1) Do these steps to remove the equipment cooling muffler [1]:

(a) Loosen the clamp [3].

(b) Slide the flex hose [2] away from the end of the muffler [1].

(c) Remove the clamp [4].

(d) Remove the 2-inch vinyl plastic tape [5].

(e) Move the muffler [1] down to remove it from the duct [6].

END OF TASK

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Equipment Cooling Muffler Installation
Figure 401/21-27-07-990-801

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TASK 21-27-07-400-801

3. Equipment Cooling Muffler Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-31-11-400-801	Galley No. 1 - Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00090	Solvent - Inhibited Trichloroethane 1,1,1	MIL-T-81533

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Muffler	21-27-51-03A-070	AKS ALL

D. Location Zones

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00

E. Equipment Cooling Muffler Installation

SUBTASK 21-27-07-860-002

(1) Make sure power has been removed from the airplane (Remove Electrical Power, TASK 24-22-00-860-812).

SUBTASK 21-27-07-110-001

(2) Clean the surfaces at the joint between the muffler [1] and the duct [6] with solvent, B00090.

SUBTASK 21-27-07-420-001

(3) Do these steps to install the equipment cooling muffler [1]:

(a) Slide the upper end of the muffler [1] over the end of the duct [6].

(b) Install the clamp [4].

(c) Slide the flex hose [2] onto the lower end of the muffler [1].

(d) Put the clamp [3] in its position and torque to between 3.00 in-lb (0.34 N·m) and 5.00 in-lb (0.56 N·m).

1) Do a visual inspection of the muffler [1] to make sure that it is not damaged.

(e) Install two layers of 2-inch vinyl plastic tape [5] over the joint between the muffler [1] and the duct [6].

SUBTASK 21-27-07-860-003

(4) Do this task to supply power to the plane: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-27-07-200-001

(5) Verify the operation of the equipment cooling fan.

SUBTASK 21-27-07-200-002

(6) Check for air leaks with your hand at all duct joints.

(a) Repair any leaks.

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SUBTASK 21-27-07-410-001

(7) Install the No. 1 galley. To install the No. 1 galley, do this task: Galley No. 1 - Installation, TASK 25-31-11-400-801.

——— END OF TASK ———

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PRESSURIZATION CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Pressurization Control System - Deactivation

(2) Pressurization Control System - Activation

(3) Digital Cabin Pressure Controller NVM Download Procedure - Maintenance Practices

TASK 21-31-00-800-801

2. Pressurization Control System - Deactivation

(Figure 201)

A. General

(1) This task will deactivate these components in the pressurization control system.

- Cabin Pressure Controller (CPC)
- Cabin Pressure Control Module
- Aft Outflow Valve

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
146	Aft Cargo Compartment Equipment Bay - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Procedure

SUBTASK 21-31-00-010-004

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-31-00-860-045

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL
F	7	C01272	PRESSURIZATION CONTROL IND

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F. Tryout

NOTE: This tryout is to make sure that the pressurization control system is in a zero energy state.

SUBTASK 21-31-00-860-046

WARNING: DO NOT PUT YOUR HANDS OR TOOLS IN THE OUTLET OF THE OUTFLOW VALVE. THE VALVE IS MOTOR-OPERATED. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Set the mode selector switch on the P5-6 cabin pressure control module to the AUTO position.

SUBTASK 21-31-00-210-001

(2) Make sure that the P5-10 air conditioning panel amber AUTO FAIL LIGHT (L8) is illuminated.

SUBTASK 21-31-00-740-005

(3) Do these steps on the BITE module on the pressure controller No. 1:

(a) Push the ON/OFF button on the BITE module on the pressure controller No. 1.

(b) Push the MENU button.

(c) Push the MENU button with the down arrow label.

(d) Make sure that the display does not show “GROUND TEST”.

SUBTASK 21-31-00-740-006

(4) Do these steps on the BITE module on the pressure controller No. 2:

(a) Push the ON/OFF button on the BITE module on the pressure controller No. 2.

(b) Push the MENU button.

(c) Push the MENU button with the down arrow label.

(d) Make sure that the display does not show “GROUND TEST”.

SUBTASK 21-31-00-860-047

(5) Set the mode selector switch on the P5-6 cabin pressure control module to the MAN position.

SUBTASK 21-31-00-210-002

(6) Make sure that the P5-10 air conditioning panel green MANUAL LIGHT (L7) is illuminated.

(a) Position an assistant to monitor the cabin pressurization outflow valve for movement.

SUBTASK 21-31-00-860-048

WARNING: DO NOT PUT YOUR HANDS OR TOOLS IN THE OUTLET OF THE OUTFLOW VALVE. THE VALVE IS MOTOR-OPERATED. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(7) Push and hold the MANUAL MODE CLOSE/OPEN toggle switch (S2) on the P5-6 cabin pressure control module to the CLOSE position.

(a) Make sure that the cabin pressurization outflow valve gates do not move.

SUBTASK 21-31-00-860-049

WARNING: DO NOT PUT YOUR HANDS OR TOOLS IN THE OUTLET OF THE OUTFLOW VALVE. THE VALVE IS MOTOR-OPERATED. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(8) Push and hold the MANUAL MODE CLOSE/OPEN toggle switch (S2) on the P5-6 cabin pressure control module to the OPEN position.

(a) Make sure that the cabin pressurization outflow valve gates do not move.

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SUBTASK 21-31-00-860-050

(9) Install DO NOT OPERATE tag, STD-858 on the following P5-6 cabin pressure control module switches:

(a) AUTO/ALTN/MAN select switch (S1).

(b) MANUAL MODE CLOSE/OPEN toggle switch (S2).

——— END OF TASK ———

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FLIGHT COMPARTMENT

CABIN PRESSURE CONTROL MODULE

A

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Pressurization Control System
Figure 201/21-31-00-990-807 (Sheet 1 of 4)

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Pressurization Control System
Figure 201/21-31-00-990-807 (Sheet 2 of 4)

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ELECTRONIC EQUIPMENT RACK, E1

C

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Pressurization Control System
Figure 201/21-31-00-990-807 (Sheet 3 of 4)

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OUTFLOW VALVE (EXTERIOR VIEW)

D

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Pressurization Control System
Figure 201/21-31-00-990-807 (Sheet 4 of 4)

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TASK 21-31-00-800-802

3. **Pressurization Control System - Activation**
(Figure 201)

A. General

(1) This task will activate these components in the pressurization control system.

- Cabin Pressure Controller (CPC)
- Cabin Pressure Control Module
- Aft Outflow Valve

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
146	Aft Cargo Compartment Equipment Bay - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Procedure

SUBTASK 21-31-00-860-051

WARNING: DO NOT PUT YOUR HANDS OR TOOLS IN THE OUTLET OF THE OUTFLOW VALVE. THE VALVE IS MOTOR-OPERATED. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL
F	7	C01272	PRESSURIZATION CONTROL IND

SUBTASK 21-31-00-410-003

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— **END OF TASK** ———

TASK 21-31-00-970-802

4. **Digital Cabin Pressure Controller NVM Download Procedure - Maintenance Practices**
Figure 202

A. General

(1) This procedure provides instructions to download NVM data from pressure controllers M1653 and M1654.

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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-12762	Analyzer - Data Bus, ARINC 429-USB Part #: 403557 Supplier: $1272 Part #: 800-0630 Supplier: 1JSZ6 Part #: UA1410 Supplier: 0H231 Opt Part #: 702125-01 Supplier: $1272

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Preparation for the NVM Download

SUBTASK 21-31-00-860-041

(1) Make sure the laptop computer has the software loaded that is listed in Fleet Team Digest article 737NG-FTD-21-10002.

SUBTASK 21-31-00-860-040

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

SUBTASK 21-31-00-010-002

(3) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

F. NVM Download Procedure

SUBTASK 21-31-00-860-042

(1) Make sure that cabin pressure controllers No.1 (M1653) and No.2 (M1654) are powered:

(a) Press the ON/OFF button.

(b) Press the MENU button.

(c) If the MENU is displayed, the controller is powered.

SUBTASK 21-31-00-010-001

(2) Remove the two thumbscrews that attach the BITE INSTRUCTIONS plate to the face of the controller.

SUBTASK 21-31-00-480-001

(3) Connect the six wire modular phone cable to the connector on the face of the cabin pressure controller and to the ARINC 429 to USB interface Analyzer, COM-12762.

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SUBTASK 21-31-00-480-002

(4) Connect the USB cable to the ARINC 429 to USB interface and the computer.

SUBTASK 21-31-00-750-001

(5) Do the instructions provided in the NVM Download software help files to download the NVM data.

SUBTASK 21-31-00-080-001

(6) Disconnect the six wire modular phone cable from the controller.

SUBTASK 21-31-00-750-002

(7) Do the NVM download procedure on the other cabin pressure controller.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-00-420-001

(1) Install the BITE instructions plate on the front of the controller.

SUBTASK 21-31-00-410-002

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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Cabin Pressure Controller Installation
Figure 202/21-31-00-990-804 (Sheet 1 of 2)

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Cabin Pressure Controller Installation
Figure 202/21-31-00-990-804 (Sheet 2 of 2)

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PRESSURIZATION CONTROL SYSTEM - ADJUSTMENT/TEST

1. **General**
   A. This procedure contains scheduled maintenance task data.
   B. This procedure has the three tasks that follow:
      (1) Pressurization System Manual Mode Test
      (2) 750 Feet Per Minute Descent With Cargo Fire Mode Test
      (3) Master Caution Test
      (4) Pressurization System Ground Test

TASK 21-31-00-710-801

2. **Pressurization System Manual Mode Test**
   (Figure 501)

   NOTE: This procedure is a scheduled maintenance task.

   A. General
   (1) This task does an operational test of these components:
      (a) The outflow valve manual mode motor
      (b) The outflow valve selector panel
      (c) The outflow valve position indicator
      (d) The outflow valve feedback module for the outflow valve position indicator

   B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

   C. Location Zones

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

   D. Prepare for the Test

SUBTASK 21-31-00-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-31-00-860-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	1	C01273	PRESSURIZATION CONTROL LCD LTG
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL
F	7	C01272	PRESSURIZATION CONTROL IND

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E. Pressurization System Manual Mode Test

SUBTASK 21-31-00-860-003

CAUTION: MAKE SURE ONE OF THE EXTERNALS DOORS OR WINDOWS IS OPEN BEFORE YOU CONTINUE WITH THE TEST. UNCONTROLLED PRESSURIZATION OF THE CABIN CAN OCCUR WHEN THE OUTFLOW VALVE IS CLOSED. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Make sure at least one exterior door or window is open or that the L and R PACK switches on the P5 forward overhead panel are in the OFF position.

SUBTASK 21-31-00-860-004

(2) Set the mode selector switch on the P5-6 cabin pressure control module to the MAN position.

SUBTASK 21-31-00-710-001

(3) Make sure the MANUAL light on the P5-10 air conditioning module comes on.

SUBTASK 21-31-00-860-005

(4) Set the LIGHTS switch on the P2 center instrument panel to DIM.

SUBTASK 21-31-00-710-002

(5) Make sure the MANUAL light becomes dim.

SUBTASK 21-31-00-860-006

(6) Set the LIGHTS switch on the P2 center instrument panel to BRT.

SUBTASK 21-31-00-710-003

(7) Make sure the MANUAL light becomes bright.

SUBTASK 21-31-00-710-004

(8) Push and hold the CLOSE/OPEN toggle switch on the pressure control module to the CLOSE position until the outflow valve is fully closed.

SUBTASK 21-31-00-710-005

(9) Make sure the outflow valve is fully closed.

SUBTASK 21-31-00-710-006

(10) Make sure the needle on the position indicator gage for the outflow valve is within approximately two needle widths of the fully closed mark.

SUBTASK 21-31-00-710-007

(11) Push and hold the CLOSE/OPEN toggle switch on the pressure control module to the OPEN position until the outflow valve is fully open.

SUBTASK 21-31-00-710-008

(12) Make sure the outflow valve is fully open.

SUBTASK 21-31-00-710-009

(13) Make sure the needle on the position indicator gage for the outflow valve is within approximately two needle widths of the fully open mark.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-00-860-037

(1) Make sure the mode selector switch on the cabin pressurization control panel, P5-6, is returned to the AUTO position.

SUBTASK 21-31-00-860-007

(2) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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FLIGHT COMPARTMENT

CABIN PRESSURE CONTROL MODULE

A

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Cabin Pressure Control System Test
Figure 501/21-31-00-990-802 (Sheet 1 of 4)

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Cabin Pressure Control System Test
Figure 501/21-31-00-990-802 (Sheet 2 of 4)

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Cabin Pressure Control System Test
Figure 501/21-31-00-990-802 (Sheet 3 of 4)

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OUTFLOW VALVE (EXTERIOR VIEW)

D

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Cabin Pressure Control System Test
Figure 501/21-31-00-990-802 (Sheet 4 of 4)

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TASK 21-31-00-710-802

3. **750 Feet Per Minute Descent With Cargo Fire Mode Test**
(Figure 501)

A. **General**

(1) This task does an operational test of the 750 feet per minute descent rate with cargo fire mode.

B. **References**

Reference	Title
21-31-01-000-801	Cabin Pressure Controller (CPC) Removal (P/B 401)
21-31-01-400-801	Cabin Pressure Controller (CPC) Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. **Tools/Equipment**

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

Reference	Description
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 260-8XPI Supplier: 88277 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 21 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536

D. **Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. **Prepare for the Test**

SUBTASK 21-31-00-860-032

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

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SUBTASK 21-31-00-860-033

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	1	C01273	PRESSURIZATION CONTROL LCD LTG
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL
F	7	C01272	PRESSURIZATION CONTROL IND

F. 750 Feet Per Minute Descent With Cargo Fire Mode Test

SUBTASK 21-31-00-860-034

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.

(1) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-31-00-020-001

(2) Remove Cabin Pressure Controller 1 and Cabin Pressure Controller 2. To remove the controllers, do this task: Cabin Pressure Controller (CPC) Removal, TASK 21-31-01-000-801.

SUBTASK 21-31-00-860-038

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

SUBTASK 21-31-00-710-015

(4) Push and hold the TEST switch on the P8 Cargo Fire Control Panel.

SUBTASK 21-31-00-710-016

(5) Connect a digital/analog multimeter, COM-1793 between the E2-2 shelf connector D10738B electrical contact D7 and airplane ground.

NOTE: Pressure controller No. 1 is installed on the E2-2 shelf.

(a) Make sure there is less than 4.0 ohms between electrical contact D7 and airplane ground.

SUBTASK 21-31-00-710-017

(6) Disconnect the multimeter from electrical contact D7 of E2-2 shelf connector D10738B.

SUBTASK 21-31-00-710-018

(7) Connect the multimeter between the E2-2 shelf connector D10738B electrical contact B10 and airplane ground.

(a) Make sure there is less than 4.0 ohms between electrical contact B10 and airplane ground.

SUBTASK 21-31-00-710-019

(8) Disconnect the multimeter from electrical contact B10 of E2-2 shelf connector D10738B.

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SUBTASK 21-31-00-710-025

(9) Connect the multimeter between the E1-1shelf connector D10740B electrical contact D7 and airplane ground.

NOTE: Pressure controller No. 2 is installed on the E1-1 shelf.

(a) Make sure there is less than 4.0 ohms between electrical contact D7 and airplane ground.

SUBTASK 21-31-00-710-026

(10) Disconnect the multimeter from electrical contact D7 of E1-1 shelf connector D10740B.

SUBTASK 21-31-00-710-027

(11) Connect the multimeter between the E1-1 shelf connector D10740B electrical contact B10 and airplane ground.

(a) Make sure there is less than 4.0 ohms between electrical contact B10 and airplane ground.

SUBTASK 21-31-00-710-028

(12) Disconnect the multimeter from electrical contact B10 of E1-1 shelf connector D10740B.

SUBTASK 21-31-00-710-024

(13) Release the TEST switch on the P8 Cargo Fire Control Panel.

SUBTASK 21-31-00-860-039

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-00-860-035

(1) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-31-00-410-001

(2) Install Cabin Pressure Controller 1 and Cabin Pressure Controller 2. To install the controllers, do this task: Cabin Pressure Controller (CPC) Installation, TASK 21-31-01-400-801.

SUBTASK 21-31-00-860-036

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

TASK 21-31-00-700-801

4. Master Caution Test

(Figure 501)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Location Zones

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

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C. Prepare for the Test

SUBTASK 21-31-00-860-008

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
D	11	C00133	INDICATOR MASTER DIM DIM/TST CONT
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
E	11	C00313	INDICATOR MASTER DIM SECT 1
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL

D. Master Caution Test

SUBTASK 21-31-00-860-009

(1) Put the mode selector switch on the P5-6 pressure control module to the AUTO position.

SUBTASK 21-31-00-860-010

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1

SUBTASK 21-31-00-710-010

(3) Make sure that the AUTO FAIL and ALTN lights on the P5-10 air conditioning module come on in less than 5 seconds.

SUBTASK 21-31-00-860-011

(4) Set the mode selector switch on the P5-6 pressure control module to the ALTN position.

SUBTASK 21-31-00-710-011

(5) Make sure the AUTO FAIL light on the P5-10 air conditioning module goes off and the ALTN light stays on.

SUBTASK 21-31-00-860-012

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

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SUBTASK 21-31-00-710-012

(7) Make sure that the AUTO FAIL light comes on and the ALTN light goes off in less than 5 seconds.

SUBTASK 21-31-00-860-013

(8) Disconnect electrical connector D10724 from the P5-6 pressure control module:

(a) Get access to the back of the P5-6 pressure control panel as follows:

1) Loosen the 1/4-turn fasteners and lower the forward end of the P5 forward overhead panel.

SUBTASK 21-31-00-860-014

(9) Make sure the AUTO FAIL light is on.

SUBTASK 21-31-00-860-015

(10) Connect electrical connector D10724 to the P5-6 pressure control module.

(a) Push the P5 forward overhead panel back into its installed position and tighten the 1/4-turn fasteners to hold the panel.

SUBTASK 21-31-00-860-016

(11) Set the mode selector switch on the pressure control module to the MAN position.

SUBTASK 21-31-00-860-017

(12) Make sure the AUTO FAIL light goes off and the MANUAL light comes on.

SUBTASK 21-31-00-860-018

(13) Set the mode selector switch on the pressure control module to the AUTO position.

SUBTASK 21-31-00-860-019

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

SUBTASK 21-31-00-860-020

(15) Make sure the AUTO FAIL, ALTN, and the MANUAL lights are off.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-00-860-021

(1) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

TASK 21-31-00-700-802

5. Pressurization System Ground Test

(Figure 501)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

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(Continued)

Zone	Area
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Pressurization System Ground Test (No. 1 Pressure Controller)

SUBTASK 21-31-00-860-023

(1) Put the mode selector switch on the P5-6 pressure control module to AUTO.

SUBTASK 21-31-00-710-013

CAUTION: MAKE SURE ONE OF THE EXTERNAL DOORS OR WINDOWS IS OPEN BEFORE YOU CONTINUE WITH THE TEST. UNCONTROLLED PRESSURIZATION OF THE CABIN CAN OCCUR WHEN THE OUTFLOW VALVE IS CLOSED. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Make sure at least one external door or window is open or that the L and R PACK switches on the P5 forward overhead panel are off.

SUBTASK 21-31-00-740-003

(3) Do these steps on the BITE module on the pressure controller No. 1:

(a) Push the ON/OFF button on the BITE module on the pressure controller No. 1.

(b) Push the MENU button.

(c) Continue to push the button with the down arrow label until the display shows this message:

Table 501/21-31-00-993-801

GROUND TEST

(d) Push the YES button.

(e) Make sure this message is shown on the display:

Table 502/21-31-00-993-802

DISPLAY TEST

(f) Continue to push the button with the down arrow label until the display shows this message:

Table 503/21-31-00-993-803

SYSTEM TEST

(g) Push the YES button to start the system test.

(h) Make sure this message is shown on the display:

Table 504/21-31-00-993-804

DOORS OPEN?

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(i) Make sure that at least one external airplane door is open and then push the YES button.

(j) Make sure this message is shown on the display:

Table 505/21-31-00-993-805

DADC ON?

(k) Make sure that both ADIRU L and R are ON.

(l) Push the YES button.

(m) Make sure this message is shown on the display:

Table 506/21-31-00-993-806

SMC ON?

(n) Push the YES button on the pressure controller No. 1.

(o) Make sure this message is shown on the display:

Table 507/21-31-00-993-807

OFV CLEAR?

(p) Do these steps in less than one minute or the test will fail:

NOTE: You will try to do a system test on pressure controller No. 2 while the test for pressure controller No. 1 is in progress. The system test cannot be done on the two controllers at the same time. This step makes sure that if you try to do the system test on pressure controller No. 2 when the test is in progress on pressure controller No. 1 that the test on pressure controller No. 2 will be aborted.

WARNING: DO NOT PUT YOUR HANDS OR TOOLS IN THE OUTLET OF THE OUTFLOW VALVE. THE VALVE IS MOTOR-OPERATED. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

1) Push the YES button on the BCM on pressure controller No. 1 after you make sure the outflow valve is not blocked.

2) Make sure this message is shown on the display:

NOTE: Five or eight digits will come on below the word "TESTING" at intervals of approximately 12 seconds. Older controllers will show eight digits. Newer controllers will show 5 digits.

Table 508/21-31-00-993-808

TESTING

3) Do these steps on the BITE module on pressure controller No. 2:

a) Push the ON/OFF button on the front of the pressure controller No. 2.

b) Push the MENU button.

c) Continue to push the button with the down arrow label until the display shows this message:

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Table 509/21-31-00-993-809

GROUND TEST

d) Push the YES button.

e) Make sure this message is shown on the display:

Table 510/21-31-00-993-810

DISPLAY TEST

f) Continue to push the button with the down arrow label until the display shows this message:

Table 511/21-31-00-993-811

SYSTEM TEST

g) Push the YES button to start the system test.

h) Make sure the display on the BITE module of pressure controller No. 2 shows these messages:

NOTE: The messages will show one after the other with a two second delay between the first and the second message. This shows that the test on pressure controller No. 2 is aborted.

Table 512/21-31-00-993-812

BOTH SYS
IN IBIT
IBIT
ABORTED

i) Push the ON/OFF button on the BITE module of pressure controller No. 2 (M1654).

(q) Make sure that five or eight digits are on for pressure controller No. 1.

NOTE: Five or eight digits will come on below the word "TESTING" at intervals of approximately 12 seconds. Older controllers will show eight digits. Newer controllers will show 5 digits.

(r) Make sure the display on the BITE module of pressure controller No. 1 shows these messages:

NOTE: The messages will show one after the other with a two second delay between the first and the second message.

Table 513/21-31-00-993-813

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SYSTEM
OK
SYSTEM TEST
& CLEAR

(s) Push the YES button on the BITE module on pressure controller No. 1 (M1653).

(t) Push the ON/OFF button on the BITE module on pressure controller No. 1 (M1653).

D. Pressurization System Ground Test (No. 2 Pressure Controller)

SUBTASK 21-31-00-860-026

(1) Put the mode selector switch on the P5-6 pressure control module to AUTO.

SUBTASK 21-31-00-710-014

CAUTION: MAKE SURE ONE OF THE EXTERNAL DOORS OR WINDOWS IS OPEN BEFORE YOU CONTINUE WITH THE TEST. UNCONTROLLED PRESSURIZATION OF THE CABIN CAN OCCUR WHEN THE OUTFLOW VALVE IS CLOSED. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Make sure at least one external door or window is open or that the L and R PACK switches on the P5 forward overhead panel are off.

SUBTASK 21-31-00-740-004

(3) Do these steps on the BITE module on the pressure controller No. 2:

(a) Push the ON/OFF button on the BITE module on the pressure controller No. 2.

(b) Push the MENU button.

(c) Continue to push the button with the down arrow label until the display shows this message:

Table 514/21-31-00-993-814

GROUND TEST

(d) Push the YES button.

(e) Make sure this message is shown on the display:

Table 515/21-31-00-993-815

DISPLAY TEST

(f) Continue to push the button with the down arrow label until the display shows this message:

Table 516/21-31-00-993-816

SYSTEM TEST

(g) Push the YES button to start the system test.

(h) Make sure this message is shown on the display:

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Table 517/21-31-00-993-817

DOORS OPEN?

(i) Make sure that at least one external airplane door is open and then push the YES button.

(j) Make sure this message is shown on the display:

Table 518/21-31-00-993-818

DADC ON?

(k) Make sure that both ADIRU L and R are ON.

(l) Push the YES button.

(m) Make sure this message is shown on the display:

Table 519/21-31-00-993-819

SMC ON?

(n) Push the YES button on the pressure controller No. 2.

(o) Make sure this message is shown on the display:

Table 520/21-31-00-993-820

OFV CLEAR?

(p) Do these steps in less than one minute or the test will fail:

NOTE: You will try to do a system test on pressure control No. 1 while the test for pressure controller No. 2 is in progress. The system test cannot be done on the two pressure controllers at the same time. This test makes sure that if you try to do the system test on pressure controller No. 1 when the test is in progress on pressure controller No. 2 that the test on pressure controller No. 1 will be aborted.

WARNING: DO NOT PUT YOUR HANDS OR TOOLS IN THE OUTLET OF THE OUTFLOW VALVE. THE VALVE IS MOTOR-OPERATED. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT COULD RESULT.

1) Push the YES button on pressure controller No. 2 after you make sure the outflow valve is not blocked.

2) Make sure this message is shown on the display:

NOTE: Five or eight digits will come on below the word "TESTING" at intervals of approximately 12 seconds. Older controllers will show eight digits. Newer controllers will show 5 digits.

Table 521/21-31-00-993-821

TESTING

3) Do these steps on the BITE module on pressure controller No. 1:

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a) Push the ON/OFF button on the front of pressure controller No. 1 (M1653).

b) Push the MENU button.

c) Continue to push the button with the down arrow label until the display shows this message:

Table 522/21-31-00-993-822

GROUND TEST

d) Push the YES button.

e) Make sure this message is shown on the display:

Table 523/21-31-00-993-823

DISPLAY TEST

f) Continue to push the button with the down arrow label until the display shows this message:

Table 524/21-31-00-993-824

SYSTEM TEST

g) Push the YES button to start the system test.

h) Make sure the display on the BITE module of pressure controller No. 1 shows these messages:

NOTE: The messages will show one after the other with a two second delay between the first and the second message. This shows that the test on pressure controller No. 1 is aborted.

Table 525/21-31-00-993-825

BOTH SYS
IN IBIT
IBIT
ABORTED

i) Push the ON/OFF button on the BITE module of pressure controller No. 1 (M1653).

(q) Make sure that five or eight digits on pressure controller No. 2 are on.

NOTE: Five or eight digits will come on below the word "TESTING" at intervals of approximately 12 seconds. Older controllers will show eight digits. Newer controllers will show 5 digits.

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(r) Make sure the display on the BITE module of pressure controller No. 2 shows these messages:

NOTE: The messages will show one after the other with a two second delay between the first and the second message.

Table 526/21-31-00-993-826

SYSTEM
OK
SYSTEM TEST
& CLEAR

(s) Push the YES button on the BITE module on pressure controller No. 2 (M1654).

(t) Push the ON/OFF button on the BITE module on pressure controller No. 2 (M1654).

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-00-860-029

(1) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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CABIN PRESSURE CONTROLLER (CPC) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the cabin pressure controller (CPC).

(2) An installation of the cabin pressure controller (CPC).

TASK 21-31-01-000-801

2. Cabin Pressure Controller (CPC) Removal

(Figure 401 or Figure 402)

A. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Procedure

SUBTASK 21-31-01-860-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

SUBTASK 21-31-01-010-001

(2) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-31-01-020-001

AKS ALL; AIRPLANES WITH CABIN PRESSURE CONTROLLERS P/N 7121-19971-01AA/01AB/01AC/01BA

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AKS ALL; AIRPLANES WITH CABIN PRESSURE CONTROLLERS P/N 7121-19971-01AA/01AB/01AC/01BA (Continued)

CAUTION: REMOVE AND INSTALL THE PRESSURE CONTROLLER CAREFULLY TO PREVENT DAMAGE TO THE COPPER TAPE ON THE FRONT OF THE PRESSURE CONTROLLER. THE COPPER TAPE PREVENTS ELECTROMAGNETIC INTERFERENCE. IF YOU ARE NOT CAREFUL, DAMAGE TO THE COPPER TAPE WILL OCCUR.

AKS ALL

(3) Remove the cabin pressure controller No. 2 [1] or the cabin pressure controller No. 1 [2]. To remove the controller, do this task: E/E Box Removal, TASK 20-10-07-000-801.

——— END OF TASK ———

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Cabin Pressure Controller Installation
Figure 401/21-31-01-990-801 (Sheet 1 of 2)

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NOTE:

OVERLAP AREA 1.0-2.0 INCHES (25.0-50.0 mm)

LEGEND:

ADDED LAYER OF PROTECTION TAPE

Cabin Pressure Controller Installation
Figure 401/21-31-01-990-801 (Sheet 2 of 2)

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Cabin Pressure Controller Installation
Figure 402/21-31-01-990-803 (Sheet 1 of 4)

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Cabin Pressure Controller Installation
Figure 402/21-31-01-990-803 (Sheet 2 of 4)

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Cabin Pressure Controller Installation
Figure 402/21-31-01-990-803 (Sheet 3 of 4)

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NOTE:

OVERLAP AREA 1.0-2.0 INCHES (25.0-50.0 mm)

LEGEND:

ADDED LAYER OF PROTECTION TAPE

Cabin Pressure Controller Installation
Figure 402/21-31-01-990-803 (Sheet 4 of 4)

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TASK 21-31-01-400-801

3. Cabin Pressure Controller (CPC) Installation

(Figure 401 or Figure 402)

A. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
21-31-00-700-802	Pressurization System Ground Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)

B. Consumable Materials

Reference	Description	Specification
B00062	Solvent - Acetone (99.5% Grade)	ASTM D 329 (Supersedes O-A-51)
B00634	Solvent - Stabilized Limonene Cleaner	BMS11-10 Type 1, 2, or 3
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G50179	Tape - Moisture Barrier, Adhesive One-side, Clear Polyurethane	BMS8-346 Type I
G50630	Tape - Copper Foil With Conductive Adhesive (3M 1181 Tape)	
G51207	Tape - Moisture Barrier, Adhesive One-side, Clear Polyurethane	BMS8-346 Type I Class 1

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Pressure controller No. 2	21-31-01-03-010	AKS ALL
2	Pressure controller No. 1	21-31-01-02B-010	AKS ALL

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Cabin Pressure Controller (CPC) Installation

SUBTASK 21-31-01-420-002

(1) Make sure the shipping protection cap [2] is removed from the cabin pressure port on the faceplate of the controller.

AKS ALL; AIRPLANES WITH CABIN PRESSURE CONTROLLERS P/N 7121-19971-01AA/01AB/01AC/01BA

SUBTASK 21-31-01-211-001

(2) Visually inspect the installed copper tape on the cabin pressure controller to determine if any of these conditions exist:

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(a) Abrasions to the copper tape at the corners of the front cover

(b) Splitting/tearing of the copper tape at these locations:

1) Along the edges of the front cover at the juncture with the side covers

2) At the four corners of the front cover.

(c) Disbonding/peeling of the copper tape away from the controller front cover

(d) If any of the above conditions exist, replace all of the copper tape.

SUBTASK 21-31-01-420-004

(3) Replace damaged copper tape as follows:

(a) Remove all the installed tape.

(b) Clean the surfaces to be taped as follows:

1) Use a cotton wiper, G00034 that is moist with solvent, B00062 or Limonene solvent, B00634 to clean the surface of tape residue.

2) Use a cotton wiper, G00034 to remove all traces of solvent from the surfaces to be taped until the surfaces are dry.

(c) Install the 1-inch wide 3M 1181 copper foil tape, G50630 to the controller front cover and the interfacing controller sides as shown on Figure 401 or Figure 402 :

1) Make sure the tape overlaps the front cover of the controller a minimum of 1.5 mm and a maximum of 2.2 mm with the remainder of the tape applied to the sides of the controller.

2) Make sure the tape blocks all optical openings into the controller where the controller front cover interfaces with the sides of the controller.

3) Apply multiple layers of tape as necessary to make sure all openings into the controller are blocked:

a) Make sure that all openings at the front cover corners are blocked.

4) Do not cover the BITE instruction label.

SUBTASK 21-31-01-410-002

(4) If the Added Layer Of Protection (ALOP) tape is not installed on the cabin pressure controller do the following steps:

NOTE: The additional tape layer should not replace the required copper tape. It is installed to protect the copper tape from damage.

(a) Make sure the existing copper tape has been inspected and replaced as necessary.

(b) Install the ALOP moisture barrier tape, G50179 or ALOP moisture barrier tape, G51207 over the copper tape on the four corners and edges of the cabin pressure controller front cover as shown on Figure 401 or Figure 402 .

1) Make sure the tape overlaps the front cover of the controller a minimum of 0.375 in. (9.525 mm) and maximum of 0.45 in. (11.43 mm)

a) Trim the ALOP tape at the handle and BITE module.

b) Make sure the ALOP tape overlaps the side of the BITE module.

2) Apply the remainder of the ALOP tape width to the sides of the cabin pressure controller.

a) Make sure the ALOP overlaps the existing copper tape.

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AKS ALL; AIRPLANES WITH CABIN PRESSURE CONTROLLERS P/N 7121-19971-01AA/01AB/01AC/01BA (Continued)

3) Do not cover the cooling holes on the sheet metal.

(c) Make sure that the modification level sticker at the front is still readable.

(d) Make sure that the bite instruction label is not covered with tape.

AKS ALL

SUBTASK 21-31-01-420-001

AKS ALL; AIRPLANES WITH CABIN PRESSURE CONTROLLERS P/N 7121-19971-01AA/01AB/01AC/01BA

CAUTION: REMOVE AND INSTALL THE PRESSURE CONTROLLER CAREFULLY TO PREVENT DAMAGE TO THE COPPER TAPE ON THE FRONT OF THE PRESSURE CONTROLLER. THE COPPER TAPE PREVENTS ELECTROMAGNETIC INTERFERENCE. IF YOU ARE NOT CAREFUL, DAMAGE TO THE COPPER TAPE WILL OCCUR.

AKS ALL

(5) Install the cabin pressure controller No. 2 [1] or the cabin pressure controller No. 1 [2]. To install the controller, do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 21-31-01-860-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

G. Cabin Pressure Controller (CPC) Installation Test

SUBTASK 21-31-01-860-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-31-01-740-001

(2) Do a pressurization system ground test on the controller. To do the ground test, do this task: Pressurization System Ground Test, TASK 21-31-00-700-802.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-01-410-001

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

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CABIN PRESSURE CONTROL MODULE - REMOVAL/INSTALLATION

1. General

A. The pressure control module is installed on the lower right corner of the P5 forward overhead panel in the flight deck.

B. This procedure has these tasks:

(1) A removal of the cabin pressure control module.

(2) An installation of the cabin pressure control module.

TASK 21-31-02-000-801

2. Cabin Pressure Control Module Removal

(Figure 401)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Location Zones

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

C. Cabin Pressure Control Module Removal

SUBTASK 21-31-02-860-006

(1) Make sure power has been removed from the airplane (Remove Electrical Power, TASK 24-22-00-860-812).

SUBTASK 21-31-02-860-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	7	C01272	PRESSURIZATION CONTROL IND

SUBTASK 21-31-02-010-001

(3) Get access to the electrical connectors on the back of the P5-6 cabin pressure control module in the P5 forward overhead panel.

(a) Loosen the 1/4-turn fasteners that hold the P5 forward overhead panel in position and let the panel move downward.

SUBTASK 21-31-02-020-001

(4) Remove the P5-6 cabin pressure control module [1] from the P5 forward overhead panel as follows:

(a) Disconnect the electrical connectors at the back of the module.

WARNING: HOLD THE PRESSURE CONTROL MODULE WHEN YOU LOOSEN THE 1/4-TURN FASTENERS. IF THE MODULE FALLS, INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(b) Hold the cabin pressure control module [1] while you loosen the 1/4-turn fasteners that attach the cabin pressure control module [1] to the P5 forward overhead panel.

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(c) Remove the cabin pressure control module [1].

——— END OF TASK ———

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FLIGHT COMPARTMENT

[1] CABIN PRESSURE CONTROL MODULE

A

2177695 S0000480356_V2

Cabin Pressure Control Module Installation
Figure 401/21-31-02-990-801

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TASK 21-31-02-400-801

3. Cabin Pressure Control Module Installation

(Figure 401)

A. References

Reference	Title
21-31-00-700-802	Pressurization System Ground Test (P/B 501)
21-31-00-710-801	Pressurization System Manual Mode Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Module	21-31-02-06-020	AKS ALL
		31-11-94-05S-055	AKS 007, 008, 011, 012, 014, 019, 026, 028-999

C. Location Zones

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

D. Cabin Pressure Control Module Installation

SUBTASK 21-31-02-860-005

(1) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	7	C01272	PRESSURIZATION CONTROL IND

SUBTASK 21-31-02-010-002

(2) If it has not already been done, lower the P5 forward overhead panel.

SUBTASK 21-31-02-420-001

(3) Install the P5-6 cabin pressure control module [1] into the P5 forward overhead panel as follows:

(a) Put the module [1] into the P5 forward overhead panel and hold it in position.

(b) Turn the 1/4-turn fasteners on the cabin pressure control module [1] to hold the module to the P5 forward overhead panel.

(c) Connect the two electrical connectors to the module.

SUBTASK 21-31-02-010-003

(4) Lift the P5 forward overhead panel to the closed position and turn the 1/4-turn fasteners.

SUBTASK 21-31-02-860-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1

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(Continued)

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	7	C01272	PRESSURIZATION CONTROL IND

E. Cabin Pressure Control Module Installation Test

SUBTASK 21-31-02-860-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-31-02-860-004

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	1	C01273	PRESSURIZATION CONTROL LCD LTG
F	6	C01269	PRESSURIZATION CONTROL MANUAL

SUBTASK 21-31-02-710-001

(3) Do a cabin pressurization system ground test. To do the ground test, do this task: Pressurization System Ground Test, TASK 21-31-00-700-802.

SUBTASK 21-31-02-710-002

(4) Do a Pressurization System Manual Mode Test. To do the manual mode test, do this task: Pressurization System Manual Mode Test, TASK 21-31-00-710-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-31-02-410-001

(1) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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AFT OUTFLOW VALVE ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure gives instructions for the removal and installation of the aft outflow valve assembly.

B. The aft outflow valve assembly is found on the bottom of the airplane near the aft entry door.

TASK 21-31-03-000-801

2. Aft Outflow Valve Assembly Removal

(Figure 401)

A. Location Zones

Zone	Area
146	Aft Cargo Compartment Equipment Bay - Right

B. Prepare for the Removal

SUBTASK 21-31-03-860-001

WARNING: MAKE SURE YOU DO NOT OPERATE THE OUTFLOW VALVE DURING THE REMOVAL OR THE INSTALLATION. IF YOU OPERATE THE VALVE DURING THE REMOVAL OR INSTALLATION YOU CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL

C. Outflow Valve Assembly Removal

AKS ALL; OUTFLOW VALVES WITH JAGGED GATES

SUBTASK 21-31-03-020-008

(1) Use care not to damage the antiskating foil on the forward and aft gates of the outflow valve (Figure 402) when you reach through the opening of the valve to disconnect electrical connectors or other components.

NOTE: The purpose of the antiskating foil is to help reduce any noise made by the air as it passes through the valve.

AKS ALL

SUBTASK 21-31-03-020-001

(2) Disconnect these electrical connectors from the aft outflow valve [1]:

NOTE: You can access the connectors through the valve door opening.

(a) ELACT 1 [3]

(b) ELACT 2 [2]

(c) Feedback Module 1 [5]

(d) Feedback Module 2 [6]

SUBTASK 21-31-03-020-002

(3) Remove the nut [7] and the washer [8] that attach the bonding jumper [9] to the aft outflow valve [1].

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SUBTASK 21-31-03-020-003

(4) Disconnect the bonding jumper [9] from the aft outflow valve [1].

SUBTASK 21-31-03-020-009

(5) Turn the three aft lugs [11] so that they face inboard to outboard.

SUBTASK 21-31-03-860-002

WARNING: DO NOT INSERT YOUR HANDS OR TOOLS IN THE OUTFLOW VALVE WHEN THE VALVE IS IN OPERATION. IF YOU INSERT YOUR HANDS OR TOOLS IN THE OUTFLOW VALVE WHEN IT OPERATES YOU CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(6) Do these steps to position the aft outflow valve [1] gates so that the valve can be moved through the fuselage opening:

(a) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	6	C01269	PRESSURIZATION CONTROL MANUAL

(b) Put the mode select switch on the cabin pressure control module on the overhead P5 panel to the MAN position.

(c) Position the aft outflow valve [1] as follows:

1) Use the service interphone system to make sure there is communication between the technician at the aft outflow valve location and the technician in the flight deck.

2) Push and hold the CLOSE/OPEN toggle switch on the P5-6 pressure control module to CLOSE until the technician at the aft outflow valve location states that the valve is approximately in the specified position (see Figure 401, View B-B).

SUBTASK 21-31-03-860-003

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	6	C01269	PRESSURIZATION CONTROL MANUAL

SUBTASK 21-31-03-020-004

(8) Do these steps to remove the aft outflow valve [1]:

(a) Turn the six screws [12] counterclockwise as much as you can.

(b) Slowly push up and aft against the aft end of the aft outflow valve [1].

(c) Turn the aft outflow valve [1] as necessary until you can get to the manual motor electrical connector [4].

(d) Disconnect the manual motor electrical connector [4].

(e) Lift and turn the aft outflow valve [1] so that it is diagonal to the skin opening of the airplane and so that the valve motors are up.

(f) Carefully remove the aft outflow valve [1] through the skin opening of the airplane.

NOTE: Remove the valve [1] such that the valve motors come out last.

(g) Remove the gasket [10].

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AKS ALL; OUTFLOW VALVES WITH JAGGED GATES

SUBTASK 21-31-03-210-001

(9) Visually examine the condition of the antiskating foil on the forward and aft gates of the outflow valve (Figure 402) as follows:

AKS ALL

(a) If the antiskating foil is missing, you may make a decision to do one of these actions:

1) Remove any adhesive or dirt that remains on the valve gates and not replace the foil as the outflow valve is functionally serviceable with the antiskating foil missing.

2) Repair the antiskating foil per the vendor component maintenance manual at the next convenient maintenance opportunity.

(b) If the antiskating foil is damaged or peeled away from the gate surface, trim the damaged or loose portion of the foil from the gate.

——— END OF TASK ———

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Aft Outflow Valve Installation
Figure 401/21-31-03-990-801 (Sheet 1 of 4)

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Aft Outflow Valve Installation
Figure 401/21-31-03-990-801 (Sheet 2 of 4)

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Aft Outflow Valve Installation
Figure 401/21-31-03-990-801 (Sheet 3 of 4)

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Aft Outflow Valve Installation
Figure 401/21-31-03-990-801 (Sheet 4 of 4)

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AFT OUTFLOW VALVE

A

1957065 S0000370128_V3

Location of Antiskating Foil on Forward and Aft Gates
Figure 402/21-31-03-990-802 (Sheet 1 of 2)

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FORWARD GATE

B

AFT GATE

C

1957955 S0000373350_V3

Location of Antiskating Foil on Forward and Aft Gates
Figure 402/21-31-03-990-802 (Sheet 2 of 2)

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TASK 21-31-03-400-801

3. Aft Outflow Valve Assembly Installation

(Figure 401)

A. References

Reference	Title
21-31-00-700-802	Pressurization System Ground Test (P/B 501)
21-31-00-710-801	Pressurization System Manual Mode Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Tools/Equipment

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

Reference	Description
COM-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 #: C15292 (MODEL T477W) Supplier: 01014 Part #: M1 Supplier: 3AD17 Opt Part #: M1B Supplier: 3AD17
COM-10996	Bit - Screwdriver, Torq-set Part #: TS212-5/16B Supplier: 67179
SPL-14208	Extension Cable - Outflow Valve Installation, Aft Fuselage Part #: C21008-1 Supplier: 81205
STD-10994	Screwdriver - Torque, (0-100 in-lbs, 1/4 in. drive)

C. Consumable Materials

Reference	Description	Specification
D50004	Compound - Antiseize	BMS3-28

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-31-03-01-197	AKS ALL
10	Gasket	21-31-03-01-080	AKS ALL

E. Location Zones

Zone	Area
146	Aft Cargo Compartment Equipment Bay - Right

F. Outflow Valve Assembly Installation

(Figure 401)

SUBTASK 21-31-03-860-006

(1) Make sure power has been removed from the airplane (Remove Electrical Power, TASK 24-22-00-860-812).

SUBTASK 21-31-03-420-004

(2) Make sure that all shipping plugs are removed from the vent ports of the two electronic actuators.

NOTE: The vent ports are below the electronic actuators.

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SUBTASK 21-31-03-640-001

(3) If a screw [12] is replaced for any reason or if a screw [12] was difficult to loosen, apply a light and even application of compound, D50004 to the threads and shank of the screw [12].

AKS ALL; OUTFLOW VALVES WITH JAGGED GATES

SUBTASK 21-31-03-420-006

(4) Use care not to damage the antiskating foil on the forward and aft gates of the outflow valve (Figure 402) when you reach through the opening of the valve to connect electrical connectors or other components.

(a) If you install the same outflow valve that you removed and the foil is damaged or peeled away from the gate, the foil can be removed or cut away until all loose foil has been removed.

AKS ALL

SUBTASK 21-31-03-980-001

(5) If the aft outflow valve [1] to be installed is in the fully open position or closed position and you do not have outflow valve installation extension cable, SPL-14208 available, do these steps to position the outflow valve gates so that the valve can be moved through the fuselage opening:

NOTE: If you are re-installing the same outflow valve that you removed, then you do not need to change the position of the valve gates.

(a) Lift the aft outflow valve [1] sufficiently so that you can connect the manual motor electrical connector [4] on the valve.

(b) Connect the manual motor electrical connector [4] on the aft outflow valve [1].

(c) Put the aft outflow valve [1] on a suitable support so that the valve doors will be free to move.

WARNING: DO NOT INSERT YOUR HANDS OR TOOLS IN THE OUTFLOW VALVE WHEN THE VALVE IS IN OPERATION. IF YOU INSERT YOUR HANDS OR TOOLS IN THE OUTFLOW VALVE WHEN IT OPERATES, YOU CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	6	C01269	PRESSURIZATION CONTROL MANUAL

(e) Put the mode select switch on the cabin pressure control module on the overhead P5 panel to the MAN position.

(f) Position the aft outflow valve [1] as follows:

1) Use the service interphone system to make sure there is communication between the technician at the aft outflow valve location and the technician in the flight deck.

2) Push and hold the CLOSE/OPEN toggle switch on the P5-6 pressure control module to OPEN until the technician at the aft outflow valve location states that the valve is approximately in the specified position (see Figure 401, Section B-B).

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	6	C01269	PRESSURIZATION CONTROL MANUAL

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(h) Disconnect the manual motor electrical connector [4] from the aft outflow valve [1].

SUBTASK 21-31-03-480-001

(6) If the aft outflow valve [1] to be installed is in the fully open position or closed position and outflow valve installation extension cable, SPL-14208 is available, do these steps to position the outflow valve gates so that the valve can be moved through the fuselage opening:

NOTE: If you are re-installing the same outflow valve that you removed, then you do not need to change the position of the valve gates.

(a) Position the aft outflow valve so that the valve gates are free to move and are not obstructed.

(b) Connect J1 connector of the outflow valve installation extension cable, SPL-14208 to connector D10730 on the ship's wiring inside the outflow valve opening in the fuselage.

(c) Connect P1 of the outflow valve installation extension cable, SPL-14208 to the manual motor electrical connector J5 [4] on the aft outflow valve DC motor.

WARNING: DO NOT PUT YOUR HANDS OR TOOLS IN THE OUTLET OF THE OUTFLOW VALVE. THE VALVE IS MOTOR-OPERATED. INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(d) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	6	C01269	PRESSURIZATION CONTROL MANUAL

(e) Put the mode select switch on the P5-6 cabin pressure control module to the MAN position.

(f) Position the aft outflow valve [1] as follows:

1) Use the service interphone system to make sure there is communication between the technician at the aft outflow valve location and the technician in the flight deck.

2) Push and hold the CLOSE/OPEN toggle switch on the P5-6 pressure control module to OPEN until the technician at the aft outflow valve location states that the valve is approximately in the specified position (see Figure 401, Section B-B).

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	6	C01269	PRESSURIZATION CONTROL MANUAL

(h) Disconnect the outflow valve installation extension cable, SPL-14208 from the aft outflow valve connector J5 and connector D10730 on the ship's wiring.

SUBTASK 21-31-03-420-001

(7) Do these steps to install the aft outflow valve [1]:

(a) Make sure the three aft lugs [11] are turned so they face inboard to outboard.

NOTE: The lugs will be 1/4 turn away from the installed position.

(b) Put the aft outflow valve [1] through the skin opening on the airplane so that the motors go in first with the valve diagonal to the skin opening.

NOTE: The motors will be on the inboard side of the skin opening.

(c) Set the aft outflow valve [1] down on the inside of the airplane so that you can connect the manual motor electrical connector [4].

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(d) Connect the manual motor electrical connector [4] to the aft outflow valve [1].

(e) Install the gasket [10] in its position on the airplane skin opening with the thinner rubber side against the airplane (down).

(f) Do these steps to put the aft outflow valve [1] in its position:

1) Put the aft outflow valve [1] above the skin opening with the motors facing inboard.

2) While you tilt the aft outflow valve [1], put the forward end of the valve under the three forward lugs [11], then lower the aft end of the valve.

3) Turn the three aft lugs [11] 90 degrees counterclockwise so that they face aft to forward.

(g) Tighten the screws [12] to 55-65 pound-inches (6.12-7.23 newton-meters) as follows:

1) Tighten the screws [12] no more than one turn at a time in sequence (1 thru 6) as shown (Figure 401), (View D).

2) Continue to tighten the screws [12] until all of the latches are in contact with the valve.

3) Use a torque screwdriver, STD-10994 set at 55 to 65 pound-inches (6.12-7.23 newton-meters) with a bit, COM-10996 to tighten the screws no more than 1/2 turn at a time in the sequence shown in (Figure 401), (View D).

4) Continue to tighten the screws [12] in sequence until all latch screws [12] are tightened to 55 to 65 pound-inches (6.12-7.23 newton-meters).

5) If a screw [12] does not turn when the final application of torque is applied, back that screw [12] off one turn and tighten it to the final torque value.

WARNING: DO NOT INSERT YOUR HANDS OR TOOLS IN THE OUTFLOW VALVE WHEN THE VALVE IS IN OPERATION. IF YOU INSERT YOUR HANDS OR TOOLS IN THE OUTFLOW VALVE WHEN IT OPERATES YOU CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	6	C01269	PRESSURIZATION CONTROL MANUAL

(i) Put the mode select switch on the cabin pressure control module on the overhead P5 panel to the MAN position.

(j) Use the service interphone system so that the technician at the aft outflow valve location can communicate the position of the aft outflow valve to the technician in the flight deck.

(k) Push and hold the manual control switch to the OPEN position until the aft outflow valve [1] is in the full open position.

(l) Open this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	6	C01269	PRESSURIZATION CONTROL MANUAL

SUBTASK 21-31-03-420-002

(8) Connect these electrical connectors to the aft outflow valve [1]:

NOTE: You can access the connectors through the valve door opening.

(a) ELACT 1 [3]

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(b) ELACT 2 [2]

(c) Feedback Module 1 [5]

(d) Feedback Module 2 [6]

SUBTASK 21-31-03-020-005

(9) Put the bonding jumper [9] in its position on the stud of the aft outflow valve [1].

SUBTASK 21-31-03-420-003

(10) Install the nut [7] and the washer [8] that attach the bonding jumper [9] to the aft outflow valve [1].

(a) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the resistance between the bonding jumper [9] and the aft outflow valve [1] is a maximum of 1 milliohm.

SUBTASK 21-31-03-860-004

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL

G. Outflow Valve Assembly Installation Test

SUBTASK 21-31-03-710-001

(1) Do a test of the manual mode. To test the manual mode, do this task: Pressurization System Manual Mode Test, TASK 21-31-00-710-801.

SUBTASK 21-31-03-710-002

(2) Do a cabin pressure control system ground test. To do the ground test, do this task: Pressurization System Ground Test, TASK 21-31-00-700-802.

——— END OF TASK ———

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POSITIVE PRESSURE RELIEF VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Positive pressure relief valve removal.

(2) Positive pressure relief valve installation.

B. Two positive pressure relief valves are installed in the area aft of the aft cargo compartment behind the aft bulkhead liner.

TASK 21-32-01-000-801

2. Positive Pressure Relief Valve Removal

(Figure 401)

A. References

Reference	Title
21-31-03-000-801	Aft Outflow Valve Assembly Removal (P/B 401)
38-11-01-000-801	Water Tank Removal (P/B 401)

B. Location Zones

Zone	Area
146	Aft Cargo Compartment Equipment Bay - Right

C. Prepare for the Removal

SUBTASK 21-32-01-010-005

(1) Do one of the tasks that follow to get access to the positive pressure relief valves.

(a) Remove the potable water tank. To remove the potable water tank, do this task: Water Tank Removal, TASK 38-11-01-000-801.

(b) Remove the aft outflow valve. To remove the aft outflow valve, do this task: Aft Outflow Valve Assembly Removal, TASK 21-31-03-000-801.

D. Positive Pressure Relief Valve Removal

SUBTASK 21-32-01-020-001

(1) Loosen the clamp [3] at the bottom of the relief valve [4].

(a) Slide the clamp [3] down over the pedestal [1].

SUBTASK 21-32-01-020-002

(2) Remove the relief valve [4].

SUBTASK 21-32-01-020-003

(3) Remove and discard the gasket [2].

——— END OF TASK ———

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Positive Pressure Relief Valve Installation
Figure 401/21-32-01-990-802 (Sheet 1 of 2)

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Positive Pressure Relief Valve Installation
Figure 401/21-32-01-990-802 (Sheet 2 of 2)

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TASK 21-32-01-400-801

3. Positive Pressure Relief Valve Installation

(Figure 401)

A. References

Reference	Title
21-31-03-400-801	Aft Outflow Valve Assembly Installation (P/B 401)
21-32-01-700-801	Positive Pressure Relief Valve - System Test with the Use of Hamilton Sundstrand Test Equipment (P/B 501)
21-32-01-700-802	Positive Pressure Relief Valve - System Test with the Use of Boeing Test Equipment (P/B 501)
38-11-01-400-801	Water Tank Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
G50063	Lubricant - PTFE Release Agent - Miller-Stephenson MS-122XD (Replaces MS-122DF)	BAC5000

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Gasket	21-32-01-01-030	AKS ALL
4	Relief valve	21-32-01-01-010	AKS ALL

D. Location Zones

Zone	Area
146	Aft Cargo Compartment Equipment Bay - Right

E. Positive Pressure Relief Valve Installation

SUBTASK 21-32-01-640-001

(1) Apply MS-122XD release agent, G50063 to the two sides of the gasket [2].

SUBTASK 21-32-01-420-001

CAUTION: MAKE SURE YOU DO NOT GET UNWANTED MATERIALS IN THE AMBIENT SENSE TUBE [5] OR CAUSE THE SENSE TUBE [5] TO BECOME BLOCKED WHEN YOU INSTALL THE GASKET [2]. THE RELIEF VALVE [4] WILL NOT OPERATE CORRECTLY IF THE AMBIENT SENSE TUBE [5] IS BLOCKED.

(2) Install the gasket [2] on the pedestal [1].

SUBTASK 21-32-01-420-002

CAUTION: BE CAREFUL WHEN YOU INSTALL THE RELIEF VALVE [4] VALVE ON THE PEDESTAL [1]. DAMAGE COULD OCCUR TO THE AMBIENT SENSE TUBE [5].

(3) Put the relief valve [4] in its position on the pedestal [1].

SUBTASK 21-32-01-420-003

(4) Put the clamp [3] in its position around the top of the pedestal [1] and the bottom of the relief valve [4].

(a) Tighten the clamp [3] to 65 (+5/-0) inch-pounds.

SUBTASK 21-32-01-710-001

(5) To do the required post-installation test of the relief valve [4] , do one of these tasks:

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(a) Positive Pressure Relief Valve - System Test with the Use of Boeing Test Equipment, TASK 21-32-01-700-802

(b) Positive Pressure Relief Valve - System Test with the Use of Hamilton Sundstrand Test Equipment, TASK 21-32-01-700-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-32-01-410-004

(1) If removed, install the potable water tank. To install the potable water tank, do this task: Water Tank Installation, TASK 38-11-01-400-801.

SUBTASK 21-32-01-410-005

(2) If removed, install the aft outflow valve. To install the aft outflow valve, do this task: Aft Outflow Valve Assembly Installation, TASK 21-31-03-400-801.

——— END OF TASK ———

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POSITIVE PRESSURE RELIEF VALVE - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has two tasks. Each task does a test to find the differential pressure when the positive pressure relief valve opens. The first task uses a Hamilton Sundstrand valve test fixture. The second task uses Boeing test equipment.

C. The two positive pressure relief valves are installed on the lower exterior part of the airplane near the aft entry door. One of the valves is above the aft outflow valve and one is below the aft outflow valve.

D. Each task is accomplished with the positive pressure relief valves installed on the aircraft. The task will make sure that the positive pressure relief valves can operate correctly at specific differential pressures if the pressure inside the airplane becomes too high as compared to the pressure outside the airplane. To accomplish this task, the differential pressure at which the valve is designed to relieve is simulated with ground test equipment.

TASK 21-32-01-700-801

2. Positive Pressure Relief Valve - System Test with the Use of Hamilton Sundstrand Test Equipment

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. Tools/Equipment

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

Reference	Description
SPL-6692	Vacuum Tank - Pressure Relief Valve Tester Part #: A21010-203 Supplier: 81205 Part #: GS15047-1 Supplier: 99167 Opt Part #: A21010-187 Supplier: 81205 Opt Part #: A21010-188 Supplier: 81205 Opt Part #: A21010-189 Supplier: 81205 Opt Part #: A21010-190 Supplier: 81205
STD-1114	Air Source - Regulated, Dry, Filtered 0-150 PSIG with Pressure Gauge range 100 PSIG, 1 PSIG increment and +/-1 psi minimum accuracy

B. Location Zones

Zone	Area
146	Aft Cargo Compartment Equipment Bay - Right

C. Prepare for the Test

SUBTASK 21-32-01-840-002

(1) Make sure there is no blockage or unwanted materials at these locations:

(a) The fuselage skin in the area of the relief valves.

(b) The overboard vent tube opening in the center of each relief valve.

SUBTASK 21-32-01-840-003

(2) Close the pressure regulator on the pressure relief valve tester, SPL-6692.

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SUBTASK 21-32-01-840-001

(3) Connect the Regulated Dry Filtered Air Source, STD-1114 to the pressure regulator of the pressure relief valve tester, SPL-6692.

D. Positive Pressure Relief Valve - System Test

NOTE: This test can only be done on one relief valve at a time. Do the test on the outboard relief valve, then do the test again on the inboard relief valve.

SUBTASK 21-32-01-730-001

(1) Do these steps to do a test of the positive pressure relief valve:

(a) Put the pressure relief valve tester, SPL-6692 on the relief valve on the fuselage.

(b) Put the locating crossbar on the pressure relief valve tester, SPL-6692 forward of the deflector tube on the relief valve and hold the fixture in position.

NOTE: The fixture is installed to make sure that the test fixture gasket is not on the opening in the valve.

(c) Open the air pressure regulator on the pressure relief valve tester, SPL-6692 to start the flow of air.

(d) Adjust the air pressure regulator so that the indication on the vacuum gage increases 2.21 psi/minute (15.24 kPa/minute) until the vacuum gage shows 7.76 psia (53.50 kPa).

WARNING: MANUALLY HOLD THE TEST FIXTURE AGAINST THE FUSELAGE. WHEN THE VALVE OPENS, IT CAN CAUSE THE TEST FIXTURE TO FALL. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(e) When the vacuum gage shows 7.76 psia (53.50 kPa), manually hold the test fixture against the airplane fuselage.

(f) When the vacuum gage shows 7.76 psia (53.50 kPa), adjust the air pressure regulator to increase the vacuum in 0.05 psi (0.34 kPa) increments.

(g) Stop the increase of vacuum for 10 seconds between each increase of 0.05 psi (0.34 kPa).

(h) Continue the intermittent vacuum increases of 0.05 psi (0.34 kPa) until the valve opens as noted by these indications:

1) The cracking point pressure of the valve occurs when the vacuum gauge needle stops increasing, then suddenly decreases slightly, then increases slightly again and then stabilizes.

(i) Monitor the indication on the vacuum gage when the valve opens.

(j) Make sure the valve opens between 8.69 psia (59.92 kPa) to 9.09 psia (62.67 kPa) (17.7 to 18.5 inches Hg).

(k) If the pressure relief valve cracks open at a vacuum gauge indication greater than 9.09 psia (62.67 kPa) (18.5 inches of Hg), make sure that there are no leaks anywhere on the valve test fixture.

(l) Adjust the vacuum regulator valve to increase the differential pressure to approximately 7.5 psid (51.7 kPa) to 7.0 psid (48.3 kPa) (15.04 to 14.02 inches Hg) at a rate not more than 2.00 psig/minute (13.79 kPa/minute) (4.07 inches Hg/minute).

1) Make sure the relief valve closes.

NOTE: The indication that the relief valve has closed is seen on the differential pressure gauge when the gauge stops, and then starts to increase and then becomes stable.

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(m) Adjust the air pressure regulator to reduce the indication on the vacuum gage to 0 psig (0 kPa) (0 inches Hg) at a rate of 4.0 psig/minute (27.58 kPa/minute) (8.14 inches Hg/minute) or slower.

(n) Close the pressure regulator on the pressure relief valve tester, SPL-6692.

(o) Remove the pressure relief valve tester, SPL-6692 from the airplane.

(p) Disconnect the Regulated Dry Filtered Air Source, STD-1114 from the pressure regulator.

SUBTASK 21-32-01-730-002

(2) Do the test for the other relief valve.

——— END OF TASK ———

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Positive Pressure Relief Valve Test Setup
Figure 501/21-32-01-990-804 (Sheet 1 of 2)

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GS15047-1 POSITIVE RELIEF VALVE TEST FIXTURE

B

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Positive Pressure Relief Valve Test Setup
Figure 501/21-32-01-990-804 (Sheet 2 of 2)

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TASK 21-32-01-700-802

3. **Positive Pressure Relief Valve - System Test with the Use of Boeing Test Equipment**
(Figure 502)

NOTE: This procedure is a scheduled maintenance task.

A. Tools/Equipment

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

Reference	Description
SPL-6692	Vacuum Tank - Pressure Relief Valve Tester Part #: A21010-203 Supplier: 81205 Part #: GS15047-1 Supplier: 99167 Opt Part #: A21010-187 Supplier: 81205 Opt Part #: A21010-188 Supplier: 81205 Opt Part #: A21010-189 Supplier: 81205 Opt Part #: A21010-190 Supplier: 81205
STD-1114	Air Source - Regulated, Dry, Filtered 0-150 PSIG with Pressure Gauge range 100 PSIG, 1 PSIG increment and +/-1 psi minimum accuracy

B. Location Zones

Zone	Area
146	Aft Cargo Compartment Equipment Bay - Right

C. Prepare for the Test

SUBTASK 21-32-01-210-001

(1) Make sure there is no blockage or unwanted materials at these locations:

(a) The fuselage skin in the area of the relief valve.

(b) The overboard vent tube opening in the center of each relief valve.

D. Positive Pressure Relief Valve - System Test

NOTE: This test can only be done on one relief valve at a time. Do the test on the outboard relief valve, then do the test again on the inboard relief valve.

SUBTASK 21-32-01-480-001

(1) Do these steps to connect the pressure relief valve tester, SPL-6692 to the relief valve:

(a) Make sure all the valves on the pressure relief valve tester, SPL-6692 are closed.

(b) Connect the Regulated Dry Filtered Air Source, STD-1114 to the quick-disconnect connection on the pressure relief valve tester, SPL-6692.

(c) Adjust the air control valve on the pressure relief valve tester, SPL-6692 until the indication on the pressure gage is 70 +/-10 psi (482.6 ±69 kPa).

(d) Adjust the vacuum regulator valve until the differential pressure is approximately 2.0 psi (4.07 inches Hg) (14 kPa).

NOTE: Turn the vacuum regulator valve counter-clockwise to increase the vacuum (differential pressure). The arrow on the vacuum regulator valve indicates an increase of pressure not vacuum.

(e) Put and hold the vacuum head assembly over the relief valve, and open the vacuum head assembly valve.

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1) Make sure the vacuum head assembly is sealed to the airplane skin.

SUBTASK 21-32-01-730-003

(2) Do these steps to find the differential pressure when the relief valve opens:

(a) Adjust the vacuum regulator valve so the indication on the vacuum rate gage does not exceed 2.4 psi/minute (16.5 kPa/minute).

WARNING: THE VACUUM HEAD ASSEMBLY MUST BE MANUALLY HELD AGAINST THE AIRPLANE FUSELAGE WHEN THE DIFFERENTIAL PRESSURE GAGE INDICATION IS 8.25 PSID (56.88 KPA). WHEN THE VALVE OPENS, THE VACUUM HEAD ASSEMBLY CAN FALL FROM THE FUSELAGE SURFACE. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT COULD RESULT.

(b) When the differential pressure gage shows 8.25 psid (56.88 kPa), manually hold the vacuum head assembly against the fuselage.

(c) When the differential pressure gage shows 8.25 psid (56.88 kPa), adjust the vacuum regulator valve to increase the differential pressure in 0.05 psi (.345 kPa) increments.

(d) Stop the increase of vacuum for 10 seconds between each increase of 0.05 psid (.345 kPa).

(e) Continue the intermittent vacuum increases of 0.05 psid (.345 kPa) until the relief valve opens.

(f) Monitor the indication on the differential pressure gage when the relief valve opens.

NOTE: The indication that the relief valve has opened is seen on the differential pressure gage when the pressure starts to decrease.

(g) Make sure that the valve opens at a differential pressure of 8.69 to 9.09 psid (59.92 - 62.67 kPa) (17.7 to 18.5 inches Hg).

NOTE: When the valve opens the differential pressure will decrease to near 0 psid.

(h) If the relief valve opens at a differential pressure more than 9.09 psid (62.67 kPa) (18.5 inches Hg), make sure that there are no leaks at any of the tubing connections on the vacuum tank assembly.

(i) Adjust the vacuum regulator valve to increase the differential pressure to approximately 7.5 to 7.0 psig (51.71 - 48.26 kPa) (15.04 to 14.02 inches Hg) at a rate not more than 2.00 psig/minute (13.79 kPa/minute) (4.07 inches Hg/minute).

1) Make sure the relief valve closes.

NOTE: The indication that the relief valve has closed is seen on the differential pressure gage when the gage stops, and then starts to increase and then becomes stable.

SUBTASK 21-32-01-080-001

(3) Adjust the vacuum regulator valve fully clockwise and reduce the differential pressure to 0 psig (0 inches Hg), at a rate of 4.0 psig/min (27.58 kPa/min) (8.14 inches Hg/min) or slower.

SUBTASK 21-32-01-080-002

(4) Close the vacuum head assembly valve and remove the vacuum head assembly.

SUBTASK 21-32-01-730-004

(5) Do the test for the other relief valve.

END OF TASK

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Positive Pressure Relief Valve Test Setup
Figure 502/21-32-01-990-803 (Sheet 1 of 2)

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A21010 VACUUM TANK - RELIEF VALVE TEST

B

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Positive Pressure Relief Valve Test Setup
Figure 502/21-32-01-990-803 (Sheet 2 of 2)

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POSITIVE PRESSURE RELIEF VALVE FILTER - 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 aft cargo compartment behind just inboard and outboard of the aft outflow valve. 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
25-52-19-000-801	Aft Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)
38-11-01-000-801	Water Tank Removal (P/B 401)

B. Location Zones

Zone	Area
142	Aft Cargo Compartment - Right

C. Prepare for the Removal

SUBTASK 21-32-02-010-001

(1) Remove the cargo compartment liner on the aft bulkhead of the aft cargo compartment to get access to the relief valves. To remove the aft bulkhead liner, do this task: Aft Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-19-000-801.

SUBTASK 21-32-02-010-004

(2) If necessary, you can remove the potable water tank to gain access to the inboard relief valve filter, do this task: (Water Tank Removal, TASK 38-11-01-000-801).

D. Positive Pressure Relief Valve Filter Removal

SUBTASK 21-32-02-020-001

(1) Remove the cover [4] from the top of the positive pressure relief valve [1].

SUBTASK 21-32-02-020-002

(2) Remove and discard the filter [3] and the packing [2].

END OF TASK

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Positive Pressure Relief Valve Filter Installation
Figure 401/21-32-02-990-801 (Sheet 1 of 2)

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Positive Pressure Relief Valve Filter Installation
Figure 401/21-32-02-990-801 (Sheet 2 of 2)

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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
25-52-19-400-801	Aft Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)
38-11-01-400-801	Water Tank Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	21-32-01-01-020	AKS ALL
3	Filter	21-32-01-01-025	AKS ALL
4	Cover	21-32-01-01-015	AKS ALL

C. Location Zones

Zone	Area
142	Aft Cargo Compartment - Right

D. Procedure

SUBTASK 21-32-02-420-001

(1) Install a new filter [3] and packing [2] in the top of the positive pressure relief valve [1].

SUBTASK 21-32-02-420-002

(2) Install and turn the cover [4] until it snaps into position.

E. Put the Airplane Back to its Usual Condition

SUBTASK 21-32-02-410-004

(1) If the potable water tank was removed, do this task: (Water Tank Installation, TASK 38-11-01-400-801).

SUBTASK 21-32-02-410-001

(2) To install the aft bulkhead liner, do this task: Aft Cargo Compartment Aft Bulkhead Liner - Installation, TASK 25-52-19-400-801.

END OF TASK

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NEGATIVE PRESSURE RELIEF VALVE - MAINTENANCE PRACTICES

1. **General**
   A. This procedure contains scheduled maintenance task data.
   B. This procedure has these tasks:
      (1) Negative pressure relief valve removal
      (2) Negative pressure relief valve installation
      (3) Negative pressure relief valve adjustment/test.

TASK 21-32-03-000-801

2. **Negative Pressure Relief Valve Removal**
   (Figure 201)

A. References

Reference	Title
25-52-06-000-801	Cargo Compartment Sidewall Lining - Removal (P/B 401)

B. Location Zones

Zone	Area
142	Aft Cargo Compartment - Right

C. Prepare for the Removal

SUBTASK 21-32-03-010-001

(1) Open the aft cargo compartment door.

SUBTASK 21-32-03-010-002

(2) Remove the sidewall liner on the right side of the aft cargo compartment, just forward of the aft bulkhead. To remove the sidewall liner, do this task: Cargo Compartment Sidewall Lining - Removal, TASK 25-52-06-000-801

D. Negative Pressure Relief Valve Removal

SUBTASK 21-32-03-020-001

(1) Do the steps that follow to remove the door assembly [6] from the frame:
   (a) Remove the nut [5] and washer [4] from the end of the bolt [1].
   (b) Remove the bolt [1] and washer [2].
   (c) Remove the bushing [3] from the frame.
   (d) Carefully lower the door assembly [6] and disengage the end of the spring [7] from the hole in the frame.

      NOTE: Hold the end of the spring as you disengage it from the hole in the frame so that it does not move suddenly when it is free from the frame hole.

SUBTASK 21-32-03-020-002

(2) Do the steps which follow to remove the spring [7] from the door assembly [6]:
   (a) Remove the nut [14] and washer [13] from the end of the bolt [10].
   (b) Remove the bolt [10] and washer [11].
   (c) Remove the retainer [9] and shim [12].
   (d) Remove the spring support [8] and spring [7].

END OF TASK

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AFT CARGO COMPARTMENT

A

F64816 S0006562787_V3

Negative Pressure Relief Valve Installation
Figure 201/21-32-03-990-801 (Sheet 1 of 3)

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RIGHT SIDEWALL
(LINING NOT SHOWN)

B

NEGATIVE PRESSURE RELIEF VALVE DOOR

C

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Negative Pressure Relief Valve Installation
Figure 201/21-32-03-990-801 (Sheet 2 of 3)

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SPRING

D

A-A

F64837 S0006562790_V3

Negative Pressure Relief Valve 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 Valve Installation

(Figure 201)

A. References

Reference	Title
25-52-06-400-801	Cargo Compartment Sidewall Lining - Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)

C. Location Zones

Zone	Area
142	Aft Cargo Compartment - Right

D. Negative Pressure Relief Valve Installation

SUBTASK 21-32-03-420-001

(1) Do the steps which follow to install the spring [7] on the door assembly [6]:

(a) Put the spring [7] on the spring support [8].

(b) Put the end of the spring [7] in the door hole.

(c) Put the end of the spring support [8] in the large hole in the door.

(d) Turn the spring [7] approximately one full turn and hold it in that position.

(e) Put the free end of the spring support [8] in the slot of the door assembly [6].

(f) Slowly release the free end of the spring [7] until it rests against the edge of the door assembly [6].

(g) Put the shim [12] and the retainer [9] in their position.

(h) Install the bolt [10] and the washer [11].

(i) Install the washer [13] and the nut [14].

1) Tighten the nut [14] to 20-25 pound-inches (2.2-2.8 newton-meters).

SUBTASK 21-32-03-210-001

(2) Examine the condition of the seal [15] and replace it if it is damaged.

SUBTASK 21-32-03-420-002

(3) Do the steps which follow to install the door assembly [6] in the frame:

(a) Lubricate the bolt [1] with the grease, D00013.

(b) Put the door assembly [6] in its position.

1) Hold the door assembly [6] in an approximately 45° open position while you turn the free end of the spring [7] and insert it into the frame hole.

(c) Install the bushing [3].

(d) Install the bolt [1] and the washer [2].

(e) Install the washer [4] and the nut [5].

1) Tighten the nut [5] 60-70 pound-inches (81-95 newton-meters).

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SUBTASK 21-32-03-720-001

(4) Do this task: Negative Pressure Relief Valve Adjustment/Test, TASK 21-32-03-700-801.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-32-03-410-001

(1) Install the sidewall liner. To install the sidewall liner, do this task: Cargo Compartment Sidewall Lining - Installation, TASK 25-52-06-400-801

——— END OF TASK ———

TASK 21-32-03-700-801

4. Negative Pressure Relief Valve Adjustment/Test

NOTE: This procedure is a scheduled maintenance task.

A. Tools/Equipment

Reference	Description
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy

B. Location Zones

Zone	Area
142	Aft Cargo Compartment - Right

C. Procedure

SUBTASK 21-32-03-480-001

(1) On the external surface of the airplane, hold the push/pull scale 0-25 pound (0-11 kilogram), STD-753 against the relief valve as shown in View A-A Figure 201.

(a) Put the push/pull scale 0-25 pound (0-11 kilogram), STD-753 at approximately the center of the relief valve door and 2.92 ± 0.20 inches (74.2 ± 5.1 mm) above the lower edge of the relief valve door.

SUBTASK 21-32-03-720-002

(2) Slowly push the push/pull scale 0-25 pound (0-11 kilogram), STD-753 against the relief valve door.

(a) Keep the push/pull scale 0-25 pound (0-11 kilogram), STD-753 at approximately a 90° angle to the relief valve door.

SUBTASK 21-32-03-720-003

(3) Make sure the relief valve door starts to open when the push/pull scale 0-25 pound (0-11 kilogram), STD-753 shows between 4 and 8 pounds (17.8 and 35.8 newtons).

SUBTASK 21-32-03-720-004

(4) Continue to push the relief valve door to the full open position.

(a) Make sure the door moves smoothly without any binding.

SUBTASK 21-32-03-720-005

(5) Make sure the push/pull scale 0-25 pound (0-11 kilogram), STD-753 shows between 8 and 10.5 pounds (35.8 and 46.7 newtons) when the relief valve door is in the full open position.

NOTE: The door will be at an 80° angle in the full open position.

SUBTASK 21-32-03-720-006

(6) Slowly release the relief valve door until it is in the closed position.

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SUBTASK 21-32-03-080-001

(7) Remove the push/pull scale 0-25 pound (0-11 kilogram), STD-753.

END OF TASK

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CARGO COMPARTMENT BLOWOUT PANELS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the cargo compartment ceiling blowout panels.

(2) An installation of the cargo compartment ceiling blowout panels.

(3) A removal of the cargo compartment bulkhead blowout panels.

(4) An installation of the cargo compartment bulkhead blowout panels.

B. There are three ceiling blowout panels, two in the aft cargo compartment and one in the forward cargo compartment.

C. There are three bulkhead blowout panels, one in the forward cargo forward bulkhead, one in the forward cargo aft bulkhead and one in the aft cargo compartment waste tank enclosure.

TASK 21-32-05-000-801

2. Ceiling Blowout Panel Removal

(Figure 401)

A. Location Zones

Zone	Area
122	Forward Cargo Compartment - Right
142	Aft Cargo Compartment - Right

B. Prepare for the Removal

SUBTASK 21-32-05-010-001

(1) Do this step to access the blowout panels in the forward cargo compartment:

(a) Open the forward cargo door.

SUBTASK 21-32-05-010-002

(2) Do this step to access the blowout panels in the aft cargo compartment:

(a) Open the aft cargo door.

C. Ceiling Blowout Panel Removal

SUBTASK 21-32-05-020-001

(1) Remove the screws [3] on one of the cap strip assemblies [4].

SUBTASK 21-32-05-020-002

(2) Remove the cap strip assembly [4].

SUBTASK 21-32-05-020-003

(3) Loosen the screws [2] on the remaining three cap strip assemblies [4].

SUBTASK 21-32-05-020-004

(4) Slide out the blowout panel [1].

END OF TASK

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Cargo Compartment Ceiling Blowout Panels Installation
Figure 401/21-32-05-990-801 (Sheet 1 of 2)

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BLOWOUT PANEL ASSEMBLY

C

G25194 S0006562799_V2

Cargo Compartment Ceiling Blowout Panels Installation
Figure 401/21-32-05-990-801 (Sheet 2 of 2)

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TASK 21-32-05-400-801

3. Ceiling Blowout Panel Installation

(Figure 401)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Panel	25-52-09-04A-040	AKS ALL
		25-52-09-06C-190	AKS ALL

B. Location Zones

Zone	Area
122	Forward Cargo Compartment - Right
142	Aft Cargo Compartment - Right

C. Ceiling Blowout Panel Installation

SUBTASK 21-32-05-420-001

(1) Tighten the screws [2] on the three cap strip assemblies [4] on the ceiling until there is about a 0.125 inch (3.17 millimeters) gap in the cap strip assemblies [4].

SUBTASK 21-32-05-420-002

(2) Slide the blowout panel [1] into its position.

NOTE: Engage the panel [1] edges to expose the black edge band 0.00 to 0.10 inches (0.0 to 2.5 millimeters).

SUBTASK 21-32-05-420-003

(3) Put the cap strip assembly [4] that was removed in its position.

SUBTASK 21-32-05-420-004

(4) Install the remaining screws [3] loosely in the cap strip assembly [4].

SUBTASK 21-32-05-420-005

(5) Tighten the screws [3] to 20-25 pound-inches (2.3-2.8 newton-meters).

NOTE: Do not apply tape over cap strips.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-32-05-010-003

(1) Do this step if you installed the blowout panel [1] in the forward cargo compartment:

(a) Close the forward cargo door.

SUBTASK 21-32-05-010-004

(2) Do this step if you installed the blowout panels [1] in the aft cargo compartment:

(a) Close the aft cargo door.

END OF TASK

TASK 21-32-05-000-802

4. Cargo Compartment Bulkhead Blowout Panel Removal

(Figure 402)

A. References

Reference	Title
25-52-06-000-801	Cargo Compartment Sidewall Lining - Removal (P/B 401)

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B. Location Zones

Zone	Area
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

C. Prepare for the Removal

SUBTASK 21-32-05-010-005

(1) Open the applicable forward or aft cargo door.

D. Cargo Compartment Bulkhead Blowout Panel Removal

SUBTASK 21-32-05-020-005

(1) Do these steps to remove the blowout panel [23] for the forward bulkhead:

(a) Remove the forward upper center and lower center bulkhead panels in the forward cargo compartment. To remove the panels, do this task: Cargo Compartment Sidewall Lining - Removal, TASK 25-52-06-000-801.

(b) Loosen the quarter-turn fasteners on either side of the blowout panel assembly [21].

(c) Remove the blowout panel assembly [21].

(d) Remove the nuts [28], washers [27], washers [26], and screws [25].

(e) Remove the retaining ring [22].

CAUTION: MAKE SURE YOU DO NOT ATTEMPT TO REMOVE THE INDEX PINS. IF YOU TRY TO REMOVE THE INDEX PINS YOU CAN DAMAGE THEM.

(f) Remove the blowout panel [23].

SUBTASK 21-32-05-020-006

(2) Do these steps to remove the blowout panel [34] for the aft bulkhead or waste tank enclosure:

(a) Remove the screws [31] that attach the decompression assembly [32] to the bulkhead.

(b) Remove the decompression assembly [32].

(c) Remove the screws [38] and the nuts [29], at 6 locations.

(d) Remove the grill [36].

(e) Remove the screws [37] and the nuts [30], at 26 locations.

(f) Remove the cap strip assemblies [35].

(g) Remove the blowout panel [34].

END OF TASK

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Cargo Compartment Bulkhead Blowout Panels Installation
Figure 402/21-32-05-990-802 (Sheet 1 of 3)

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Cargo Compartment Bulkhead Blowout Panels Installation
Figure 402/21-32-05-990-802 (Sheet 2 of 3)

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BLOWOUT PANEL ASSEMBLY
(EXAMPLE)

E

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Cargo Compartment Bulkhead Blowout Panels Installation
Figure 402/21-32-05-990-802 (Sheet 3 of 3)

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TASK 21-32-05-400-802

5. Cargo Compartment Bulkhead Blowout Panel Installation

(Figure 402)

A. References

Reference	Title
25-52-06-400-801	Cargo Compartment Sidewall Lining - Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
34	Panel	25-52-17-02B-260	AKS ALL
		25-52-20-01B-160	AKS ALL

C. Location Zones

Zone	Area
121	Forward Cargo Compartment - Left
122	Forward Cargo Compartment - Right

D. Cargo Compartment Bulkhead Blowout Panel Installation

SUBTASK 21-32-05-420-006

(1) Do these steps to install the blowout panel [23] for the forward bulkhead:

(a) Put the retaining ring [22] so you can slide the blowout panel [23] into its position.

(b) Put the blowout panel [23] in its position.

NOTE: The panel will be held in its position by the index pins [24].

(c) Install the nuts [28], the washers [27], the washers [26], and the screws [25] at 12 locations.

(d) Put the blowout panel assembly [21] in its position and tighten the quarter-turn screws on either side of the blowout panel assembly.

(e) Install the forward upper center and lower center bulkhead panels. To install the panels, do this task: Cargo Compartment Sidewall Lining - Installation, TASK 25-52-06-400-801.

SUBTASK 21-32-05-420-007

(2) Do these steps to install the blowout panel [34] for the aft bulkhead or waste tank enclosure:

(a) Position the decompression assembly [32] on a flat surface so that the nutplates are facing down.

(b) Put the blowout panel [34] in its position over the seal [33].

(c) Install the cap strip assemblies [35].

(d) Install the screws [37] and the nuts [30] at 26 locations.

(e) Install the grill [36].

(f) Install the screws [38] and the nuts [29] at 6 locations.

(g) Put the decompression assembly [32] in its position on the bulkhead.

(h) Install the screws [31] at 18 locations.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-32-05-010-006

(1) Close the applicable forward or aft cargo door.

END OF TASK

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CABIN PRESSURE INDICATION SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has one task. The task is a functional test of the cabin altitude warning switches S128 and S1153.

C. The cabin altitude warning switches S128 and S1153 are installed in the area forward of the nose landing gear wheel well and just below the cabin floor.

D. This procedure contains a check of the cabin rate of climb indicator.

TASK 21-33-00-000-801

2. Cabin Altitude Warning Switch Functional Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Tools/Equipment

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

Reference	Description
COM-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 #: MPS43 Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: 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

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

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(Continued)

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

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. General

F. Prepare for the Test

SUBTASK 21-33-00-860-001

(1) Supply electrical power. To supply electrical power, do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-33-00-860-002

(2) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	17	C00129	LANDING GEAR LATCH & PRESS WARN

Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	18	C00451	LANDING GEAR AURAL WARN
E	12	C00314	INDICATOR MASTER DIM SECT 2
F	12	C00318	INDICATOR MASTER DIM SECT 6

SUBTASK 21-33-00-010-001

(3) Open this access panel:

Number	Name/Location
112A	Forward Access Door

G. Cabin Altitude Warning Switch Functional Test

SUBTASK 21-33-00-720-021

(1) Do a test of the cabin altitude warning switch S128 as follows:

(a) Remove the screen port assembly from the cabin altitude warning switch, S128.

(b) Install an adapter fitting on the cabin altitude warning switch, S128.

NOTE: The female threads on the cabin altitude warning switch are 7/16-20-UNJF-3A.

1) If the Air Data Test Set you use does not have an adapter to connect to the cabin altitude warning switch, you can use one of the adapters that follows:

a) Altitude pressure switch adapter kit P/N JAK136 (Consolidated Controls Corp.)

b) AN807-4D Tube to Hose Adapter, AN924-4 nut and appropriate sized O-ring

c) P/N JUD321 Hose Fitting with MS28778-4 O-ring (Eaton Aerospace LLC, Bethel, CT 02750)

(c) Connect the air data model test set, COM-1914, or equivalent, to the adapter fitting.

(d) Slowly increase the altitude of the cabin altitude warning switch, S128, and monitor the altimeter.

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1) Do not increase the altitude at a rate more than 4000 ft/minute.

(e) Make sure the aural warning signal comes on at an altitude of 9000 to 11,000 feet.

(f) Make sure the red CABIN ALTITUDE indicators on the captain's instrument panel P1-3 and the first officer's instrument panel P3-1 come on.

(g) Press the ALT HORN CUTOUT switch on the P5-16 Cabin Pressure Control Panel.

(h) Make sure the aural warning signal goes off.

(i) Make sure the red CABIN ALTITUDE indicators on the captain's instrument panel P1-3 and the first officer's instrument panel P3-1 stay on.

(j) Decrease the altitude on the cabin altitude warning switch, S128, to approximately 1700 feet below the altitude at which the aural warning came on.

1) Do not decrease the altitude at a rate more than 4000 ft/minute.

(k) Make sure the CABIN ALTITUDE indicators on the captain's instrument panel P1-3 and the first officer's instrument panel P3-1 go off.

(l) Increase the altitude on the cabin altitude warning switch, S128, while you monitor the altimeter.

1) Do not increase the altitude at a rate more than 4000 ft/minute.

(m) Make sure the aural warning signal comes on again at an altitude of 9000 to 11,000 feet.

(n) Make sure the red CABIN ALTITUDE indicators on the captain's instrument panel P1-3 and the first officer's instrument panel P3-1 come on.

(o) Decrease the altitude on the cabin altitude warning switch, S128, to ground level.

1) Do not decrease the altitude at a rate more than 4000 ft/minute.

(p) Make sure the aural warning signal goes off.

(q) Make sure the CABIN ALTITUDE indicators on the captain's instrument panel P1-3 and the first officer's instrument panel P3-1 go off.

(r) Remove the air data model test set, COM-1914, or equivalent, and the adapter fitting from the cabin altitude warning switch, S128.

(s) Install the screen port assembly on the cabin altitude warning switch, S128.

SUBTASK 21-33-00-720-022

(2) Do a test of the cabin altitude warning switch S1153 as follows:

(a) Remove the screen port assembly from the cabin altitude warning switch, S1153.

(b) Install an adapter fitting on the cabin altitude warning switch, S1153.

NOTE: The female threads on the cabin altitude warning switch are 7/16-20-UNJF-3A.

1) If the Air Data Test Set you use does not have an adapter to connect to the cabin altitude warning switch, you can use one of the adapters that follows:

a) Altitude pressure switch adapter kit P/N JAK136 (Consolidated Controls Corp.)

b) AN807-4D Tube to Hose Adapter, AN924-4 nut and appropriate sized O-ring

c) P/N JUD321 Hose Fitting with MS28778-4 O-ring (Eaton Aerospace LLC, Bethel, CT 02750)

(c) Connect the air data model test set, COM-1914, or equivalent, to the adapter fitting.

(d) Slowly increase the altitude of the cabin altitude warning switch, S1153, and monitor the altimeter.

1) Do not increase the altitude at a rate more than 4000 ft/minute.

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(e) Make sure the aural warning signal comes on at an altitude of 9000 to 11,000 feet.

(f) Make sure the red CABIN ALTITUDE indicators on the captain's instrument panel P1-3 and the first officer's instrument panel P3-1 come on.

(g) Press the ALT HORN CUTOUT switch on the P5-16 Cabin Pressure Control Panel.

(h) Make sure the aural warning signal goes off.

(i) Make sure the red CABIN ALTITUDE indicators on the captain's instrument panel P1-3 and the first officer's instrument panel P3-1 stay on.

(j) Decrease the altitude on the cabin altitude warning switch, S1153, to approximately 1700 feet below the altitude at which the aural warning came on.

1) Do not decrease the altitude at a rate more than 4000 ft/minute.

(k) Make sure the CABIN ALTITUDE indicators on the captain's instrument panel P1-3 and the first officer's instrument panel P3-1 go off.

(l) Increase the altitude on the cabin altitude warning switch, S1153, while you monitor the altimeter.

1) Do not increase the altitude at a rate more than 4000 ft/minute.

(m) Make sure the aural warning signal comes on again at an altitude of 9000 to 11,000 feet.

(n) Make sure the red CABIN ALTITUDE indicators on the captain's instrument panel P1-3 and the first officer's instrument panel P3-1 come on.

(o) Decrease the altitude on the cabin altitude warning switch, S1153, to ground level.

1) Do not decrease the altitude at a rate more than 4000 ft/minute.

(p) Make sure the aural warning signal goes off.

(q) Make sure the CABIN ALTITUDE indicators on the captain's instrument panel P1-3 and the first officer's instrument panel P3-1 go off.

(r) Remove the air data model test set, COM-1914, or equivalent, and the adapter fitting from the cabin altitude warning switch, S1153.

(s) Install the screen port assembly on the cabin altitude warning switch, S1153.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-33-00-410-002

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 21-33-00-860-003

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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Cabin Altitude Warning Switch Test
Figure 501/21-33-00-990-801

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TASK 21-33-00-700-801

3. Check of the Cabin Rate of Climb Indicator

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Cabin Rate of Climb Indicator Check

SUBTASK 21-33-00-212-001

(1) Get access to the cabin rate of climb indicator on the P5-16 cabin pressure control panel.

SUBTASK 21-33-00-710-003

(2) Do this check of the cabin rate of climb indicator:

(a) Open one of the cabin entry doors to make sure that the cabin is not pressurized.

(b) Turn the zero adjustment screw on the lower left corner of the gauge and make sure that the pointer can be adjusted to a minimum of 400 ft/min on both sides of the zero graduation.

(c) Reset the pointer to zero.

——— END OF TASK ———

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FLIGHT COMPARTMENT

CABIN PRESSURE CONTROL PANEL
(P5-16)

A

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Cabin Rate of Climb Indicator Check
Figure 502/21-33-00-990-802

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CABIN RATE OF CLIMB INDICATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Cabin rate of climb indicator removal.

(2) Cabin rate of climb indicator installation.

B. The cabin rate of climb indicator is installed in the P5-16 Cabin Altimeter and Rate of Climb Module.

C. The P5-16 Cabin Altimeter and Rate of Climb Module is installed in the P5 Forward Overhead Panel.

TASK 21-33-01-000-801

2. Cabin Rate of Climb Indicator Removal

(Figure 401)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Preparation Check for Removal

SUBTASK 21-33-01-710-001

(1) Do this check to determine if the cabin rate of climb indicator requires replacement:

(a) Make sure that the cabin is not pressurized.

(b) Turn the zero adjustment screw on the lower left corner of the gauge to make sure that the pointer can be adjusted to a minimum of 400 ft/min on both sides of the zero graduation.

(c) Reset the pointer to zero.

SUBTASK 21-33-01-000-001

(2) If the indicator cannot be adjusted as noted in the previous step, continue with the removal procedure.

C. Cabin Rate of Climb Indicator Removal

SUBTASK 21-33-01-860-001

(1) Open this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	10	C00328	OVERHEAD 5V SECONDARY

SUBTASK 21-33-01-020-001

CAUTION: HOLD THE INDICATOR WHEN YOU LOOSEN THE CLAMP. THE INDICATOR CAN FALL WHEN THE CLAMP IS LOOSE. THE INDICATOR CAN BE DAMAGED IF IT FALLS.

(2) Loosen the clamp tension screws [1].

SUBTASK 21-33-01-020-002

(3) Carefully pull the cabin rate of climb indicator [3] out of the P5-16 panel [4].

SUBTASK 21-33-01-020-003

(4) Disconnect the electrical connector [2] from the cabin rate of climb indicator [3].

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SUBTASK 21-33-01-480-001

(5) Put a dust cap on the cabin pressure port to keep out unwanted objects.

END OF TASK

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FLIGHT COMPARTMENT

CABIN ALTIMETER AND RATE OF CLIMB MODULE (P5-16)

A

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Cabin Rate of Climb Indicator Installation
Figure 401/21-33-01-990-801 (Sheet 1 of 2)

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CABIN RATE OF CLIMB INDICATOR

B

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Cabin Rate of Climb Indicator Installation
Figure 401/21-33-01-990-801 (Sheet 2 of 2)

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TASK 21-33-01-400-801

3. Cabin Rate of Climb Indicator Installation

(Figure 401)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Indicator	21-33-01-04-020	AKS ALL

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Cabin Rate of Climb Indicator Installation

SUBTASK 21-33-01-080-001

(1) Remove the dust cap from the cabin pressure port on the back of the indicator.

SUBTASK 21-33-01-420-001

(2) Connect the electrical connector [2] to the cabin rate of climb indicator [3].

SUBTASK 21-33-01-820-001

(3) Carefully push the cabin rate of climb indicator [3] into its position in the P5-16 panel [4].

SUBTASK 21-33-01-420-002

(4) Tighten the clamp tension screws [1] 5.0 in-lb (0.6 N·m) to 8.0 in-lb (0.9 N·m).

NOTE: Hold the indicator [3] against the panel [4] while you tighten the screws [1].

SUBTASK 21-33-01-860-002

(5) Close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	10	C00328	OVERHEAD 5V SECONDARY

SUBTASK 21-33-01-700-001

(6) Do this check of the cabin rate of climb indicator:

(a) Make sure that the cabin is not pressurized.

(b) Turn the zero adjustment screw on the lower left corner of the gauge and make sure that the pointer can be adjusted to a minimum of 400 ft/min on both sides of the zero graduation.

(c) Reset the pointer to zero.

END OF TASK

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CABIN ALTITUDE AND DIFFERENTIAL PRESSURE INDICATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Cabin altitude and differential pressure indicator removal.

(2) Cabin altitude and differential pressure indicator installation.

B. The cabin altitude and differential pressure indicator is installed in the P5-16 Cabin Pressure Control Panel.

C. The P5-16 Cabin Pressure Control Panel is installed in the P5 Forward Overhead Panel.

TASK 21-33-02-000-801

2. Cabin Altitude and Differential Pressure Indicator Removal

(Figure 401)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Cabin Altitude and Differential Pressure Indicator Removal

SUBTASK 21-33-02-860-001

(1) Open this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	10	C00328	OVERHEAD 5V SECONDARY

SUBTASK 21-33-02-020-001

CAUTION: HOLD THE INDICATOR WHEN YOU LOOSEN THE CLAMP. THE INDICATOR CAN FALL WHEN THE CLAMP IS LOOSE. THE INDICATOR CAN BE DAMAGED IF IT FALLS.

(2) Loosen the clamp tension screws [1].

SUBTASK 21-33-02-020-002

(3) Carefully pull the cabin altitude and differential pressure indicator [6] out of the P5-16 panel [7].

SUBTASK 21-33-02-020-003

(4) Disconnect the electrical connector [5] from the cabin altitude and differential pressure indicator [6].

SUBTASK 21-33-02-020-004

(5) Disconnect the static pressure hose [4] from the male quick-disconnect [2].

SUBTASK 21-33-02-020-011

(6) Do these steps if the cabin altitude and differential pressure indicator is no longer serviceable and is to be replaced:

(a) Remove the male quick-disconnect [2] and the packing [3] from the cabin altitude and differential pressure indicator [6].

(b) Discard the packing [3].

SUBTASK 21-33-02-800-001

(7) If the cabin altitude and differential pressure indicator is serviceable and will be reinstalled in the P5-16 panel, do not remove the quick-disconnect fitting and packing [3].

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SUBTASK 21-33-02-480-001

(8) Put a dust cap on the cabin pressure port to keep out unwanted objects.

END OF TASK

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FLIGHT COMPARTMENT

CABIN PRESSURE CONTROL PANEL (P5-16)

A

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Cabin Altitude and Differential Pressure Indicator Installation
Figure 401/21-33-02-990-801 (Sheet 1 of 2)

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CABIN ALTITUDE AND DIFFERENTIAL PRESSURE INDICATOR

B

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Cabin Altitude and Differential Pressure Indicator Installation
Figure 401/21-33-02-990-801 (Sheet 2 of 2)

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TASK 21-33-02-400-801

3. Cabin Altitude and Differential Pressure Indicator Installation

(Figure 401)

A. References

Reference	Title
34-11-00-790-808	Alternate Static System Low-range Leak Test (P/B 501)

B. Consumable Materials

Reference	Description	Specification
D50004	Compound - Antiseize	BMS3-28

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Packing	34-11-00-10-095	AKS ALL
6	Indicator	21-33-02-18-020	AKS ALL

D. Location Zones

Zone	Area
212	Flight Compartment - Right

E. Cabin Altitude and Differential Pressure Indicator Installation

SUBTASK 21-33-02-080-001

(1) Remove the dust cap from the cabin pressure port on the back of the indicator.

SUBTASK 21-33-02-420-003

(2) If you are installing a cabin altitude and differential pressure indicator [6] that does not have a quick-disconnect fitting already installed, do these steps:

(a) Put a new packing [3] on the male quick-disconnect [2].

(b) Apply anti-seize compound, D50004 to the threads of the male quick-disconnect [2].

(c) Install the male quick-disconnect [2] on the cabin altitude and differential pressure indicator [6].

(d) Tighten the male quick-disconnect [2] to a torque of 120 (± 12) inch-pounds [13.6 (± 1.36) Nm].

SUBTASK 21-33-02-020-009

(3) Connect the static pressure hose [4] to the quick-disconnect [2] on the cabin altitude and differential pressure indicator [6].

SUBTASK 21-33-02-420-001

(4) Connect the electrical connector [5] to the cabin altitude and differential pressure indicator [6].

SUBTASK 21-33-02-820-001

(5) Carefully push the cabin altitude and differential pressure indicator [6] into its position in the P5-16 panel [7].

SUBTASK 21-33-02-420-002

(6) Tighten the clamp tension screws [1] 5 to 8 pound-inches (0.6 to 0.9 newton-meters).

NOTE: Hold the indicator [6] against the panel [7] while you tighten the screws [1].

SUBTASK 21-33-02-790-001

(7) If you removed or installed the quick-disconnect fitting on the cabin altitude and differential pressure indicator [6] at any time during this maintenance, do this task: Alternate Static System Low-range Leak Test, TASK 34-11-00-790-808.

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(a) Note that if the replacement indicator came with the quick-disconnect installed or if the quick-disconnect was never removed from the existing indicator during this maintenance, it is not necessary to do the task: Alternate Static System Low-range Leak Test, TASK 34-11-00-790-808.

SUBTASK 21-33-02-860-002

(8) Close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	10	C00328	OVERHEAD 5V SECONDARY

SUBTASK 21-33-02-710-001

(9) Do this check of the cabin altimeter gauge:

(a) Open one of the main entry doors to make sure that the cabin is not pressurized.

(b) Set the barometric pressure for the pilot's altimeter to 29.92 inches of Hg.

(c) Observe the altitude on the pilot's altimeter.

(d) Compare the altitude on the pilot's altimeter to the altitude on the cabin altimeter.

(e) If the altitude on the cabin altimeter is within 1000 feet of the altitude on the pilot's altimeter, the cabin altimeter is satisfactory.

(f) If the altitude on the cabin altimeter is not within1000 feet of the altitude on the pilot's altimeter, then do these tasks to replace the gauge: Cabin Altitude and Differential Pressure Indicator Removal, TASK 21-33-02-000-801 and Cabin Altitude and Differential Pressure Indicator Installation, TASK 21-33-02-400-801.

SUBTASK 21-33-02-710-002

(10) Do this check of the cabin differential pressure gauge:

(a) Observe the differential pressure on the DIFF PRESS gauge.

(b) If the differential pressure is within 0 (± 0.2) psid, the cabin differential pressure gauge is satisfactory.

(c) If the differential pressure is not within 0 (± 0.2) psid, then do these tasks to replace the gauge: Cabin Altitude and Differential Pressure Indicator Removal, TASK 21-33-02-000-801 and Cabin Altitude and Differential Pressure Indicator Installation, TASK 21-33-02-400-801.

END OF TASK

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CABIN ALTITUDE WARNING SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Cabin altitude warning switches (S128 and S1153) removal

(2) Cabin altitude warning switches (S128 and S1153) installation

B. The cabin altitude warning switch is installed in the forward EE bay.

C. There are two switches installed in the forward EE bay. The switches have the same part number and are functionally the same. The forward switch is identified as S128 and the aft switch is identified as S1153. The purpose of the second switch is to provide a redundant capability.

TASK 21-33-04-000-801

2. Cabin Altitude Warning Switch Removal

(Figure 401)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch	21-33-04-03-015	AKS ALL

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

C. Access Panels

Number	Name/Location
112A	Forward Access Door

D. Cabin Altitude Warning Switch Removal

SUBTASK 21-33-04-010-001

(1) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 21-33-04-862-001

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	17	C00129	LANDING GEAR LATCH & PRESS WARN

SUBTASK 21-33-04-020-001

(3) Disconnect the electrical connector from the cabin altitude warning switch [1], S128.

SUBTASK 21-33-04-020-010

(4) Disconnect the electrical connector from the cabin altitude warning switch [1], S1153.

SUBTASK 21-33-04-020-002

(5) Remove the four screws [2] from the cabin altitude warning switch [1], S128.

SUBTASK 21-33-04-030-001

(6) Remove the four screws [2] from the cabin altitude warning switch [1], S1153.

SUBTASK 21-33-04-020-007

(7) Remove the cabin altitude warning switch [1], S128.

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SUBTASK 21-33-04-020-012

(8) Remove the cabin altitude warning switch [1], S1153.

END OF TASK

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Cabin Altitude Warning Switch Installation
Figure 401/21-33-04-990-801

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TASK 21-33-04-400-801

3. **Cabin Altitude Warning Switch Installation**
(Figure 401)

A. **References**

Reference	Title
21-33-00-000-801	Cabin Altitude Warning Switch Functional Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch	21-33-04-03-015	AKS ALL

C. **Location Zones**

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

D. **Access Panels**

Number	Name/Location
112A	Forward Access Door

E. **Cabin Altitude Warning Switch Installation**

SUBTASK 21-33-04-820-001

(1) Put the cabin altitude warning switch [1], S128, in its position.

SUBTASK 21-33-04-420-008

(2) Put the cabin altitude warning switch [1], S1153, in its position.

SUBTASK 21-33-04-420-001

(3) Install the four screws [2] that attach the cabin altitude warning switch [1], S128.

SUBTASK 21-33-04-430-001

(4) Install the four screws [2] that attach the cabin altitude warning switch [1], S1153.

SUBTASK 21-33-04-420-002

(5) Connect the electrical connector to the cabin altitude warning switch [1], S128.

SUBTASK 21-33-04-430-002

(6) Connect the electrical connector to the cabin altitude warning switch [1], S1153.

SUBTASK 21-33-04-865-001

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	17	C00129	LANDING GEAR LATCH & PRESS WARN

SUBTASK 21-33-04-720-002

(8) Do a functional test of the cabin altitude warning switch as follows:

(a) Do this task: Cabin Altitude Warning Switch Functional Test, TASK 21-33-00-000-801.

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F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-33-04-410-001

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 21-33-04-860-001

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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Cabin Altimeter and Rate of Climb Module - Removal and Installation

1. General

A. The cabin altimeter and rate of climb module is located on the lower right corner of the P5 forward overhead panel in the flight deck.

B. This procedure has these tasks:

(1) A removal task of the cabin altimeter and rate of climb module

(2) An installation task of the cabin altimeter and rate of climb module.

TASK 21-33-07-000-801

2. Cabin Altimeter and Rate of Climb Module Removal

Figure 401

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Procedure

SUBTASK 21-33-07-000-001

(1) Get access to the electrical connectors on the back of the P5-16 cabin altimeter and rate of climb module on the P5 forward overhead panel:

(a) Loosen the 1/4-turn fasteners that hold the P5 forward overhead panel in position and let the panel rotate downward.

SUBTASK 21-33-07-020-001

(2) Remove the P5-16 cabin altimeter and rate of climb module from the P5 forward overhead panel as follows:

(a) Disconnect the electrical connectors to the cabin rate of climb indicator and the cabin altitude and differential pressure indicator at the back of the module.

(b) Disconnect the static pressure hose from the quick-disconnect at the back of the cabin altitude and differential pressure indicator.

(c) Hold the cabin altimeter and rate of climb module in position and loosen the 1/4-turn fasteners that hold the module to the P5 forward overhead panel.

(d) Remove the cabin altimeter and rate of climb module.

END OF TASK

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FLIGHT COMPARTMENT

CABIN ALTIMETER AND RATE OF CLIMB MODULE

A

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Cabin Altimeter and Rate of Climb Module
Figure 401/21-33-07-990-801

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TASK 21-33-07-400-801

3. Cabin Altimeter and Rate of Climb Module Installation

Figure 401

A. References

Reference	Title
34-11-00-790-808	Alternate Static System Low-range Leak Test (P/B 501)

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Procedure

SUBTASK 21-33-07-020-002

(1) If it has not already been done, lower P5 forward overhead panel.

SUBTASK 21-33-07-420-001

(2) Install the P5-16 cabin altimeter and rate of change module into the P5 forward overhead panel as follows:

(a) Put the P5-16 cabin altimeter and rate of climb module into the P5 forward overhead panel.

(b) Turn the 1/4-turn fasteners on the cabin altimeter and rate of climb module to hold the module to the P5 forward overhead panel.

(c) Connect the electrical connectors to the module.

(d) Connect the static pressure hose to the quick-disconnect.

SUBTASK 21-33-07-410-001

(3) Lift the P5 forward overhead panel to the closed position and turn the 1/4-turn fasteners.

SUBTASK 21-33-07-720-001

(4) Do this task: Alternate Static System Low-range Leak Test, TASK 34-11-00-790-808.

NOTE: It is not necessary to do the Alternate Static System Low-range Leak Test, TASK 34–11–00–790–808 if the replacement module has the quick-disconnect already installed on the Cabin Altitude and Differential Pressure Indicator.

END OF TASK

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DOOR AREA HEATING SYSTEM - MAINTENANCE PRACTICES

1. **General**

A. This procedure has these tasks:

(1) Door Area Heating System - Deactivation

(2) Door Area Heating System - Activation

TASK 21-45-00-800-801

2. **Door Area Heating System - Deactivation**

(Figure 201 or Figure 202, Figure 203)

A. General

(1) This task will deactivate these components in the door area heating system.

- Forward Door Area Heater
- Emergency Exit Door Heater Blankets
- Aft Door Area Heater

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Procedure

SUBTASK 21-45-00-010-001

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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SUBTASK 21-45-00-860-029

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	11	C01274	AIR CONDITIONING DOOR AREA HEAT CONT

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	7	C01279	DOOR AREA HTR-AFT
D	9	C01280	DOOR AREA HTR-FWD

F. Tryout

NOTE: This tryout is to make sure the forward door, emergency exit hatch, and aft door area heating system is in a zero energy state.

SUBTASK 21-45-00-860-030

(1) Do this task: (Supply Electrical Power, TASK 24-22-00-860-811).

SUBTASK 21-45-00-860-031

(2) Make sure that the CAB/UTIL switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

SUBTASK 21-45-00-860-033

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

SUBTASK 21-45-00-200-024

(4) Make sure that the airflow from the forward and aft door heater outlet is cool.

SUBTASK 21-45-00-200-026

(5) Make sure that these emergency exit hatch heater blankets are cool.

(a) Emergency exit door lining heater blankets.

(b) Emergency exit door surround panel heater blankets.

(c) Emergency exit door closeout panel heater blankets.

SUBTASK 21-45-00-860-034

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.

(6) Do this task: (Put the Airplane in the Air Mode, TASK 32-09-00-860-801).

SUBTASK 21-45-00-200-025

(7) Make sure that the airflow from the forward and aft door heater outlet does not become warmer.

SUBTASK 21-45-00-200-028

(8) Make sure that these emergency exit hatch heater blankets do not become warmer.

(a) Emergency exit door lining heater blankets.

(b) Emergency exit door surround panel heater blankets.

(c) Emergency exit door closeout panel heater blankets.

SUBTASK 21-45-00-860-035

(9) Do this task: (Return the Airplane to the Ground Mode, TASK 32-09-00-860-802).

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SUBTASK 21-45-00-860-036

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

SUBTASK 21-45-00-860-037

(11) Make sure the L RECIRC FAN and the R RECIRC FAN switches, on the P5-10 air conditioning panel, are set to AUTO.

SUBTASK 21-45-00-860-038

(12) Do this task: (Remove Electrical Power, TASK 24-22-00-860-812).

END OF TASK

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Forward Door Area Heater
Figure 201/21-45-00-990-801 (Sheet 1 of 2)

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VIEW THROUGH ACCESS PANEL, 113BW

B

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Forward Door Area Heater
Figure 201/21-45-00-990-801 (Sheet 2 of 2)

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Aft Door Area Heater
Figure 202/21-45-00-990-802

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Emergency Exit Door Heater Blankets
Figure 203/21-45-00-990-804 (Sheet 1 of 3)

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Emergency Exit Door Heater Blankets
Figure 203/21-45-00-990-804 (Sheet 2 of 3)

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Emergency Exit Door Heater Blankets
Figure 203/21-45-00-990-804 (Sheet 3 of 3)

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TASK 21-45-00-800-802

3. **Door Area Heating System - Activation**
(Figure 201 or Figure 202, Figure 203)

A. **General**

(1) This task will activate these components in the door area heating system.

- Forward Door Area Heater
- Emergency Exit Door Heater Blankets
- Aft Door Area Heater

B. **References**

Reference	Title
21-45-00-700-801	Emergency Exit Hatch Heaters Operational Test (P/B 501)
21-45-00-700-802	Door Area Heater Operational Test (P/B 501)

C. **Location Zones**

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

D. **Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

E. **Procedure**

SUBTASK 21-45-00-860-039

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	11	C01274	AIR CONDITIONING DOOR AREA HEAT CONT

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	7	C01279	DOOR AREA HTR-AFT
D	9	C01280	DOOR AREA HTR-FWD

SUBTASK 21-45-00-710-001

(2) Do this task: (Door Area Heater Operational Test, TASK 21-45-00-700-802)

SUBTASK 21-45-00-710-002

(3) Do this task: (Emergency Exit Hatch Heaters Operational Test, TASK 21-45-00-700-801)

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SUBTASK 21-45-00-410-001

(4) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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DOOR AREA HEATING SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks. The tasks are:

(1) An operational test of the door area heaters.

(2) An operational test of the emergency exit hatch heaters.

NOTE: The emergency exit hatch heaters have over-temperature thermostats. The thermostats will turn the heaters off very shortly after they come on when the airplane is on the ground, in the air mode, with an air conditioning pack on. You must have a minimum of two persons to do this test correctly.

B. The door area and emergency exit hatch heaters operate when these conditions are met:

(1) The airplane is in the air.

(2) One or both of the air conditioning packs are on.

C. There is a door area heater for the forward and the aft entry doors.

D. There are five heater blankets associated with each emergency exit hatch. The heaters are installed as follows:

(1) There are two heaters behind the lining of the emergency exit hatch.

(2) There are two heaters for the emergency exit hatch doorway. There is a heater behind the forward and the aft surround panels.

(3) There is a heater on the outboard side of the closeout panel of emergency exit hatch.

TASK 21-45-00-700-802

2. Door Area Heater Operational Test

A. General

(1) This task will test the operation of the door area heater.

B. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
24-22-00-860-813	Supply External Power (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Location Zones

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

D. Prepare for the Test

SUBTASK 21-45-00-860-006

(1) Do this task: Supply External Power, TASK 24-22-00-860-813.

SUBTASK 21-45-00-860-027

(2) Make sure that the CAB/UTIL switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

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SUBTASK 21-45-00-860-007

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

SUBTASK 21-45-00-860-008

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	11	C01274	AIR CONDITIONING DOOR AREA HEAT CONT

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	7	C01279	DOOR AREA HTR-AFT
D	9	C01280	DOOR AREA HTR-FWD

E. Door Area Heater Operational Test

SUBTASK 21-45-00-200-003

(1) Feel the airflow from the door heater outlet.

(a) Make sure the airflow from the door heater outlet is cool.

SUBTASK 21-45-00-860-009

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) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-45-00-200-004

(3) Feel the airflow from the door heater outlet.

(a) Make sure the air that exits the outlet becomes warmer.

SUBTASK 21-45-00-860-024

(4) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-45-00-840-003

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

SUBTASK 21-45-00-840-004

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

TASK 21-45-00-700-801

3. Emergency Exit Hatch Heaters Operational Test

A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (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)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

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(Continued)

Reference	Title
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

B. Consumable Materials

Reference	Description	Specification
G02319	Spray - Freeze - Miller-Stephenson MS-242N	

C. Location Zones

Zone	Area
212	Flight Compartment - Right
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

D. Prepare for the Test

NOTE: The emergency exit hatch heaters have over-temperature thermostats (Figure 501). The thermostats will turn the heaters off very shortly after they come on when the airplane is on the ground, in the air mode, with an air conditioning pack on. The exit hatch heaters will not operate when the temperature is more than approximately 70 ±5°F (21 ±3°C) (when the overheat thermostat is closed) or 50 ±7°F (10 ±4°C) (when the overheat thermostat is open due to a previous overheat condition). In warm temperatures, the heater thermostats may need to be cooled before the heaters will operate.

SUBTASK 21-45-00-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-45-00-860-002

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

SUBTASK 21-45-00-860-003

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	11	C01274	AIR CONDITIONING DOOR AREA HEAT CONT

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

SUBTASK 21-45-00-200-032

(4) Make sure that the temperature in the area of the associated thermostats is low enough to make the heaters operate during the test (Figure 501).

- 70°F (21°C) or less for the hatch heaters and trim heaters.
- 80°F (27°C) or less for the closeout panel heater.

(a) If necessary remove any lining required for access to cool the thermostats during the heater test.

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E. Emergency Exit Hatch Heater Operational Test

SUBTASK 21-45-00-200-005

(1) For the applicable heater(s), check the adjacent surface temperature as follows (Figure 501).

(a) Feel the surface of the emergency exit hatch lining along the vertical edges.

1) Make sure that the temperature of the lining is approximately the same as the ambient air temperature.

(b) Feel the surface of the trim strips of the emergency exit hatch doorway.

1) Make sure that the temperature of the trim strips is approximately the same as the ambient air temperature.

(c) Feel the surface of the closeout panel.

1) Make sure that the temperature of the closeout panel is approximately the same as the ambient air temperature.

SUBTASK 21-45-00-860-011

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

SUBTASK 21-45-00-860-004

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) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-45-00-860-012

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

NOTE: Have one person turn the air conditioning pack on. Have one or more persons check the operation of the emergency exit hatch heaters.

SUBTASK 21-45-00-200-033

(5) If necessary, cool the associated control thermostat and overheat thermostat to make the heater operate.

- 70°F (21°C) or less for the hatch heaters and trim heaters.
- 80°F (27°C) or less for the closeout panel heater.

NOTE: The time to cool the thermostats and the amount of cooling required will vary depending on the ambient temperature.

NOTE: Check the heater quickly after cooling the thermostats. The thermostats will shut the hatch and trim heaters down when the heaters reach 80°F (27°C). The closeout heater will shut down at 100°F (38°C).

(a) A cool air source such as MS-242N spray, G02319 or equivalent can be used to cool the thermostats.

SUBTASK 21-45-00-200-007

(6) Make sure that the applicable heaters operate as follows (Figure 501).

(a) Feel the surface of the emergency exit hatch lining along the vertical edges.

1) Make sure that you feel the warmth from the heater.

(b) Feel the surface of the trim strips for the emergency exit hatch doorway.

1) Make sure that you feel the warmth from the heater.

(c) Feel the surface of the closeout panel.

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1) Make sure that you feel the warmth from the heater.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-45-00-860-005

(1) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-45-00-840-001

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

SUBTASK 21-45-00-840-002

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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2418683 S0000558834_V1

Exit Hatch Heater Locations
Figure 501/21-45-00-990-805

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DOOR AREA HEATER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the door area heater

(2) An installation of the door area heater.

B. The door area heaters operate when these conditions are met:

(1) The airplane is in the air

(2) One or two of the air conditioning packs are on.

TASK 21-45-01-000-801

2. Door Area Heater Removal

(Figure 401 or Figure 402)

A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)

B. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
117	Electrical and Electronics Compartment - Left
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

C. Access Panels

Number	Name/Location
113BW	Forward Nose Wheel Well Panel
117A	Electronic Equipment Access Door

D. Prepare for the Removal

SUBTASK 21-45-01-840-001

(1) Do these steps to make sure that conditioned air is not supplied to the passenger compartment:

NOTE: This will make sure that there is no airflow in the ducts when you remove the door area heater.

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

NOTE: Do not operate a ground conditioned air source.

(b) Make sure the L RECIRC FAN and the R RECIRC FAN switches, on the P5-10 air conditioning panel, are set to OFF.

SUBTASK 21-45-01-010-001

(2) To prepare for the forward door area heater removal located in the nose wheel well, do these steps:

(a) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

(c) Open this access panel:

Number	Name/Location
113BW	Forward Nose Wheel Well Panel

SUBTASK 21-45-01-010-002

(3) Do these steps to prepare for the aft door area heater removal:

NOTE: You can use the (Figure 401 or Figure 402) to help you find the approximate location of the aft door area heater.

(a) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	7	C01279	DOOR AREA HTR-AFT

(c) At the forward attendant panel, set the switch for the entry lights to the OFF position and attach a DO-NOT-OPERATE tag.

WARNING: DO NOT TOUCH THE SOCKETS OR THE METAL ENDS OF THE LAMP. WHEN ELECTRICAL POWER IS SUPPLIED TO THE LIGHT, ELECTRICAL SHOCK CAN OCCUR.

(d) Lower the aft side of the aft entry light lens assembly.

E. Door Area Heater Removal

SUBTASK 21-45-01-020-001

(1) Disconnect the electrical connector [2] from the door area heater [3].

SUBTASK 21-45-01-020-002

(2) To remove the aft door area heater, do this step:

(a) Remove the nut [6], the washer [7], and the wire bundle mounting plate [8].

SUBTASK 21-45-01-020-003

(3) Remove the two clamps [1].

SUBTASK 21-45-01-020-006

(4) Loosen the clamp [1] and the clamp [5] and move them away from the door area heater [3] and onto the flex ducts.

SUBTASK 21-45-01-020-007

(5) Remove the door area heater [3] from the flex ducts.

END OF TASK

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Forward Door Area Heater Installation
Figure 401/21-45-01-990-804 (Sheet 1 of 2)

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VIEW THROUGH ACCESS PANEL, 113BW

B

G05200 S0006562858_V4

Forward Door Area Heater Installation
Figure 401/21-45-01-990-804 (Sheet 2 of 2)

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Aft Door Area Heater Installation
Figure 402/21-45-01-990-801

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TASK 21-45-01-400-801

3. **Door Area Heater Installation**

(Figure 401 or Figure 402)

A. **General**

(1) Some of the ducts and equipment 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 Part 25.856, effective September 2, 2003.

(2) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.

(3) Melamine foam insulation, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement. BMS8-385 Type 4 is the preferred foam insulation material that meets the flame propagation requirement. BMS 8-385 Type 6 and BMS 8-300 Type VIII insulation is optional to BMS8-385 Type 4.

(4) Air conditioning ducts with polyimide foam insulation, G02470 must be wrapped with tape, G50327 or tape, G50789 to meet the flammability/flame propagation requirements. Wrap the tape, G50327 or tape, G50789 across 100% of the brown hypalon insulation surface on the polyimide foam insulation, G02470.

(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 BMS 5-157, Type I, Class 1, Grade B, composition MPVF and BMS 5-157, Type I, Class 2, Grade C, composition MPEEK are qualified tapes used to secure insulation to ducts.

B. **References**

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-00-00-800-803	Supply Conditioned Air with a Cooling Pack (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. **Consumable Materials**

Reference	Description	Specification
G02470	Foam - Flexible Polyimide	BMS8-300 Type I
G50327	Tape - Advanced Insulation Blanket	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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D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Heater	21-45-01-02-125	AKS ALL
		21-45-01-07-045	AKS ALL

E. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
117	Electrical and Electronics Compartment - Left
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

F. Access Panels

Number	Name/Location
113BW	Forward Nose Wheel Well Panel
117A	Electronic Equipment Access Door

G. Door Area Heater Installation

SUBTASK 21-45-01-420-011

(1) Install the forward door area heater [3] between the flex ducts as follows:

(a) Put the forward door area heater [3] in position with the electrical connector pointed down and the flow arrow on the heater pointed in the same direction as the flow arrow on the support structure.

(b) Install the free ends of the forward and aft flex ducts on the forward door area heater [3] so that the routing of the flex ducts takes up any excess duct length as follows:

1) Use large radius bends to prevent kinking or twisting of the ducts.

2) Compress the flex duct between the support clamps.

(c) Make sure the flex ducts overlap the ends of the heater duct 1.00 (± 0.13) inch.

(d) Move the clamps [1] and [5] into position 0.38 (± 0.13) inch from the ends of the flex ducts.

(e) Tighten the clamps 15 to 18 pound-inches (1.7 to 2.0 newton-meters).

SUBTASK 21-45-01-420-001

(2) Install the aft door area heater [3] between the flex ducts as follows:

(a) Put the aft door area heater [3] in position with the electrical connector pointed down and the flow arrow on the heater pointed in the same direction as the flow arrow on the support structure.

(b) Install the free ends of the forward and aft flex ducts on the aft door area heater [3] so that the ends of the flex ducts overlap the heater duct by 1.25 (± 0.13) inches.

(c) Move the clamp [1] and the clamp [5] into position so they are 0.38 (± 0.13) inch from the ends of the heater duct.

(d) Tighten the clamps 15 to 18 pound-inches (1.7 to 2.0 newton-meters).

SUBTASK 21-45-01-420-006

(3) Install the two clamps [1].

SUBTASK 21-45-01-420-007

(4) Connect the electrical connector [2] to the door area heater [3].

SUBTASK 21-45-01-840-002

(5) If you installed the forward door area heater, do this step:

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

SUBTASK 21-45-01-410-001

(6) If you installed the aft door area heater, then do these steps:

(a) Install the wire bundle mounting plate [8], the washer [7], and the nut [6].

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	7	C01279	DOOR AREA HTR-AFT

H. Door Area Heater Installation Test

SUBTASK 21-45-01-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-45-01-860-016

(2) Make sure that the CAB/UTIL switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

SUBTASK 21-45-01-860-002

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

SUBTASK 21-45-01-700-001

(4) Make sure that the airflow from the door heater outlet is cool.

SUBTASK 21-45-01-860-003

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.

(5) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-45-01-700-002

(6) Make sure that the airflow from the door heater outlet becomes warmer.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-45-01-860-004

(1) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-45-01-410-002

(2) If you installed the forward door area heater, then close this access panel:

Number	Name/Location
113BW	Forward Nose Wheel Well Panel

SUBTASK 21-45-01-410-003

(3) If you installed the aft door area heater, then close the aft entry light lens assembly.

SUBTASK 21-45-01-840-003

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

SUBTASK 21-45-01-860-007

(5) Make sure the L RECIRC FAN and the R RECIRC FAN switches, on the P5-10 air conditioning panel, are set to AUTO.

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SUBTASK 21-45-01-840-004

(6) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 21-45-01-840-005

(7) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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EMERGENCY EXIT DOOR HEATER SYSTEM - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the emergency exit door heater blanket

(2) An installation of the emergency exit door heater blanket.

(3) A removal of the door surround panel heater blanket of the emergency exit door

(4) An installation of the door surround panel heater blanket of the emergency exit door.

(5) A removal of the closeout panel heater blanket of the emergency exit door

(6) A installation of the closeout panel heater blanket of the emergency exit door.

B. There are two heater blankets in each emergency exit door. There is one heater blanket behind the closeout panel of each emergency exit door doorway. There is a heater blanket behind the forward and aft door surround panel of each emergency exit door.

C. The emergency exit door heater blankets operate when these conditions are met:

(1) The airplane is in the air

(2) One or two of the air conditioning packs are on.

TASK 21-45-02-000-801

2. Emergency Exit Door Heater Blanket Removal

(Figure 401)

A. References

Reference	Title
25-21-20-000-801	Emergency Exit Doorway Lining Removal (P/B 401)

B. Location Zones

Zone	Area
212	Flight Compartment - Right
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

C. Prepare for the Removal

SUBTASK 21-45-02-840-001

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

SUBTASK 21-45-02-010-001

(2) Open the emergency exit door.

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D. Emergency Exit Door Heater Blanket Removal

SUBTASK 21-45-02-010-002

CAUTION: DO NOT APPLY TENSION TO THE WIRING BEHIND THE LINING. YOU MAY DAMAGE THE WIRING.

(1) Remove the lining on the emergency exit door. To remove the lining, do this task: Emergency Exit Doorway Lining Removal, TASK 25-21-20-000-801.

SUBTASK 21-45-02-020-001

(2) Disconnect the electrical connectors from the heater blanket [1].

SUBTASK 21-45-02-020-002

(3) Remove the heater blankets [1].

NOTE: The heater blanket [1] is attached to the lining with adhesive.

END OF TASK

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LEFT EMERGENCY EXIT DOOR
(RIGHT EMERGENCY EXIT DOOR IS OPPOSITE)
A

EMERGENCY EXIT DOOR LINING
(SHOWN REMOVED)
B

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Emergency Exit Door Heater Blanket Installation
Figure 401/21-45-02-990-801

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TASK 21-45-02-400-801

3. Emergency Exit Door Heater Blanket Installation

(Figure 401)

A. References

Reference	Title
21-45-00-700-801	Emergency Exit Hatch Heaters Operational Test (P/B 501)
25-21-20-400-801	Emergency Exit Doorway Lining Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	ASTM D-3735 Type III

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Heater blanket	52-22-51-03-257	AKS ALL
		52-22-51-03-265	AKS ALL
		52-22-51-03-280	AKS ALL
		52-22-51-03-300	AKS ALL
		52-22-51-04-260	AKS ALL
		52-22-51-04-300	AKS ALL

D. Location Zones

Zone	Area
212	Flight Compartment - Right
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

E. Emergency Exit Door Heater Blanket Installation

SUBTASK 21-45-02-110-001

(1) Clean the lining assembly with solvent, B00083 to remove all the adhesive.

SUBTASK 21-45-02-420-001

(2) Install the heater blankets [1] 3.5 ±0.25 inches (88.9 ±6.4 mm) from the top of the lining assembly.

NOTE: Make sure there are no air bubbles between the heater and the lining assembly.

SUBTASK 21-45-02-020-003

(3) Connect the electrical connectors for the heater blanket [1].

SUBTASK 21-45-02-010-003

CAUTION: DO NOT APPLY TENSION TO THE WIRING BEHIND THE LINING. YOU MAY DAMAGE THE WIRING.

(4) Install the lining on the emergency exit door. To install the lining, do this task: Emergency Exit Doorway Lining Installation, TASK 25-21-20-400-801.

SUBTASK 21-45-02-010-004

(5) Close the emergency exit door.

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SUBTASK 21-45-02-840-002

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

SUBTASK 21-45-02-710-001

(7) Do an operational test of the emergency exit hatch heaters. To do the test, do this task: Emergency Exit Hatch Heaters Operational Test, TASK 21-45-00-700-801.

——— END OF TASK ———

TASK 21-45-02-000-802

4. Emergency Exit Door Surround Panel Heater Blanket Removal

(Figure 402)

A. References

Reference	Title
25-21-20-000-801	Emergency Exit Doorway Lining Removal (P/B 401)

B. Location Zones

Zone	Area
212	Flight Compartment - Right
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

C. Prepare for the Removal

SUBTASK 21-45-02-840-003

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

SUBTASK 21-45-02-010-005

(2) Open the emergency exit door.

D. Emergency Exit Door Surround Panel Heater Blanket Removal

SUBTASK 21-45-02-010-006

CAUTION: DO NOT APPLY TENSION TO THE WIRING BEHIND THE TRIM STRIP. YOU MAY DAMAGE THE WIRING.

(1) Remove the door surround panel from the emergency exit door doorway. To remove the panel, do this task: Emergency Exit Doorway Lining Removal, TASK 25-21-20-000-801.

SUBTASK 21-45-02-020-004

(2) Disconnect the electrical connectors from the heater blanket [21].

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SUBTASK 21-45-02-020-005

(3) Remove the heater blanket [21].

NOTE: The heater blanket [21] is attached to the trim strip with adhesive.

——— END OF TASK ———

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Emergency Exit Door Surround Panel Heater Blanket Installation
Figure 402/21-45-02-990-802

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TASK 21-45-02-400-802

5. Emergency Exit Door Surround Panel Heater Blanket Installation

(Figure 402)

A. References

Reference	Title
21-45-00-700-801	Emergency Exit Hatch Heaters Operational Test (P/B 501)
25-21-20-400-801	Emergency Exit Doorway Lining Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	ASTM D-3735 Type III

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Heater blanket	52-22-51-03-257	AKS ALL
		52-22-51-03-265	AKS ALL
		52-22-51-03-280	AKS ALL
		52-22-51-03-300	AKS ALL
		52-22-51-04-260	AKS ALL
		52-22-51-04-300	AKS ALL

D. Location Zones

Zone	Area
212	Flight Compartment - Right
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

E. Emergency Exit Door Surround Heater Blanket Installation

SUBTASK 21-45-02-110-002

(1) Clean the aluminum part of the surround panel assembly with solvent, B00083 to remove all the adhesive.

SUBTASK 21-45-02-420-002

(2) Install the heater blanket [21] in the center of the aluminum part of the surround panel assembly.

NOTE: Make sure there are no air bubbles between the heater and the lining assembly.

SUBTASK 21-45-02-020-006

(3) Connect the electrical connectors for the heater blanket [21].

SUBTASK 21-45-02-010-007

CAUTION: DO NOT APPLY TENSION TO THE WIRING BEHIND THE SURROUND PANEL. YOU MAY DAMAGE THE WIRING.

(4) Install the surround panel in the emergency exit doorway. To install the panel, do this task: Emergency Exit Doorway Lining Installation, TASK 25-21-20-400-801.

SUBTASK 21-45-02-010-008

(5) Close the emergency exit door.

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SUBTASK 21-45-02-840-004

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

SUBTASK 21-45-02-710-003

(7) Do an operational test of the emergency exit hatch heaters. To do the test, do this task: Emergency Exit Hatch Heaters Operational Test, TASK 21-45-00-700-801.

——— END OF TASK ———

TASK 21-45-02-000-803

6. Emergency Exit Door Closeout Panel Heater Blanket Removal

(Figure 403)

A. Location Zones

Zone	Area
212	Flight Compartment - Right
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

B. Prepare for the Removal

SUBTASK 21-45-02-840-005

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

SUBTASK 21-45-02-010-009

(2) Open the emergency exit door.

C. Emergency Exit Door Closeout Panel Heater Blanket Removal

SUBTASK 21-45-02-010-010

(1) Push the prop [42] on the support assembly to release the closeout panel.

SUBTASK 21-45-02-010-011

(2) Hold the closeout panel in the vertical position to remove the heater blanket [41].

SUBTASK 21-45-02-020-007

(3) Disconnect the electrical connectors from the heater blanket [41].

SUBTASK 21-45-02-020-008

(4) Remove the heater blanket [41].

NOTE: The heater blanket [41] is attached to the panel with adhesive.

——— END OF TASK ———

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Emergency Exit Door Closeout Panel Heater Blanket Installation
Figure 403/21-45-02-990-803

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TASK 21-45-02-400-803

7. Emergency Exit Door Closeout Panel Heater Blanket Installation

(Figure 403)

A. References

Reference	Title
21-45-00-700-801	Emergency Exit Hatch Heaters Operational Test (P/B 501)

B. Consumable Materials

Reference	Description	Specification
A00188	Adhesive - Urethane, Two Component	BMS5-105 Type V
B00083	Solvent - VM&P Naphthas	ASTM D-3735 Type III

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
41	Heater blanket	52-22-51-03-410	AKS ALL
		52-22-51-04-415	AKS ALL

D. Location Zones

Zone	Area
212	Flight Compartment - Right
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

E. Emergency Exit Door Closeout Panel Heater Blanket Installation

SUBTASK 21-45-02-110-003

(1) Clean the closeout panel with solvent, B00083 to remove all the adhesive.

SUBTASK 21-45-02-420-003

(2) Apply a layer of adhesive, A00188 to the closeout panel where the heater blanket and the closeout panel touch.

SUBTASK 21-45-02-420-004

(3) Apply a layer of adhesive, A00188 to the heater blanket [41].

SUBTASK 21-45-02-420-005

(4) Put the heater blanket [41] in its position on the closeout panel and apply pressure.

SUBTASK 21-45-02-420-006

(5) Connect the electrical connectors to the heater blanket [41].

SUBTASK 21-45-02-420-007

(6) Let the adhesive dry, refer to the manufacturers specifications.

SUBTASK 21-45-02-010-012

(7) Close the emergency exit door.

SUBTASK 21-45-02-840-006

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
D	9	C01280	DOOR AREA HTR-FWD

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SUBTASK 21-45-02-710-002

(9) Do an operational test of the emergency exit hatch heaters. To do the test, do this task: Emergency Exit Hatch Heaters Operational Test, TASK 21-45-00-700-801.

——— END OF TASK ———

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PACK FLOW CONTROL AND PACK COOLING SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Air Cycle Air Conditioning and Temperature Control System - Deactivation

(2) Air Cycle Air Conditioning and Temperature Control System - Activation

(3) Ram Air System - Deactivation

(4) Ram Air System - Activation

TASK 21-51-00-800-803

2. Air Cycle Air Conditioning and Temperature Control System - Deactivation

(Figure 201)

A. General

(1) This task will deactivate these components in the air cycle air conditioning and temperature control system.

- Flow Control and Shutoff Valve
- Heat Exchanger and Plenum/Diffuser Assembly
- Air Cycle Machine (ACM)
- Conditioned Air Check Valve
- High Pressure Water Separator
- Temperature Control Valve
- Standby Temperature Control Valve
- Condenser
- Reheater
- Water Extractor
- Water Extractor Duct
- Water Spray Nozzle
- High Pressure Water Separator Mix Muff
- Compressor Discharge Overheat Switch
- Turbine Inlet Overheat Switch
- Pack Discharge Duct Overheat Switch
- Ram Air Control Temperature Sensor
- Mix Manifold Temperature Sensor
- Pack Temperature Sensor
- Pack Temperature Bulb
- Air Conditioning Module

B. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

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C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

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

E. Procedure

SUBTASK 21-51-00-860-054

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE YOU DO MAINTENANCE. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: (Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806).

SUBTASK 21-51-00-860-055

(2) Do these steps on the P5-10 air conditioning panel (installed on the P5 forward overhead panel):

(a) Put the L and R PACK switches to the OFF position and attach DO NOT OPERATE tags, STD-858.

(b) Put the ISOLATION VALVE switch to the OPEN position and attach a DO NOT OPERATE tag, STD-858.

(c) Put the BLEED 1 and 2 switches to the OFF position and attach DO NOT OPERATE tags, STD-858.

(d) Put the BLEED APU switch to the OFF position and attach a DO NOT OPERATE tag, STD-858.

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.

1) If an external ground air source was used, Disconnect the external ground air source from the ground pneumatic service connector.

SUBTASK 21-51-00-860-056

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

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(Continued)

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	2	C01169	A/C ZONE TEMP DUCT OVHT AFT PASS
C	3	C01166	A/C ZONE TEMP DUCT OVHT FWD PASS
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT
D	3	C01613	AIR COND PACK CONT VALVES L ALT
D	4	C01614	AIR COND PACK CONT VALVES R ALT
D	8	C00076	AIR CONDITIONING TEMP IND
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

F. Tryout

NOTE: This tryout is to make sure the air cycle air conditioning and temperature control system is in a zero energy state.

SUBTASK 21-51-00-210-004

(1) Make sure that the (P5-10) duct temperature indicator shows less than 200°F (93°C).

SUBTASK 21-51-00-210-005

(2) Make sure that both duct pressure needles on the (P5-10) dual duct pressure indicator show 0 psi.

END OF TASK

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FLIGHT COMPARTMENT

AIR CONDITIONING
MODULE

A

G68261 S0006562891_V2

Air Conditioning Module (P5-10)
Figure 201/21-51-00-990-817

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TASK 21-51-00-800-804

3. **Air Cycle Air Conditioning and Temperature Control System - Activation**
(Figure 201)

A. General

(1) This task will activate these components in the air cycle air conditioning and temperature control system.

- Flow Control and Shutoff Valve
- Heat Exchanger and Plenum/Diffuser Assembly
- Air Cycle Machine (ACM)
- Conditioned Air Check Valve
- High Pressure Water Separator
- Temperature Control Valve
- Standby Temperature Control Valve
- Condenser
- Reheater
- Water Extractor
- Water Extractor Duct
- Water Spray Nozzle
- High Pressure Water Separator Mix Muff
- Compressor Discharge Overheat Switch
- Turbine Inlet Overheat Switch
- Pack Discharge Duct Overheat Switch
- Ram Air Control Temperature Sensor
- Mix Manifold Temperature Sensor
- Pack Temperature Sensor
- Pack Temperature Bulb
- Air Conditioning Module

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Location Zones

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

D. Procedure

SUBTASK 21-51-00-840-001

(1) Remove the DO NOT OPERATE tags, STD-858 from the L and R PACK, ISOLATION VALVE, BLEED 1 and 2, and BLEED APU switches on the P5-10 air conditioning panel (installed on the P5 forward overhead panel).

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SUBTASK 21-51-00-860-057

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE YOU DO MAINTENANCE. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	2	C01169	A/C ZONE TEMP DUCT OVHT AFT PASS
C	3	C01166	A/C ZONE TEMP DUCT OVHT FWD PASS
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT
D	3	C01613	AIR COND PACK CONT VALVES L ALT
D	4	C01614	AIR COND PACK CONT VALVES R ALT
D	8	C00076	AIR CONDITIONING TEMP IND
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

END OF TASK

TASK 21-51-00-800-801

4. Ram Air System - Deactivation

A. General

(1) This task will deactivate these components in the ram air system.

- Ram Air Inlet Actuator
- Ram Air Inlet Deflector Door

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- Ram Air Inlet Modulation Panels
- Ram Air Exhaust Actuator

B. Location Zones

Zone	Area
191	Lower Wing-To-Body Fairing - Forward of Wing Box
192	Lower Wing-To-Body Fairing - Under Wing Box
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 21-51-00-860-052

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

D. Tryout

NOTE: This tryout is to make sure the ram air system is in a zero energy state.

SUBTASK 21-51-00-210-003

(1) Make sure that the circuit breakers listed above are opened and locked out.

END OF TASK

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TASK 21-51-00-800-802

5. Ram Air System - Activation

A. General

(1) This task will activate these components in the ram air system.

- Ram Air Inlet Actuator
- Ram Air Inlet Deflector Door
- Ram Air Inlet Modulation Panels
- Ram Air Exhaust Actuator

B. Location Zones

Zone	Area
191	Lower Wing-To-Body Fairing - Forward of Wing Box
192	Lower Wing-To-Body Fairing - Under Wing Box
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 21-51-00-860-053

WARNING: MOVE ALL PERSONNEL AWAY FROM THE PANELS, DOORS, VANES, AND LINKAGES FOR RAM AIR. THESE CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

END OF TASK

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PACK FLOW CONTROL AND PACK COOLING SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

AKS 001-021

(1) Pack/Zone Temperature Controller BITE Test.

AKS 022-999

(2) Pack Flow Control Valve Operational Test.

AKS 001-021

TASK 21-51-00-700-803

2. Pack/Zone Temperature Controller BITE Test

(Figure 501 or Figure 502 or Figure 503 or Figure 504)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Procedure

SUBTASK 21-51-00-860-014

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-00-860-020

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS 001-021			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK

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AKS 001-021 (Continued)

(Continued)

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS 001-021			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	2	C01169	A/C ZONE TEMP DUCT OVHT AFT PASS
C	3	C01166	A/C ZONE TEMP DUCT OVHT FWD PASS
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-00-860-022

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	3	C01613	AIR COND PACK CONT VALVES L ALT
D	4	C01614	AIR COND PACK CONT VALVES R ALT

SUBTASK 21-51-00-860-021

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	15	C01355	LANDING GEAR AIR/GND SYS 2
C	16	C01356	LANDING GEAR AIR/GND SYS 1
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	11	C00313	INDICATOR MASTER DIM SECT 1
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN

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AKS 001-021 (Continued)

(Continued)

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
D	8	C00076	AIR CONDITIONING TEMP IND
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

SUBTASK 21-51-00-860-017

(5) Put these switches on the P5-10 Air Conditioning Panel to the positions that follow:

(a) Put the BLEED 1, BLEED 2, and BLEED APU switches to the OFF position.

(b) Make sure that the L/R duct pressure indications on the DUCT PRESS indication gauge on the P5-10 panel are zero.

(c) Put the L PACK and R PACK switches to the AUTO position.

(d) Put the L RECIRC FAN and R RECIRC FAN switches to the AUTO position.

(e) Put the ISOLATION VALVE switch to the OPEN position.

SUBTASK 21-51-00-860-018

(6) Put these switches on the P5-17 Cabin Temperature Panel to the positions that follow:

(a) Put the CONT CAB, FWD CAB, and AFT CAB selectors to the AUTO (12:00) position.

(b) Put the TRIM AIR switch to the ON position.

SUBTASK 21-51-00-010-007

(7) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-51-00-740-008

(8) Make sure these lights are off for the left and the right pack/zone temperature controllers:

(a) CONTROLLER FAULT - PACK/ZONE

(b) CONTROLLER FAULT - STANDBY PACK

SUBTASK 21-51-00-740-003

(9) Do the steps that follow on the left and the right pack/zone temperature controllers:

(a) Push and hold the PRESS/TEST switch on the controller.

1) Make sure all the lights on the controller come on and then go off.

(b) Push the BIT switch on the controller.

NOTE: The BIT switch will show if failures occurred during the last flight.

1) Wait for the green GO light to come on.

2) If a red light comes on for a component, the component does not operate. Write down the component that does not operate.

(c) Push the PREV FLT switch on the controller.

NOTE: The PREV FLT switch will show all the failures occurred during the last nine flights.

1) Wait for the green GO light to come on.

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AKS 001-021 (Continued)

2) If a red light comes on for a component, the component does not operate. Write down the component that does not operate.

WARNING: MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE RAM AIR INLET DOOR. WHEN YOU PUSH THE VERIFY SWITCH, THE RAM AIR COMPONENTS WILL MOVE AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(d) Push the VERIFY switch on the controller.

NOTE: The VERIFY switch will initiate a real time test of the pack and zone temperature control components.

1) Wait for the green GO light to come on.

2) If a red light comes on for a component, the component does not operate. Write down the component that does not operate.

3) Do this step to erase the existing faults and the fault history:

a) Push the RESET switch while the VERIFY and GO lights are on.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-00-010-006

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-51-00-860-019

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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FLIGHT COMPARTMENT

AIR CONDITIONING
MODULE

A

G68261 S0006562891_V2

Pack Flow Control and Pack Cooling Adjustment
Figure 501/21-51-00-990-803

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G68272 S0006562895_V3

Pack Flow Control and Pack Cooling Adjustment
Figure 502/21-51-00-990-804

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PACK/ZONE TEMPERATURE CONTROLLER, M1442, M1443

C

2023366 S0000402643_V2

Pack Flow Control and Pack Cooling Adjustment
Figure 503/21-51-00-990-805

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LEFT ECS BAY
(RIGHT ECS BAY IS OPPOSITE)
(DUCTS REMOVED FOR CLARITY)

D

G68286 S0006562899_V2

Pack Flow Control and Pack Cooling Adjustment
Figure 504/21-51-00-990-806

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TASK 21-51-00-700-802

3. Pack Flow Control Valve - Operational Test

A. General

(1) This test does a check of the pack flow control and shutoff valve normal, engine high and APU high flow modes.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Procedure

SUBTASK 21-51-00-860-006

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-00-010-015

(2) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-00-010-003

(3) Open the access panels in the sequence that follows:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

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AKS 001-021 (Continued)

SUBTASK 21-51-00-860-007

(4) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-51-00-860-008

(5) Do these steps to make sure the left pack and right pack flow control valves are closed with the pack switches in the OFF position:

(a) Put the L PACK switch and the R PACK switch on the P5 Air Conditioning Panel in the OFF position.

(b) Make sure the position indicators on the left and right flow control and shutoff valves are in the closed position.

SUBTASK 21-51-00-860-009

(6) Do these steps to make sure the left and right flow control valves are partially open with the pack switches in the AUTO position:

(a) Make sure that either the BLEED 1 or BLEED 2 switch on the P5-10 air conditioning panel is set to the ON position.

(b) Set the CONT CAB, FWD CAB and AFT CAB temperature selectors on the P5-17 temperature control module to the AUTO (12:00 o'clock) position.

(c) Put the L PACK switch and the R PACK switch in the AUTO position.

(d) Make sure the position indicators on the left pack and the right pack flow control and shutoff valves move to a partially open position.

NOTE: The packs will operate.

(e) Put the L PACK and the R PACK switches on the P5-10 air conditioning panel to OFF.

(f) Allow the packs to cool.

SUBTASK 21-51-00-860-010

(7) Do these steps to make sure the left pack and right pack flow control valves are commanded to APU high mode with the pack switches in the HIGH position:

(a) Disconnect electrical connector D392 from the left flow control and shutoff valve.

(b) Connect an analog multimeter between connector D392, pins 1 and 2 on the ships' wiring.

(c) Put the L PACK and the R PACK switches on the P5-10 air conditioning panel in the HIGH positions.

(d) Make sure there is 28 (± 5) VDC between pins 1 and 2 of connector D392.

(e) Put the L PACK and the R PACK switches on the P5-10 air conditioning panel to OFF.

(f) Allow the packs to cool.

(g) Disconnect electrical connector D394 from the right pack flow control valve.

(h) Connect an analog multimeter between connector D394, pins 1 and 2 on the ships' wiring.

(i) Put the L PACK and the R PACK switches on the P5-10 air conditioning panel in the HIGH positions.

(j) Make sure there is 28 (± 5) VDC between pins 1 and 2 of connector D394.

(k) Put the L PACK and R PACK switches on the P5-10 air conditioning panel in the OFF positions.

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AKS 001-021 (Continued)

(l) If necessary, allow the packs to cool.

(m) Re-connect electrical connector D392 to the left flow control and shutoff valve.

(n) Re-connect electrical connector D394 to the right flow control and shutoff valve.

SUBTASK 21-51-00-710-003

(8) Do these steps to make sure that a pack in operation will go to the engine high position when the other pack shuts down:

(a) Put the airplane in the air mode as follows: Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

(b) Retract the trailing edge flaps to the fully up position as follows: Do this task:Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

(c) Position the L PACK switch in the AUTO position.

(d) Position the R PACK switch to the OFF position.

(e) Disconnect connector D962 from the left flow control and shutoff valve.

(f) Connect an analog multimeter between connector D962, pins 1 and 2.

(g) Make sure there is 0 (± 5) VDC between connector D962, pins 1 and 2.

1) This makes sure that the left pack is in the engine high flow mode.

(h) Re-connect connector D962 to the left flow control and shutoff valve.

(i) Position the R PACK switch to the AUTO position.

(j) Position the L PACK switch to the OFF position.

(k) Disconnect connector D964 from the right flow control and shutoff valve.

(l) Connect an analog multimeter between connector D964, pins 1 and 2.

(m) Make sure there is 0 (± 5) VDC between connector D964, pins 1 and 2.

1) This makes sure that the R PACK is in the engine high flow mode.

(n) Re-connect connector D964 to the right flow control and shutoff valve.

SUBTASK 21-51-00-860-038

(9) Return the airplane to the ground mode as follows: Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-51-00-860-039

(10) If required, extend the trailing edge flaps to the fully extended position as follows: Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 21-51-00-860-011

(11) Put the L PACK and R PACK switches in the OFF position.

SUBTASK 21-51-00-860-012

(12) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-00-410-003

(1) Close these access panels:

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door

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AKS 001-021 (Continued)

(Continued)

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-51-00-860-013

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

AKS 022-999

TASK 21-51-00-710-801

4. Pack Flow Control Valve - Operational Test

Reference Not Currently Available

A. General

(1) This test does a check that the pack flow control and shutoff valve operates in AUTO and APU high flow modes.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for the Operational Test

SUBTASK 21-51-00-860-058

(1) Close these circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	15	C01355	LANDING GEAR AIR/GND SYS 2
C	16	C01356	LANDING GEAR AIR/GND SYS 1

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AKS 022-999 (Continued)

(Continued)

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	11	C00313	INDICATOR MASTER DIM SECT 1
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	2	C01169	A/C ZONE TEMP DUCT OVHT AFT PASS
C	3	C01166	A/C ZONE TEMP DUCT OVHT FWD PASS
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT
D	3	C01613	AIR COND PACK CONT VALVES L ALT
D	8	C00076	AIR CONDITIONING TEMP IND
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

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AKS 022-999 (Continued)

SUBTASK 21-51-00-010-019

(2) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-00-010-020

(3) Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-00-860-062

(4) Ensure the CAB/UTIL switch on the ELEC METER, BATTERY AND GALLEY POWER P5-13 module is in the ON position

F. Pack Flow Control Valve Operational Test

SUBTASK 21-51-00-860-060

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-00-860-061

(2) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-51-00-710-021

(3) Do these steps to make sure the left pack and right pack flow control valves are closed with the pack switches in the OFF position:

(a) Put the L PACK switch and the R PACK switch on the P5-10 Air Conditioning Panel in the OFF position.

(b) Make sure the position indicators on the left and right flow control and shutoff valves are in the closed position

SUBTASK 21-51-00-710-022

(4) Do these steps to make sure that the left and right flow control valves are partially open with the pack switches in the AUTO position

(a) Make sure that either the BLEED 1 or BLEED 2 switch on the P5-10 air conditioning panel is set to the ON position.

(b) Set the CONT CAB, FWD CAB and AFT CAB temperature selectors on the P5-17 temperature control module to the AUTO NORMAL (12:00 o'clock) position.

(c) Put the L PACK switch and the R PACK switch in the AUTO position.

(d) Make sure the position indicators on the left pack and the right pack flow control and shutoff valves move to a partially open position.

NOTE: The packs will operate.

SUBTASK 21-51-00-710-023

(5) Do these steps to make sure that a pack in operation will go to the engine high position when the other pack shuts down:

(a) Put the airplane in the air mode as follows: Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

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(b) Retract the trailing edge flaps to the fully up position as follows: Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

(c) Position the L PACK switch in the AUTO position.

(d) Position the R PACK switch to the OFF position.

(e) Make sure the position indicator on the left flow control and shutoff valve moves further open.

SUBTASK 21-51-00-860-064

(6) Return the airplane to the ground mode as follows: Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-51-00-860-065

(7) If required, extend the trailing edge flaps to the fully extended position as follows: Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 21-51-00-860-066

(8) Put the L PACK and R PACK switches in the OFF position.

SUBTASK 21-51-00-860-063

(9) Remove pneumatic pressure from the pneumatic manifold as follows: Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-00-410-012

(1) Close these access panels:

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-00-860-067

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812

END OF TASK

AKS ALL

TASK 21-51-00-730-801

5. Ram Air System Operational Test

A. General

(1) This procedure does a test of the ram air system actuators and associated components.

B. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

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(Continued)

Reference	Title
52-48-42-000-801	Environmental Control Systems (ECS) Access Doors - Removal (P/B 401)
52-48-42-400-801	Environmental Control Systems (ECS) Access Door - Installation (P/B 401)
53-51-21 P/B 401	WING-TO-BODY FAIRING PANELS - REMOVAL/INSTALLATION
53-51-21-211-801	Wing-To-Body Fairing Panel Designated Electrical Bond Visual Inspection (P/B 601)
53-51-21-760-801	Wing-To-Body Fairing Panel Maximum Electrical Resistance Check (P/B 601)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
191FL	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191FR	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GL	Ram Air Actuator Panel - Forward
191GR	Ram Air Actuator Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door
192JL	Air Conditioning Panel - Aft
192JR	Air Conditioning Panel - Aft

E. Prepare for the System Test

SUBTASK 21-51-00-860-040

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R

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(Continued)

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	3	C01166	A/C ZONE TEMP DUCT OVHT FWD PASS
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT
D	8	C00076	AIR CONDITIONING TEMP IND
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

SUBTASK 21-51-00-860-041

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	15	C01355	LANDING GEAR AIR/GND SYS 2
C	16	C01356	LANDING GEAR AIR/GND SYS 1
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	11	C00313	INDICATOR MASTER DIM SECT 1
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6

SUBTASK 21-51-00-860-042

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

SUBTASK 21-51-00-860-043

(4) Set the switches on the P5-10 air conditioning panel to these positions:

(a) BLEED 1 and BLEED 2 switches to OFF

(b) APU BLEED switch to OFF

(c) L PACK and R PACK switches to AUTO

SUBTASK 21-51-00-860-044

(5) Set the switches on the P5-17 temperature control panel to these positions:

(a) TRIM AIR switch to ON

(b) CONT CAB selector switch to AUTO

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(c) FWD CAB selector switch to AUTO

(d) AFT CAB selector switch to AUTO

F. Ram Air Modulation System Test

SUBTASK 21-51-00-860-045

(1) Make sure the aircraft is in the ground mode.

SUBTASK 21-51-00-010-013

(2) Remove these access panels to get access to the left ram air inlet actuator:

(a) Remove these access panels:

Number	Name/Location
191FL	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-51-00-010-014

(3) Remove these access panels to get access to the right ram air inlet actuator:

(a) Remove these access panels:

Number	Name/Location
191FR	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GR	Ram Air Actuator Panel - Forward

SUBTASK 21-51-00-010-016

(4) Remove these access panels to get access to the left ram air exhaust actuator:

(a) Remove these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-51-00-010-017

(5) Remove these access panels to get access to the right ram air exhaust actuator:

Remove these access panels:

Number	Name/Location
192CR	ECS Access Door
192JR	Air Conditioning Panel - Aft

SUBTASK 21-51-00-010-018

(6) If you remove access panels 192CL or 192CR, refer to this task: Environmental Control Systems (ECS) Access Doors - Removal, TASK 52-48-42-000-801.

SUBTASK 21-51-00-740-004

(7) Make sure that the green NO LRU FAULT light on the left and right ram air inlet actuators is on.

SUBTASK 21-51-00-710-004

(8) Make sure that the left and right ram air inlet deflector doors are extended.

SUBTASK 21-51-00-710-005

(9) Make sure that the blue RAM DOOR FULL OPEN lights on the P5-10 air conditioning panel are on.

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SUBTASK 21-51-00-860-046

(10) Extend the trailing edge flaps to position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 21-51-00-210-001

(11) Make sure that the left and right ram air inlet deflector doors are still extended.

SUBTASK 21-51-00-710-006

(12) Make sure that the left and right ram air inlet actuators and ram air exhaust actuators do not move.

SUBTASK 21-51-00-710-007

(13) Make sure that the blue RAM DOOR FULL OPEN lights on the P5-10 air conditioning panel remain on.

SUBTASK 21-51-00-860-047

(14) Put the airplane in the air mode. To put the airplane in the air mode, do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-51-00-710-008

(15) Make sure the left and right ram air inlet deflectors door move to the stowed position.

SUBTASK 21-51-00-710-010

(16) Make sure that the blue RAM DOOR FULL OPEN lights on the P5-10 air conditioning panel remain on.

SUBTASK 21-51-00-860-048

(17) Retract the trailing edge flaps to the fully up position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 21-51-00-710-011

(18) Make sure that the blue RAM DOOR FULL OPEN lights on the P5-10 air conditioning panel go off.

SUBTASK 21-51-00-710-012

(19) Make sure that the left and right aft ram air actuators are extended (moved towards a more closed position).

SUBTASK 21-51-00-860-049

(20) Return the airplane to the ground mode. To put the airplane in the ground mode do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-51-00-860-050

(21) Make sure that the left and right ram air inlet deflector doors are extended.

SUBTASK 21-51-00-710-013

(22) Make sure that the left and right blue RAM DOOR FULL OPEN lights on the P5-10 air conditioning panel are on.

SUBTASK 21-51-00-740-005

(23) Press VERIFY on the pack/zone temperature controller No.1 (M1442) on the E3-3 shelf.

SUBTASK 21-51-00-710-014

(24) Make sure that the left ram air exhaust actuator extends and then retracts.

SUBTASK 21-51-00-710-015

(25) Make sure that the green NO LRU FAULT light on the left ram air exhaust actuator is on.

SUBTASK 21-51-00-740-006

(26) Press VERIFY on the pack/zone temperature controller No.2 (M14443) on the E3-3 shelf.

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SUBTASK 21-51-00-740-007

(27) Make sure that the right aft ram air actuator extends and then retracts.

SUBTASK 21-51-00-710-016

(28) Make sure that the green NO LRU FAULT light on the right aft ram air actuator is on.

SUBTASK 21-51-00-740-009

(29) Make sure that the GREEN GO lights on the pack/zone temperature controllers M1442 and M1443 are on.

SUBTASK 21-51-00-740-010

(30) Press RESET on the pack/zone temperature controllers M1442 and M1443 to clear any faults.

SUBTASK 21-51-00-410-010

(31) Install the access panels. Refer to this pageblock: WING-TO-BODY FAIRING PANELS - REMOVAL/INSTALLATION, PAGEBLOCK 53-51-21/401.

SUBTASK 21-51-00-410-011

(32) If you install access panels 192CL or 192CR, refer to this task: Environmental Control Systems (ECS) Access Door - Installation, TASK 52-48-42-400-801.

SUBTASK 21-51-00-210-002

(33) Make sure that the designated electrical bonds for the panels are identified. Refer to this task: Wing-To-Body Fairing Panel Designated Electrical Bond Visual Inspection, TASK 53-51-21-211-801.

SUBTASK 21-51-00-760-001

(34) Measure the maximum electrical resistance for each bonding fastener. Refer to this task: Wing-To-Body Fairing Panel Maximum Electrical Resistance Check, TASK 53-51-21-760-801.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-00-410-004

(1) Install these access panels for the left ram air inlet actuator:

(a) Install these access panels:

Number	Name/Location
191FL	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-51-00-410-006

(2) Install these access panels for the right ram air inlet actuator:

(a) Install these access panels:

Number	Name/Location
191FR	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GR	Ram Air Actuator Panel - Forward

SUBTASK 21-51-00-410-008

(3) Install these access panels for the left ram air exhaust actuator:

(a) Install these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

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SUBTASK 21-51-00-410-009

(4) Install these access panels for the right ram air exhaust actuator:

(a) Install these access panels:

Number	Name/Location
192CR	ECS Access Door
192JR	Air Conditioning Panel - Aft

——— END OF TASK ———

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FLOW CONTROL AND SHUTOFF VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flow control and shutoff valve for the left pack

(a) The compressor inlet duct, the compressor outlet duct, the mix muff duct and the mix muff must be removed to allow the removal of the left flow control and shutoff valve.

(2) A removal of the flow control and shutoff valve for the right pack

(a) The right air cycle machine, the mix muff duct, and the compressor inlet duct must be removed to allow the removal of the right flow control and shutoff valve.

(3) An installation of the flow control and shutoff valve for the left pack

(4) An installation of the flow control and shutoff valve for the right pack.

TASK 21-51-01-000-802-002

2. Left Flow Control and Shutoff Valve Removal

(Figure 401)

A. References

Reference	Title
21-51-17-000-801	High Pressure Water Separator Mix Muff Removal (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door

D. Prepare for the Removal

SUBTASK 21-51-01-860-013-002

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-01-860-014-002

(2) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

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SUBTASK 21-51-01-010-009-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-01-010-011-002

(4) To get access to the left flow control and shutoff valve, do this task:

Open this access panel:

Number	Name/Location
192CL	ECS Access Door

E. Left Flow Control and Shutoff Valve Removal

SUBTASK 21-51-01-010-035-002

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) To remove the compressor outlet duct [10], do these steps:

(a) Disconnect the flex hose [2] from the duct [10].

(b) Remove the electrical connector [1] from the ram air control sensor.

(c) Remove the electrical connector [14] from the compressor discharge overheat switch.

(d) Remove the nut [8] and the washer [9] that hold the bonding jumper to the clamp on the duct.

(e) Remove the clamp [11] at the air cycle machine.

NOTE: Lift the three latch pawls at the same time to release the clamp.

(f) Remove the clamp [15] at the heat exchanger.

(g) Remove the compressor outlet duct [10].

(h) Remove and discard the packing [16] at the heat exchanger.

(i) Remove and discard the O-rings [12].

SUBTASK 21-51-01-020-019-002

(2) Do these steps to remove the mix muff duct [4]:

(a) Remove the nut [7], the washer [6], and the screw [5] that hold the bonding jumper to the clamp on the duct.

(b) Hold the mix muff duct [4] while you remove the two couplings [3].

(c) Remove the mix muff duct [4].

SUBTASK 21-51-01-010-036-002

(3) Remove the mix muff. To remove the mix muff, do this task: High Pressure Water Separator Mix Muff Removal, TASK 21-51-17-000-801

SUBTASK 21-51-01-010-013-002

(4) Do these steps to remove the compressor inlet duct [20]:

(a) Remove the bolt [23] that holds the ground clip [24] to the air cycle machine.

(b) Move the bonding jumper [25] away from the air cycle machine.

NOTE: Do not remove the ground clip from the bonding jumper.

(c) Remove the bolts [21] that hold the duct to the air cycle machine.

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(d) Remove and discard the O-ring [22].

1) Remove the clamshell clamp [17].

NOTE: Lift the three latch pawls at the same time to release the clamp.

2) Move the sleeve [18] to the compressor inlet duct [20].

3) Remove and discard the seal [19].

SUBTASK 21-51-01-020-020-002

(5) Do these steps to remove the electrical connectors:

(a) Disconnect electrical connector D486 from the flow control and shutoff valve [26].

(b) Disconnect electrical connector D962 from the flow control and shutoff valve [26].

(c) Disconnect electrical connector D488 from the flow control and shutoff valve [26].

(d) Disconnect electrical connector D392 from the flow control and shutoff valve [26].

SUBTASK 21-51-01-020-022-002

(6) Do these steps to remove the sense line from the flow control and shutoff valve [26]:

(a) Loosen the B-nut on the sense line.

(b) Remove the union [29].

(c) Discard the O-ring [28].

SUBTASK 21-51-01-020-061-002

(7) Remove the screw [32] and the washer [31] that connect the bonding jumper [30] to the structure.

SUBTASK 21-51-01-020-023-002

(8) Hold the valve [26] as you remove the two clamps [27].

SUBTASK 21-51-01-020-024-002

(9) Remove the flow control and shutoff valve [26].

SUBTASK 21-51-01-020-062-002

(10) Do these steps to remove the bonding jumper [30] from the flow control and shutoff valve [26]:

NOTE: You will have to install it on the new flow control and shutoff valve [26].

(a) Remove the nut [35], the washers [34], and the screw [33].

(b) Remove the bonding jumper [30] from the flow control and shutoff valve [26].

(c) Keep the bonding jumper [30], screw [33], washers [34], and nut [35] for installation on the new valve [26].

SUBTASK 21-51-01-410-005-002

(11) Put covers on the duct openings to keep out unwanted materials.

END OF TASK

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Left Flow Control and Shutoff Valve Installation
Figure 401/21-51-01-990-802-002 (Sheet 1 of 3)

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Left Flow Control and Shutoff Valve Installation
Figure 401/21-51-01-990-802-002 (Sheet 2 of 3)

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FLOW CONTROL AND SHUTOFF VALVE

D

BONDING JUMPER TO VALVE BODY

E

G59833 S0006562925_V2

Left Flow Control and Shutoff Valve Installation
Figure 401/21-51-01-990-802-002 (Sheet 3 of 3)

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TASK 21-51-01-000-805-002

3. Right Flow Control and Shutoff Valve Removal

(Figure 402)

A. References

Reference	Title
21-51-04-000-802-002	Air Cycle Machine (ACM) Removal (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-01-860-046-002

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-01-860-047-002

(2) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-51-01-010-037-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

SUBTASK 21-51-01-010-038-002

(4) To get access to the right flow control and shutoff valve, do this task:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

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E. Right Flow Control and Shutoff Valve Removal

SUBTASK 21-51-01-010-039-002

(1) To get access to the flow control and shutoff valve, remove the air cycle machine (ACM). To remove the ACM, do this task: Air Cycle Machine (ACM) Removal, TASK 21-51-04-000-802-002

SUBTASK 21-51-01-020-063-002

(2) Do these steps to remove the mix muff duct [51]:

(a) Hold the mix muff duct [51] while you remove the coupling [56].

(b) Remove the mix muff duct [51].

SUBTASK 21-51-01-010-040-002

(3) Do these steps to remove the compressor inlet duct [52]:

(a) Remove the clamshell clamp [53].

NOTE: Lift the three latch pawls at the same time to release the clamp.

(b) Move the sleeve [54] to the compressor inlet duct [52].

(c) Remove the compressor inlet duct [52].

(d) Remove and discard the seal [55].

SUBTASK 21-51-01-010-041-002

(4) Disconnect the sense lines that follow to allow removal of the shutoff valve:

(a) Remove the nut [58] and washer [59] that hold the air line and the water line from the HPWS to the trim air duct.

(b) Open the B-nuts [57] on the air line and the water line.

NOTE: The sense lines must be completely disconnected from the HPWS manifold to allow movement of the sense lines.

(c) Open the B-nut [57] at the union on the lower sense line [60] to the ACM.

(d) Rotate the sense line down to allow clearance to remove the shutoff valve [61].

SUBTASK 21-51-01-020-064-002

(5) Do these steps to remove the electrical connectors:

(a) Disconnect electrical connector D490 from the flow control and shutoff valve [61].

(b) Disconnect electrical connector D964 from the flow control and shutoff valve [61].

(c) Disconnect electrical connector D492 from the flow control and shutoff valve [61].

(d) Disconnect electrical connector D394 from the flow control and shutoff valve [61].

SUBTASK 21-51-01-020-065-002

(6) Do these steps to remove the sense line from the flow control and shutoff valve [61]:

(a) Loosen the B-nut on the sense line.

(b) Remove the union [64].

(c) Discard the O-ring [63].

SUBTASK 21-51-01-020-066-002

(7) Remove the screw [67] and the washer [66] that connect the bonding jumper [65] to the structure.

SUBTASK 21-51-01-020-067-002

(8) Hold the valve [61] as you remove the clamps [62].

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SUBTASK 21-51-01-020-068-002

(9) Carefully remove the flow control and shutoff valve [61].

NOTE: You may move the sense lines you disconnected to remove the shutoff valve. Be careful not to damage the sense lines.

SUBTASK 21-51-01-020-069-002

(10) Do these steps to remove the bonding jumper from the flow control and shutoff valve [61]:

NOTE: You will have to install it on the new flow control and shutoff valve [61].

(a) Remove the nut [70], the washers [69], and the screw [68].

(b) Remove the bonding jumper [65] from the flow control and shutoff valve [61].

(c) Keep the bonding jumper [65], screw [68], washers [69], and nut [70] for installation on the new valve [61].

SUBTASK 21-51-01-410-015-002

(11) Put covers on the duct openings to keep out unwanted materials.

END OF TASK

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Right Flow Control and Shutoff Valve Installation
Figure 402/21-51-01-990-805-002 (Sheet 1 of 3)

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Right Flow Control and Shutoff Valve Installation
Figure 402/21-51-01-990-805-002 (Sheet 2 of 3)

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Right Flow Control and Shutoff Valve Installation
Figure 402/21-51-01-990-805-002 (Sheet 3 of 3)

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TASK 21-51-01-400-805-002

4. Left Flow Control and Shutoff Valve Installation

(Figure 401)

A. References

Reference	Title
21-51-17-400-801	High Pressure Water Separator Mix Muff Installation (P/B 401)
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008
D00649	Lubricant - O-Ring - Krytox GPL206	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
12	O-ring	21-51-03-05A-055	AKS 001-021
16	Packing	21-51-03-05A-040	AKS 001-021
19	Seal	21-51-10-03-072	AKS 001-021
22	O-ring	21-51-03-05A-025	AKS 001-021
		21-51-03-05A-185	AKS 001-021
26	Valve	21-51-01-06-035	AKS 001-021
28	O-ring	21-51-11-04A-135	AKS 001-021
		21-51-11-05A-150	AKS 001-021
		21-51-53-04A-201	AKS 001-021

D. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Flow Control and Shutoff Valve Installation

SUBTASK 21-51-01-010-042-002

(1) Remove the covers from the duct openings.

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SUBTASK 21-51-01-020-070-002

(2) Do these steps to install the bonding jumper on the flow control and shutoff valve: valve [26].

(a) Set the bonding jumper [30] on the flow control and shutoff valve.

(b) Install the screw [33], the washers [34], and the nut [35].

SUBTASK 21-51-01-980-005-002

(3) Put the flow control and shutoff valve [26] in its position.

SUBTASK 21-51-01-420-011-002

(4) Loosely install the two clamps [27].

SUBTASK 21-51-01-420-012-002

(5) Install the screw [32] and washer [31] that connect the bonding jumper [30] to the structure.

NOTE: Make sure you install any other bonding jumpers that you disconnected for this procedure.

SUBTASK 21-51-01-020-071-002

(6) Do these steps to install the sense line on the flow control and shutoff valve [26]:

(a) Install a new O-ring [28] on the union [29].

(b) Apply a layer of Never-Seez NSBT compound, D00006 to the threads of the union [29].

(c) Install the union [29] on the flow control and shutoff valve [26].

(d) Tighten the B-nut on the sense line.

SUBTASK 21-51-01-020-072-002

(7) Do these steps to install the electrical connectors:

(a) Install electrical connector D486 on the flow control and shutoff valve [26].

(b) Install electrical connector D962 on the flow control and shutoff valve [26].

(c) Install electrical connector D488 on the flow control and shutoff valve [26].

(d) Install electrical connector D392 on the flow control and shutoff valve [26].

SUBTASK 21-51-01-020-073-002

(8) Tighten the nut on the clamps [27] to 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

SUBTASK 21-51-01-010-043-002

(9) Do these steps to install the compressor inlet duct [20]:

(a) Install a new O-ring [22].

(b) Put the ground clip [24] over the bolt [23].

(c) Hold the compressor inlet duct [20] in its position.

(d) Install the bolt [23] that holds the ground clip [24] to the air cycle machine.

(e) Install the bolts [21] that hold the duct to the air cycle machine.

(f) Install a new seal [19].

(g) Move the sleeve [18] over the duct ends.

(h) Install the clamshell clamp [17].

SUBTASK 21-51-01-410-016-002

(10) Install the mix muff. To install the mix muff, do this task: High Pressure Water Separator Mix Muff Installation, TASK 21-51-17-400-801

SUBTASK 21-51-01-020-074-002

(11) Do these steps to install the mix muff duct [4]:

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(a) Hold the mix muff duct [4] in its position.

(b) Install the couplings [3], tighten to 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

(c) Put the bonding jumper on the duct bonding clamp.

(d) Install the nut [7], the washer [6], and the screw [5] that hold the bonding jumper to the clamp on the duct.

SUBTASK 21-51-01-410-017-002

(12) To install the compressor outlet duct [10], do these steps:

(a) Apply a light coat of Krytox GPL206 lubricant, D00649 or Krytox 240AC perfluoropolyether grease, D50063 to the packing [16] and the O-rings [12].

(b) Install the O-rings [12] on the duct ends.

(c) Install the packing [16] at the heat exchanger.

(d) Put the compressor outlet duct [10] into its position.

(e) Install the clamp [15] at the heat exchanger.

NOTE: Do not tighten the clamp fully.

(f) Install the clamp [11] over the outlet duct connection.

(g) Tighten the nut on the clamp [15] to 45 to 50 pound-inches (5.1 to 5.6 newton-meters).

(h) Apply a light coat of Never-Seez NSBT compound, D00006 to the threads of the flex hose [2].

(i) Connect the flex hose [2] to the duct.

(j) Install the electrical connector [1] for the ram air control sensor.

(k) Install the electrical connector [14] for the compressor discharge overheat switch.

(l) Put the bonding jumper on the clamp on the compressor outlet duct.

(m) Install the nut [8] and the washer [9] that hold the bonding jumper to the clamp on the duct.

SUBTASK 21-51-01-010-044-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-01-860-048-002

(14) Remove the DO-NOT-OPERATE TAGS from these switches on the P5-10 air conditioning panel:

(a) The L PACK and R PACK switches

(b) The BLEED 1 and BLEED 2 switches

(c) The BLEED APU switch

G. Flow Control and Shutoff Valve Installation Test

SUBTASK 21-51-01-860-049-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-01-860-050-002

(2) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

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SUBTASK 21-51-01-860-051-002

(3) Do these steps to make sure the flow control valve is closed with the applicable pack switch in the OFF position:

(a) Put the applicable L PACK switch or R PACK switch in the OFF position.

(b) Make sure the position indicator on the flow control and shutoff valve is in the closed position.

SUBTASK 21-51-01-860-052-002

(4) Do these steps to make sure the flow control valve is partially open with the applicable pack switch in the AUTO position:

(a) Put the applicable L PACK switch or R PACK switch in the AUTO position.

(b) Make sure the position indicator on the flow control and shutoff valve moves to a partially open position.

SUBTASK 21-51-01-860-053-002

(5) Do these steps to make sure the left flow control valve is commanded to HIGH with the pack switch in the HIGH position:

(a) Put the L PACK switch in the HIGH position.

(b) Disconnect electrical connector D392 from the left flow control valve.

(c) Connect an analogue multimeter between D392, pins 1 and 2.

(d) Make sure there is 28 (plus or minus 5) VDC between connector D392, pins 1 and 2.

(e) Re-connect the electrical connector D392 to the left flow control valve.

SUBTASK 21-51-01-740-001-002

(6) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002.

SUBTASK 21-51-01-790-005-002

(7) Make sure there is no air leakage at the couplings or the sense line connections you removed for this task.

SUBTASK 21-51-01-860-054-002

(8) Put the applicable L PACK or R PACK switch in the OFF position.

SUBTASK 21-51-01-860-055-002

(9) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-01-410-018-002

(1) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-01-410-019-002

(2) Close this access panel:

Number	Name/Location
192CR	ECS Access Door

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Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-51-01-860-056-002

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

TASK 21-51-01-400-802-002

5. Right Flow Control and Shutoff Valve Installation

(Figure 402)

A. References

Reference	Title
21-51-04-400-802-002	Air Cycle Machine Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
55	Seal	21-51-10-04-072	AKS 001-021
		21-51-41-08-037	AKS 001-021
61	Valve	21-51-01-06-035	AKS 001-021
63	O-ring	21-51-53-05-188	AKS 001-021

D. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Right Flow Control and Shutoff Valve Installation

SUBTASK 21-51-01-010-014-002

(1) Remove the covers from the duct openings.

SUBTASK 21-51-01-020-075-002

(2) Do these steps to install the bonding jumper on the flow control and shutoff valve: valve [61].

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(a) Set the bonding jumper [65] on the flow control and shutoff valve.

(b) Install the screw [68], the washers [69], and the nut [70].

SUBTASK 21-51-01-980-002-002

(3) Put the flow control and shutoff valve [61] in its position.

SUBTASK 21-51-01-420-004-002

(4) Loosely install the clamps [62] on the ends of the shutoff valve [61].

SUBTASK 21-51-01-420-013-002

(5) Install the screw [67] and washer [66] that connect the bonding jumper [65] to the structure.

NOTE: Make sure you install any other bonding jumpers that you disconnected for this procedure.

SUBTASK 21-51-01-020-027-002

(6) Do these steps to install the sense line on the flow control and shutoff valve [61]:

(a) Install a new O-ring [63] on the union [64].

(b) Apply a layer of Never-Seez NSBT compound, D00006 to the threads of the union [64].

(c) Install the union [64] on the flow control and shutoff valve [61].

(d) Tighten the B-nut on the sense line.

SUBTASK 21-51-01-020-028-002

(7) Do these steps to install the electrical connectors:

(a) Install electrical connector D490 on the flow control and shutoff valve [61].

(b) Install electrical connector D964 on the flow control and shutoff valve [61].

(c) Install electrical connector D492 on the flow control and shutoff valve [61].

(d) Install electrical connector D394 on the flow control and shutoff valve [61].

SUBTASK 21-51-01-210-002-002

(8) Make sure there is a minimum of 0.10 inch clearance between the flow control and shutoff valve and the bonding jumper ground stud on the keel beam.

(a) If there is not a minimum of 0.10 inch clearance, slightly rotate the valve clockwise (as you look aft) to obtain the necessary clearance.

SUBTASK 21-51-01-020-076-002

(9) Tighten the nut on the clamps [62] to 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

SUBTASK 21-51-01-010-045-002

(10) Do these steps to connect the sense lines:

(a) Put the sense lines into position.

(b) Connect the B-nut [57] at the union on the lower sense line [60] to the ACM.

(c) Connect the B-nuts [57] on the air line and the water line.

(d) Install the washer [59] and the nut [58] that hold the water line and the air line from the HPWS to the trim air duct.

SUBTASK 21-51-01-010-046-002

(11) Do these steps to install the compressor inlet duct [52]:

(a) Install a new seal [55].

(b) Put the compressor inlet duct [52] in its position.

(c) Move the sleeve [54] over the duct ends.

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(d) Install the clamshell clamp [53].

SUBTASK 21-51-01-410-020-002

(12) Install the air cycle machine. To install the ACM, do this task: Air Cycle Machine Installation, TASK 21-51-04-400-802-002

SUBTASK 21-51-01-020-030-002

(13) Do these steps to install the mix muff duct [51]:

(a) Hold the mix muff duct [51] in its position.

(b) Install the couplings [56] and tighten to 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

SUBTASK 21-51-01-010-016-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-01-860-015-002

(15) Remove the DO-NOT-OPERATE TAGS from these switches on the P5-10 air conditioning panel:

(a) The L PACK and R PACK switches

(b) The BLEED 1 and BLEED 2 switches

(c) The BLEED APU switch

G. Flow Control and Shutoff Valve Installation Test

SUBTASK 21-51-01-860-016-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-01-860-017-002

(2) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-51-01-860-018-002

(3) Do these steps to make sure the flow control valve is closed with the applicable pack switch in the OFF position:

(a) Put the applicable L PACK switch or R PACK switch in the OFF position.

(b) Make sure the position indicator on the flow control and shutoff valve is in the closed position.

SUBTASK 21-51-01-860-019-002

(4) Do these steps to make sure the flow control valve is partially open with the applicable pack switch in the AUTO position:

(a) Put the applicable L PACK switch or R PACK switch in the AUTO position.

(b) Make sure the position indicator on the flow control and shutoff valve moves to a partially open position.

SUBTASK 21-51-01-860-020-002

(5) Do these steps to make sure the right flow control valve is commanded to HIGH with the R PACK switch in the HIGH position:

(a) Put the R PACK switch in the HIGH position.

(b) Disconnect electrical connector D394 from the right pack flow control valve.

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(c) Connect an analogue multimeter between D394, pins 1 and 2.

(d) Make sure there is 28 (plus or minus 5) VDC between D394, pins 1 and 2.

(e) Re-connect D394 to the right pack flow control valve.

SUBTASK 21-51-01-790-002-002

(6) Make sure there is no air leakage at the couplings or the sense line connections you removed for this task.

SUBTASK 21-51-01-860-021-002

(7) Put the applicable L PACK or R PACK switch in the OFF position.

SUBTASK 21-51-01-860-022-002

(8) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-01-410-006-002

(1) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-01-410-007-002

(2) Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-51-01-860-023-002

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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FLOW CONTROL AND SHUTOFF VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal and installation tasks for the left flow control and shutoff valve, V184

(2) Removal and installation tasks for the right flow control and shutoff valve, V185.

TASK 21-51-01-000-806-003

2. Left Flow Control and Shutoff Valve Removal

Figure 401

A. General

(1) This procedure has these tasks:

(a) Left flow control and shutoff valve removal

(b) Left flow control and shutoff valve installation.

(2) The flow control and shutoff valve will be referred to as the pack valve in the procedures.

B. References

Reference	Title
21-51-17-000-801	High Pressure Water Separator Mix Muff Removal (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door

E. Prepare for the Removal

SUBTASK 21-51-01-860-057-003

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE YOU DO MAINTENANCE. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-01-860-059-003

(2) Set switches on the P5-10 panel on the forward overhead panel to these positions:

(a) L and R PACK switches to OFF

1) Attach DO-NOT-OPERATE tag.

(b) BLEED 1 and BLEED 2 switches to OFF

1) Attach DO-NOT-OPERATE tag.

(c) BLEED APU switch to OFF.

1) Attach a DO-NOT-OPERATE tag.

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SUBTASK 21-51-01-860-058-003

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-01-010-047-003

(4) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

F. Left Flow Control and Shutoff Valve Removal

SUBTASK 21-51-01-020-084-003

(1) Remove the compressor outlet duct [10] as follows:

(a) Remove the electrical connector [1] from the ram air control sensor.

(b) Remove the electrical connector [14] from the compressor discharge overheat switch.

(c) Remove the nut [8] and the washer [9] that hold the bonding jumper to the clamp on the duct.

(d) Remove the clamp [11] at the air cycle machine:

1) Lift the three latch pawls at the same time to release the clamp.

(e) Remove the clamp [15] at the heat exchanger.

(f) Remove the compressor outlet duct [10].

(g) Remove and discard the packing [16] at the heat exchanger.

(h) Remove and discard the O-rings [12].

SUBTASK 21-51-01-020-085-003

(2) Remove the mix muff duct [4] as follows:

(a) Remove the nut [7], the washer [6], and the screw [5] that hold the bonding jumper to the clamp on the duct.

(b) Hold the mix muff duct [4] while you remove the two couplings [3].

(c) Remove the mix muff duct [4].

SUBTASK 21-51-01-020-086-003

(3) Remove the mix muff. To remove the mix muff, do this task: High Pressure Water Separator Mix Muff Removal, TASK 21-51-17-000-801.

SUBTASK 21-51-01-020-087-003

(4) Remove the compressor inlet duct [20] as follows:

(a) Remove the bolt [23] that holds the ground clip [24] to the air cycle machine.

(b) Move the bonding jumper [25] away from the air cycle machine.

1) Do not remove the ground clip from the bonding jumper.

(c) Remove the bolts [21] that hold the duct to the air cycle machine.

(d) Remove and discard the O-ring [22].

1) Remove the clamshell clamp [17]:

a) Lift the three latch pawls at the same time to release the clamp.

2) Move the sleeve [18] to the compressor inlet duct [20].

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3) Remove and discard the seal [19].

SUBTASK 21-51-01-020-077-003

(5) Disconnect these electrical connectors from the left pack valve V184:

(a) D15818

(b) D15830

(c) D158332.

SUBTASK 21-51-01-020-078-003

(6) Remove the bonding jumper [35] from the bonding tab [36] on the pack valve as follows:

(a) Remove the nut [34], screw [33] and washers [32].

(b) Remove the bonding jumper [35] from the pack valve.

SUBTASK 21-51-01-020-079-003

(7) Remove the left flow control and shutoff valve [26] from the ducts as follows:

(a) Support the left flow control and shutoff valve [26].

(b) Loosen the clamp T-bolts and remove the clamps [29].

(c) Remove the left flow control and shutoff valve [26].

SUBTASK 21-51-01-480-001-003

(8) Put covers on the duct openings to keep out unwanted materials.

——— END OF TASK ———

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LRU Installation
Figure 401/21-51-01-990-806-003 (Sheet 1 of 3)

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COMPRESSOR INLET DUCT

B

FLOW CONTROL AND SHUTOFF VALVE
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

C

2409496 S0000558239_V1

LRU Installation
Figure 401/21-51-01-990-806-003 (Sheet 2 of 3)

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BONDING JUMPER TO BONDING TAB (EXAMPLE)

E

2408896 S0000557819_V1

LRU Installation
Figure 401/21-51-01-990-806-003 (Sheet 3 of 3)

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TASK 21-51-01-000-807-003

3. Right Flow Control and Shutoff Valve Removal

Figure 402

A. General

(1) This procedure has this task:

(a) Removal of the right flow control and shutoff valve, V185.

(2) The flow control and shutoff valve will be referred to as the pack valve in the procedure.

B. References

Reference	Title
21-51-04-000-802-002	Air Cycle Machine (ACM) Removal (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for the Removal

SUBTASK 21-51-01-860-062-003

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE YOU DO MAINTENANCE. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806..

SUBTASK 21-51-01-860-063-003

(2) Set switches on the P5-10 panel on the forward overhead panel to these positions:

(a) L and R PACK switches to OFF

1) Attach DO-NOT-OPERATE tags.

(b) BLEED 1 and BLEED 2 switches to OFF

1) Attach DO-NOT-OPERATE tags.

(c) BLEED APU switch to OFF

1) Attach a DO-NOT-OPERATE tag.

SUBTASK 21-51-01-860-064-003

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

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SUBTASK 21-51-01-010-048-003

(4) Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Right Flow Control and Shutoff Valve Removal

SUBTASK 21-51-01-000-001-003

(1) To get access to the flow control and shutoff valve, remove the air cycle machine (ACM). To remove the ACM, do this task: Air Cycle Machine (ACM) Removal, TASK 21-51-04-000-802-002.

SUBTASK 21-51-01-020-091-003

(2) Remove the mix muff duct [51] as follows:

(a) Hold the mix muff duct [51] while you remove the coupling [56].

(b) Remove the mix muff duct [51].

SUBTASK 21-51-01-020-090-003

(3) Remove the compressor inlet duct [52] as follows:

(a) Remove the clamshell clamp [53]:

1) Lift the three latch pawls at the same time to release the clamp.

(b) Move the sleeve [54] to the compressor inlet duct [52].

(c) Remove the compressor inlet duct [52].

(d) Remove and discard the seal [55].

SUBTASK 21-51-01-020-089-003

(4) Disconnect sense lines to allow removal of the pack valve as follows:

(a) Remove the nut [58] and washer [59] that hold the air line and the water line from the HPWS to the trim air duct.

(b) Open the B-nuts [57] on the air line and the water line.

NOTE: The sense lines must be completely disconnected from the HPWS manifold to allow movement of the sense lines.

(c) Open the B-nut [57] at the union on the lower sense line [60] to the ACM.

(d) Rotate the sense line down to allow clearance to remove the right flow control and shutoff valve [61].

SUBTASK 21-51-01-020-081-003

(5) Disconnect these electrical connectors from the right pack valve, V185:

(a) D15820

(b) D15834

(c) D15836

SUBTASK 21-51-01-020-083-003

(6) Remove the bonding jumper [69] from the bonding tab [68] on the flow control and shutoff valve as follows:

(a) Remove the nut [70], screw [66] and washers [67] (3 locations).

(b) Remove the bonding jumper [69].

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SUBTASK 21-51-01-020-088-003

(7) Remove the flow control and shutoff valve [61] from the ducts as follows:

(a) Support the flow control and shutoff valve [61].

(b) Loosen the clamp T-bolts and remove the clamps [63].

(c) Remove the flow control and shutoff valve [61].

SUBTASK 21-51-01-480-002-003

(8) Put covers on the duct openings to keep out unwanted materials.

END OF TASK

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Right Flow Control and Shutoff Valve Installation
Figure 402/21-51-01-990-807-003 (Sheet 1 of 3)

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H86247 S0006562928_V2

Right Flow Control and Shutoff Valve Installation
Figure 402/21-51-01-990-807-003 (Sheet 2 of 3)

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FLOW CONTROL AND SHUTOFF VALVE
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

C

BONDING JUMPER TO BONDING TAB
(EXAMPLE)

D

2409724 S0000558303_V1

Right Flow Control and Shutoff Valve Installation
Figure 402/21-51-01-990-807-003 (Sheet 3 of 3)

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TASK 21-51-01-400-807-003

4. Left Flow Control and Shutoff Valve Installation

A. General

(1) This task includes the steps to install the left flow control and shutoff valve.

B. References

Reference	Title
21-51-00-710-801	Pack Flow Control Valve - Operational Test (P/B 501)
21-51-17-400-801	High Pressure Water Separator Mix Muff Installation (P/B 401)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00068	Alcohol - Denatured, Ethyl (Ethanol)	AMS 3002, MIL-E-51454 Type II
B50073	Alcohol - Isopropyl	ASTM D 770
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008
D00649	Lubricant - O-Ring - Krytox GPL206	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III
G50262	Wiper - Cleaning	BMS15-5

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door

F. Flow Control and Shutoff Valve Installation

SUBTASK 21-51-01-080-001-003

(1) Remove the covers from the duct openings.

SUBTASK 21-51-01-420-014-003

(2) Put the flow control and shutoff valve [26] in its installed position.

SUBTASK 21-51-01-420-020-003

(3) Loosely install the two clamps [29] that attach the valve to the ducts.

SUBTASK 21-51-01-420-015-003

(4) Do these steps to install the bonding jumper [35] on the flow control and shutoff valve:

(a) Soak a cleaning wiper, G50262 with alcohol, B00068 or alcohol, B50073 until it is saturated with the solvent.

(b) Clean all bonding surfaces of the bonding tab [36] on the valve, the washer [32] under the bonding tab and the surface of the jumper [35] with the wiper.

(c) Use a clean wiper, G50262 to remove all traces of the solvent from the bonding surfaces.

(d) Install the screw [33], washers [32] and nut [34] that connect the bonding jumper [35] to the tab [36] on the pack flow control and shutoff valve.

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(e) Tighten the nut to 33 - 40 inch-pounds.

(f) Do a resistance check between the surface of the bonding tab [36] and the surface of the jumper [35]:

1) Make sure that the resistance is not greater than 0.010 ohm.

SUBTASK 21-51-01-420-018-003

(5) Install the electrical connectors listed below on the left pack valve:

(a) D15818 electrical connector

(b) D15830 electrical connector

(c) D15832 electrical connector.

SUBTASK 21-51-01-420-019-003

(6) Determine the running torque of the nut on each clamp [29] trunnion as follows:

NOTE: The running torque is the torque required to just turn the locknut on the trunnion. The running torque should be 7 - 10 inch-pounds.

(a) With an appropriate torque wrench, measure the torque that is required to turn the locknut on the trunnion.

1) Make a record of this value.

SUBTASK 21-51-01-420-026-003

(7) Tighten each locknut on the clamp [29] trunnions as follows:

(a) Tighten the locknut to 5 inch-pounds above the running torque.

NOTE: If the running torque was measured at 8 inch-pounds, the torque required will be 13 inch-pounds.

(b) Make sure that the alignment of the valve flange on the adjoining duct flange is satisfactory.

(c) Tighten the locknut to a torque of 60 (+5, -0) inch-pounds.

SUBTASK 21-51-01-410-025-003

(8) Do these steps to install the compressor inlet duct [20]:

(a) Install a new O-ring [22].

(b) Put the ground clip [24] over the bolt [23].

(c) Hold the compressor inlet duct [20] in its position.

(d) Install the bolt [23] that holds the ground clip [24] to the air cycle machine.

(e) Install the bolts [21] that hold the duct to the air cycle machine.

(f) Install a new seal [19].

(g) Move the sleeve [18] over the duct ends.

(h) Install the clamshell clamp [17].

SUBTASK 21-51-01-420-031-003

(9) Install the mix muff. To install the mix muff, do this task: High Pressure Water Separator Mix Muff Installation, TASK 21-51-17-400-801.

SUBTASK 21-51-01-410-024-003

(10) Do these steps to install the mix muff duct [4]:

(a) Hold the mix muff duct [4] in its position.

(b) Install the couplings [3].

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(c) Tighten the couplings [3] to 60 to 65 inch-pounds (6.8 to 7.3 Nm).

(d) Put the bonding jumper on the duct bonding clamp.

(e) Install the nut [7], the washer [6], and the screw [5] that hold the bonding jumper to the clamp on the duct.

SUBTASK 21-51-01-410-023-003

(11) Install the compressor outlet duct [10] as follows:

(a) Apply a light coat of Krytox GPL206 lubricant, D00649 or Krytox 240AC perfluoropolyether grease, D50063 to the packing [16]and the O-rings [12].

(b) Install the O-rings [12] on the duct ends.

(c) Install the packing [16] at the heat exchanger.

(d) Put the compressor outlet duct [10] into its position.

(e) Install the clamp [15] at the heat exchanger.

NOTE: Do not tighten the clamp fully.

(f) Install the clamp [11] over the outlet duct connection.

(g) Tighten the nut on the clamp [15] to 45 to 50 pound-inches (5.1 to 5.6 newton-meters).

(h) Apply a light coat of Never-Seez NSBT compound, D00006 to the threads of the flex hose [2].

(i) Connect the flex hose [2] to the duct.

(j) Install the electrical connector [1] for the ram air control sensor.

(k) Install the electrical connector [14] for the compressor discharge overheat switch.

(l) Put the bonding jumper on the clamp on the compressor outlet duct.

(m) Install the nut [8] and the washer [9] that hold the bonding jumper to the clamp on the duct.

SUBTASK 21-51-01-440-001-003

(12) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-01-440-002-003

(13) Remove the DO-NOT-OPERATE TAGS from these switches on the P5-10 air conditioning panel:

(a) The L PACK and R PACK switches

(b) The BLEED 1 and BLEED 2 switches

(c) The BLEED APU switch

G. Flow Control and Shutoff Valve Installation Test

SUBTASK 21-51-01-710-002-003

(1) Do an operational check of the flow control and shutoff valve as follows:

(a) Do this task: Pack Flow Control Valve - Operational Test, TASK 21-51-00-710-801.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-01-410-021-003

(1) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-01-860-060-003

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

TASK 21-51-01-400-806-003

5. Right Flow Control and Shutoff Valve Installation

A. General

(1) This task includes the steps to install the right flow control and shutoff valve.

B. References

Reference	Title
21-51-00-710-801	Pack Flow Control Valve - Operational Test (P/B 501)
21-51-04-400-802-002	Air Cycle Machine Installation (P/B 401)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00068	Alcohol - Denatured, Ethyl (Ethanol)	AMS 3002, MIL-E-51454 Type II
B50073	Alcohol - Isopropyl	ASTM D 770
G50262	Wiper - Cleaning	BMS15-5

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Right Flow Control and Shutoff Valve Installation

SUBTASK 21-51-01-080-003-003

(1) Remove the covers from the duct openings.

SUBTASK 21-51-01-420-021-003

(2) Put the flow control and shutoff valve [61] in its installed position.

SUBTASK 21-51-01-420-022-003

(3) Loosely install the two clamps [63] that attach the valve to the ducts.

SUBTASK 21-51-01-420-030-003

(4) Do these steps to install the bonding jumper [69] on the flow control and shutoff valve:

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(a) Soak a cleaning wiper, G50262 with alcohol, B00068 or alcohol, B50073 until it is saturated with the solvent.

(b) Clean all bonding surfaces of the bonding tab [68] on the valve, the washer [67] under the bonding tab and the surface of the jumper [69] with the wiper.

(c) Use a clean wiper, G50262 to remove all traces of the solvent from the bonding surfaces.

(d) Install the screw [66], washers [67] and nut [70] that connect the bonding jumper [69] to the tab [68] on the pack flow control and shutoff valve.

(e) Tighten the nut to 33 - 40 inch-pounds.

(f) Do a resistance check between the surface of the bonding tab and the surface of the jumper:

1) Make sure that the resistance is not greater than 0.010 ohm.

SUBTASK 21-51-01-420-024-003

(5) Install the electrical connectors listed below on the right pack valve:

(a) D15820 electrical connector

(b) D158334 electrical connector

(c) D15836 electrical connector.

SUBTASK 21-51-01-700-001-003

(6) Make sure that there is a minimum of 0.10 inch clearance between any part of the flow control valve and the keel beam:

(a) If necessary, slightly rotate the valve to obtain the necessary clearance.

SUBTASK 21-51-01-420-027-003

(7) Determine the running torque of the nut on each clamp [63] trunnion as follows:

NOTE: The running torque is the torque required to just turn the locknut on the trunnion. The running torque should be 7 - 10 inch-pounds.

(a) With an appropriate torque wrench, measure the torque while you turn the locknut on the trunnion.

1) Make a record of this value.

SUBTASK 21-51-01-420-028-003

(8) Tighten each locknut on the clamp trunnions as follows:

(a) Tighten the locknut to 5 inch-pounds above the running torque.

NOTE: If the running torque was measured at 8 inch-pounds, the torque required will be 13 inch-pounds.

(b) Make sure that the alignment of the valve flange on the adjoining duct flange is satisfactory.

(c) Tighten the locknut to a torque of 60 (+5, -0) inch-pounds.

SUBTASK 21-51-01-410-027-003

(9) Connect the sense lines as follows:

(a) Put the sense lines into position.

(b) Connect the B-nut [57] at the union on the lower sense line [60] to the ACM.

(c) Connect the B-nuts [57] on the air line and the water line.

(d) Install the washer [59] and the nut [58] that hold the water line and the air line from the HPWS to the trim air duct.

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SUBTASK 21-51-01-410-028-003

(10) Do these steps to install the compressor inlet duct [52]:

(a) Install a new seal [55].

(b) Put the compressor inlet duct [52] in its position.

(c) Move the sleeve [54] over the duct ends.

(d) Install the clamshell clamp [53].

SUBTASK 21-51-01-410-029-003

(11) Install the air cycle machine. To install the ACM, do this task: Air Cycle Machine Installation, TASK 21-51-04-400-802-002.

SUBTASK 21-51-01-410-030-003

(12) Install the mix muff duct [51] as follows:

(a) Hold the mix muff duct [51] in its position.

(b) Install the couplings [56] and tighten to 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

SUBTASK 21-51-01-860-065-003

(13) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

SUBTASK 21-51-01-860-066-003

(14) Remove the DO-NOT-OPERATE TAGS from these switches on the P5-10 air conditioning panel:

(a) The L PACK and R PACK switches

(b) The BLEED 1 and BLEED 2 switches

(c) The BLEED APU switch

G. Flow Control and Shutoff Valve Installation Test

SUBTASK 21-51-01-710-001-003

(1) Do an operational test of the flow control and shutoff valve as follows:.

(a) Do this task: Pack Flow Control Valve - Operational Test, TASK 21-51-00-710-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-01-410-022-003

(1) Close these access panels:

Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-01-860-061-003

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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AIR CONDITIONING ACCESSORY UNIT (ACAU) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the air conditioning accessory unit (ACAU).

(2) An installation of the air conditioning accessory unit (ACAU).

(3) There are two air conditioning accessory units (ACAU) installed in the electronic equipment center on the E4-1 shelf.

TASK 21-51-02-000-801

2. Air Conditioning Accessory Unit (ACAU) Removal

(Figure 401)

A. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Procedure

SUBTASK 21-51-02-860-001

(1) Remove electrical power. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812

SUBTASK 21-51-02-010-001

(2) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-51-02-020-001

(3) Remove the ACAU [1]. To remove the ACAU [1], do this task: E/E Box Removal, TASK 20-10-07-000-801.

END OF TASK

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ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

A

G61677 S0006562936_V2

Air Conditioning Accessory Unit (ACAU) Installation
Figure 401/21-51-02-990-801

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TASK 21-51-02-400-801

3. Air Conditioning Accessory Unit (ACAU) Installation
(Figure 401)

A. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	ACAU	21-51-02-02-245	AKS ALL

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
192CL	ECS Access Door
192CR	ECS Access Door

E. Air Conditioning Accessory Unit (ACAU) Installation

SUBTASK 21-51-02-420-001

(1) Install the ACAU [1]. To install the ACAU [1], do this task: E/E Box Installation, TASK 20-10-07-400-801.

F. Air Conditioning Accessory Unit (ACAU) Installation Test

SUBTASK 21-51-02-710-010

(1) Do this test of the ACAU [1]:

NOTE: If you replaced the Air Conditioning Accessory Unit (ACAU M324 or M1455) because it had a defect, it is recommended that the complete adjustment/test procedure for the affected system be performed. For example, if an ACAU was replaced to correct a defect in the ram air system, then it is recommended that a test of the ram air system be performed. If the ACAU is being replaced for any other reason you may do just the test that follows:

(a) If you installed the M324 ACAU, do this test of the left pack overheat relay:

1) Make sure that the L and R PACK switches on the P5-10 Air Conditioning Panel are set to OFF.

2) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

3) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

4) Disconnect electrical connector D532 from the left compressor discharge overheat switch, S2.

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5) Install a jumper wire between pins 1 and 2 of connector D532 on the ships' wiring.
6) Make sure that the left PACK light on the P5-10 Air Conditioning Panel comes on.
7) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel come on.
8) Remove the jumper wire that was installed between pins 1 and 2 of connector D532 on the ships' wiring.
9) Re-connect electrical connector D532 to the left compressor discharge overheat switch, S2.
10) Depress the TRIP RESET switch on the P5-10 Air Conditioning Panel.
11) Make sure the left PACK light on the P5-10 Air Conditioning Panel goes off.
12) If the MASTER CAUTION or AIR COND annunciator lights are on, push and release one of the two MASTER CAUTION lights.
13) Make sure the AIR COND and MASTER CAUTION lights on the P7 glareshield go off.
14) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

(b) If you installed the M1455 ACAU, do this test of the right pack overheat relay:

1) Make sure that the L and R PACK switches on the P5-10 Air Conditioning Panel are set to OFF.
2) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

3) Open this access panel:

Number	Name/Location
192CR	ECS Access Door

4) Disconnect electrical connector D538 from the right compressor discharge overheat switch, S5.
5) Install a jumper wire between pins 1 and 2 of connector D538 on the ships' wiring.
6) Make sure the right PACK light on the P5-10 Air Conditioning Panel comes on.
7) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel come on.
8) Remove the jumper wire that was installed between pins 1 and 2 of connector D538 on the ships' wiring.
9) Reconnect electrical connector D538 to the right compressor discharge overheat switch, S5.
10) Depress the TRIP RESET switch on the P5-10 Air Conditioning Panel.
11) Make sure the right PACK light on the P5-10 Air Conditioning Panel goes off.
12) If the MASTER CAUTION or AIR COND annunciator lights are on, push and release one of the two MASTER CAUTION lights.

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13) Make sure the AIR COND and MASTER CAUTION lights on the P7 glareshield go off.

14) Close this access panel:

Number	Name/Location
192CR	ECS Access Door

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-02-410-001

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-51-02-862-001

(2) Remove electrical power if it is not necessary (Remove Electrical Power, TASK 24-22-00-860-812).

——— END OF TASK ———

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AIR CONDITIONING ACCESSORY UNIT - ADJUSTMENT/TEST

1. General

A. This procedure has one task. The task is an operational test of the Air Conditioning Accessory Unit (M324 or M1455 relays module) after installation.

B. There are two air conditioning accessory units (ACAU) installed in the electronic equipment center on the E4-1 shelf.

TASK 21-51-02-710-802-002

2. Air Conditioning Accessory Unit - Operational Test

A. References

Reference	Title
21-25-00-710-802-002	Recirculation System - Operational Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-21-45-000-803-001	Main Ceiling Panel - Removal (P/B 401)
25-21-45-400-803-001	Main Ceiling Panel - Installation (P/B 401)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
71-11-02-010-801-F00	Open the Fan Cowl Panels (P/B 201)
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-804-F00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-802-F00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door
431CL	Forward Strut Fairing, Left Overwing Fairing, Strut 1
441CR	Forward Strut Fairing, Right Overwing Fairing, Strut 2

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D. Preparation for the Test

SUBTASK 21-51-02-860-009-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-02-860-010-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	2	C01169	A/C ZONE TEMP DUCT OVHT AFT PASS
C	3	C01166	A/C ZONE TEMP DUCT OVHT FWD PASS
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-02-860-026-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	3	C01613	AIR COND PACK CONT VALVES L ALT
D	4	C01614	AIR COND PACK CONT VALVES R ALT

SUBTASK 21-51-02-860-011-002

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	12	C00132	MASTER CAUTION ANNUNCIATOR BUS 1
B	13	C00131	MASTER CAUTION ANNUNCIATOR BAT
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
C	15	C01355	LANDING GEAR AIR/GND SYS 2

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(Continued)

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	16	C01356	LANDING GEAR AIR/GND SYS 1
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	11	C00313	INDICATOR MASTER DIM SECT 1
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
D	3	C01613	AIR COND PACK CONT VALVES L ALT
D	4	C01614	AIR COND PACK CONT VALVES R ALT
D	8	C00076	AIR CONDITIONING TEMP IND
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

SUBTASK 21-51-02-410-003-002

(5) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

E. Air Conditioning Accessory Unit (ACAU) Relay Module Test

SUBTASK 21-51-02-710-012

(1) Do these checks for the post-installation test of the M324 ACAU No. 1:

(a) Do a test of the left pack overheat relay:

1) Set the L PACK and R PACK switches on the P5-10 air conditioning panel to OFF.

2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

3) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

4) Disconnect electrical connector D532 from the left compressor discharge overheat switch, S2.

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5) Install a jumper wire between pins 1 and 2 of connector D532 on the ships' wiring.
6) Make sure that the left PACK light on the P5-10 air conditioning panel comes on.
7) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel come on.
8) Remove the jumper wire that was installed between pins 1 and 2 of connector D532 on the ships' wiring.
9) Reconnect electrical connector D532 to the left compressor discharge overheat switch, S2.
10) Push the TRIP RESET switch on the P5-10 air conditioning panel.
11) Make sure that the left PACK light on the P5-10 air conditioning panel goes off.
12) If the MASTER CAUTION or AIR COND annunciator lights are on, push and release one of the two MASTER CAUTION lights.
13) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel go off.
14) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

(b) Do a test of the left ram air system relays:

1) Make sure that the left RAM DOOR FULL OPEN light is on.
2) Make sure that the deflector door for the left ram air inlet is extended.
3) Make sure that the AIR/GND logic shows that the airplane is in the GND logic.
4) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

5) Disconnect electrical connector D40844 from the left pack valve.

   NOTE: A disconnected D40844 connector simulates that the left pack valve is open.

6) Extend the trailing edge flaps to Flaps Position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.
7) Make sure that the deflector door for the left ram air system is fully extended.
8) Put the airplane in the air mode. Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.
9) Make sure that these results occur:
   a) Make sure that the left ram air inlet deflector door retracts fully.
   b) Make sure that the left ram air inlet modulation panels move toward the closed position.
10) Retract the trailing edge flaps to the fully up position. Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.
11) Make sure that these results occur:
   a) Make sure that the left ram air inlet modulation panels move toward the closed position.
   b) Make sure that the left RAM DOOR FULL OPEN light goes off.

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12) Return the airplane to the ground mode; do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

13) Make sure that these results occur:

a) Make sure that the left RAM DOOR FULL OPEN light comes on.

b) Make sure that the left ram air inlet modulation panels move to the fully open position.

c) Make sure that the left ram air inlet deflector door moves to the extended position.

14) Reconnect all electrical connectors that were disconnected.

(c) Do a test of the left engine bleed air overheat relay:

1) Set these switches on the P5-10 air conditioning panel to OFF:

a) APU BLEED

b) BLEED 1

c) BLEED 2

d) L PACK

e) R PACK

2) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

3) Get access to the left engine bleed air overtemperature switch:

a) Open this access panel:

Number	Name/Location
431CL	Forward Strut Fairing, Left Overwing Fairing, Strut 1

4) Disconnect the electrical connector D526 from the engine 1 bleed air overtemperature switch, S20.

5) Install a jumper cable between pins 1 and 2 of connector D526 on the ships' wiring.

6) Make sure that the left pack BLEED TRIP OFF light on the P5-10 air conditioning panel comes on.

7) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel come on.

8) Remove the jumper wire that was installed between pins 1 and 2 of connector D526 on the ships' wiring.

9) Reconnect electrical connector D526 to the left engine air overtemperature switch S20.

10) Depress the TRIP RESET switch on the P5-10 air conditioning panel.

11) Make sure that the left pack BLEED TRIP OFF light on the P5-10 air conditioning panel goes off.

12) Push and release one of the two MASTER CAUTION lights on the P7 glareshield panel.

13) Make sure the AIR COND and MASTER CAUTION lights on the P7 glareshield panel go off.

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(d) Do a test of the cabin air recirculation fan relays:

1) Do a operational test of the recirculation system. Do this task: Recirculation System - Operational Test, TASK 21-25-00-710-802-002.

(e) Do a test of the left engine start sense relay:

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE FLAPS AND SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

1) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.
2) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801
3) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-802-F00.
4) For the left thrust reverser, do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.
5) Do this task: Open the Fan Cowl Panels, TASK 71-11-02-010-801-F00.
6) Set these switches on the P5-10 air conditioning panel to OFF:
   a) APU BLEED
   b) BLEED 1
   c) BLEED 2
7) Disconnect the electrical connector DP1102 from the engine 1 bleed air regulator.
8) Connect a voltmeter set on the DC voltage scale between pin 5 and pin 6 of electrical connector DP1102.
9) Make sure that the voltmeter shows less than 10V dc.
10) Set the BLEED 1 switch on the P5-10 air conditioning panel to ON.
11) Make sure the voltmeter shows 20 to 29V dc.
12) Manually turn the engine 1 pneumatic start valve 30 degrees clockwise.
13) Make sure the voltmeter shows less than 10V dc.
14) Move the voltmeter lead from pin 5.
15) Connect the voltmeter positive lead to pin 7.
16) Make sure the voltmeter shows 20 to 29V dc.
17) Release the pneumatic start valve.
18) Make sure the voltmeter shows less than 10V dc.
19) Connect the electrical connector DP1102 to the engine 1 bleed air regulator.
20) Set the BLEED 1 switch on the P5-10 air conditioning panel to OFF.

(f) Do a test of the left pack flow mode relays:

1) Open these access panels:

Number	Name/Location
192CL	ECS Access Door
192DR	ECS High Pressure Access Door

2) Disconnect these connectors from the left pack valve:

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a) D392

b) D962

c) D488

d) D40844P

3) Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

4) Disconnect these connectors from the right pack valve:

a) D394

b) D964

c) D492

d) D40846P

5) Retract the trailing edge flaps to the full up position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

6) Set the BLEED 1 and BLEED 2 switches on the P5-10 panel to the ON position.

7) Set the L PACK, R PACK and APU BLEED switches on the P5-10 panel to OFF.

8) Put the airplane in the air mode. To put the airplane in the air mode, do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

9) Use an analog voltmeter to make the voltage measurements in this procedure.

10) Make sure that there is 0 VDC between pins 1 and 3 of connectors D488 (left pack valve).

11) Set the L PACK and R PACK switches on the P5-10 panel to AUTO.

12) Make sure that there is 28V dc between pins 1 and 3 of connector D488.

13) Make sure that there is 28V dc between pins 1 and 2 of connector D962.

14) Set the BLEED 1 and BLEED 2 switches on the P5-10 panel to OFF.

(g) Do a test of the flight deck zone overheat relay:

NOTE: The flight deck zone overheat relay is in the Air Conditioning Accessory Unit, M324.

1) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK

2) Make sure that the L and R PACK switches on the P5-10 air conditioning panel are set to OFF.

3) Get access to the duct overheat switch for the control cabin as follows:

a) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

b) Find the duct overheat switch S931 to the left of the E2 rack.

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c) Disconnect electrical connector D3892 from the control cabin duct overheat switch, S931.

d) Install a jumper wire between pins 1 and 2 of connector D3892 on the ships' wiring.

e) Make sure that the CONT CAB ZONE TEMP light on the P5-17 temperature control panel comes on.

f) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel come on.

g) Remove the jumper wire that was installed between pins 1 and 2 of connector D3892 on the ships' wiring.

h) Reconnect electrical connector D3892 to the control cabin duct overheat switch, S931.

i) Depress the TRIP RESET switch on the P5-10 air conditioning panel.

j) Make sure that the CONT CAB ZONE TEMP light on the P5-17 temperature control panel goes off.

k) Push and release one of the two MASTER CAUTION lights on the P7 glareshield panel.

l) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel go off.

m) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(h) Do a test of the aft passenger cabin zone overheat relay:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK

2) Set the L PACK and R PACK switches on the P5-10 air conditioning panel to OFF.

3) Get access to the duct overheat switch S1077 for the aft passenger cabin duct as follows:

a) Remove the applicable ceiling panel that is forward of the overwing escape hatches:

<1> Do this task: Main Ceiling Panel - Removal, TASK 25-21-45-000-803-001.

4) Disconnect electrical connector D11836 from the aft passenger cabin duct overheat switch S1077.

5) Install a jumper wire between pins 1 and 2 of connector D11836 on the ships' wiring.

6) Make sure that the AFT CAB ZONE TEMP light on the P5-17 temperature control panel comes on.

7) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel come on.

8) Remove the jumper wire that was installed between pins 1 and 2 of connector D11836 on the ships' wiring.

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9) Reconnect connector D11836 to the aft passenger cabin duct overheat switch S1077.

10) Depress the TRIP RESET switch on the P5-10 air conditioning panel.

11) Make sure that the AFT CAB ZONE TEMP light on the P5-17 temperature control panel goes off.

12) Push and release one of the two MASTER CAUTION lights on the P7 glareshield panel.

13) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel go off.

14) Install the applicable ceiling panel that was removed to gain access:

a) Do this task: Main Ceiling Panel - Installation, TASK 25-21-45-400-803-001.

SUBTASK 21-51-02-730-001

(2) Do these checks for the post-installation test of the M1455 ACAU No. 2:

(a) Do a test of the right pack overheat relay:

1) Set the L PACK and R PACK switches on the P5-10 air conditioning panel to OFF.

2) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

3) Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

4) Disconnect electrical connector D538 from the right compressor discharge overheat switch, S5.

5) Install a jumper wire between pins 1 and 2 of connector D538 on the ships' wiring.

6) Make sure that the right PACK light on the P5-10 air conditioning panel comes on.

7) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel come on.

8) Remove the jumper wire that was installed between pins 1 and 2 of connector D538 on the ships' wiring.

9) Reconnect electrical connector D538 to the right compressor discharge overheat switch, S5.

10) Push the TRIP RESET switch on the P5-10 air conditioning panel.

11) Make sure that the right PACK light on the P5-10 air conditioning panel goes off.

12) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel go off.

13) Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

(b) Do a test of the right ram air system relays:

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1) Make sure that the right RAM DOOR FULL OPEN light is on.
2) Make sure that the deflector door for the right ram air inlet is extended.
3) Make sure that the AIR/GND logic shows that the airplane is in the GND logic.
4) Open this access panel:

Number	Name/Location
192CR	ECS Access Door

5) Disconnect electrical connector D40846 from the right pack valve.

   NOTE: A disconnected D40846 connector simulates that the right pack valve is open.
6) Extend the trailing edge flaps to Flaps Position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.
7) Make sure that the deflector door for the right ram air system is fully extended.
8) Put the airplane in the air mode. Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.
9) Make sure that these results occur:
   a) Make sure that the right ram air inlet deflector door retracts fully.
   b) Make sure that the right ram air inlet modulation panels move toward the closed position.
10) Retract the trailing edge flaps to the fully up position. Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804..
11) Make sure that these results occur:
   a) Make sure that the right ram air inlet modulation panels move toward the closed position.
   b) Make sure that the right RAM DOOR FULL OPEN light goes off.
12) Return the airplane to the ground mode; do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.
13) Make sure that these results occur:
   a) Make sure that the right RAM DOOR FULL OPEN light comes on.
   b) Make sure that the right ram air inlet modulation panels move to the fully open position.
   c) Make sure that the right ram air inlet deflector door moves to the extended position.
14) Reconnect all electrical connectors that were disconnected.

(c) Do a test of the cabin air recirculation fan relays:
   1) Do a operational test of the recirculation system. Do this task: Recirculation System - Operational Test, TASK 21-25-00-710-802-002.

(d) Do a test of the passenger zone overheat relay:
   1) Make sure that the L PACK and R PACK switches on the P5-10 air conditioning panel are set to OFF.

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2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

3) Get access to the forward cabin duct overheat switch as follows:

a) Remove the applicable ceiling panel that is forward of the overwing escape hatches. To remove the panel, do this task: Main Ceiling Panel - Removal, TASK 25-21-45-000-803-001.

4) Disconnect electrical connector D11834 from the forward cabin duct overheat switch S1076.

5) Install a jumper cable between pins 1 and 2 of connector D11834 on the ships' wiring.

6) Make sure that the FWD CAB ZONE TEMP light on the P5-17 temperature control panel comes on.

7) Remove the jumper cable that was installed between pins 1 and 2 of connector D11834 on the ships' wiring.

8) Reconnect electrical connector D11834 to the forward cabin duct overheat switch S1076.

9) Depress the TRIP RESET switch on the P5-10 air conditioning panel.

10) Make sure that the FWD CAB ZONE TEMP light on the P5-17 temperature control panel goes off.

11) Push and release one of the two MASTER CAUTION lights on the P7 glareshield panel.

12) Make sure the AIR COND and MASTER CAUTION lights on the P7 glareshield panel go off.

13) Install the ceiling panel that was removed for access to the forward cabin duct overheat switch S1076.

(e) Do a test of the right engine bleed air overheat relay:

1) Set these switches on the P5-10 air conditioning panel to OFF:

a) APU BLEED

b) BLEED 1

c) BLEED 2

d) L PACK

e) R PACK

2) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

3) Get access to the right engine bleed air overtemperature switch:

a) Open this access panel:

Number	Name/Location
441CR	Forward Strut Fairing, Right Overwing Fairing, Strut 2

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4) Disconnect the electrical connector D528 from the engine 2 bleed air overtemperature switch, S21.

5) Install a jumper cable between pins 1 and 2 of connector D528 on the ships' wiring.

6) Make sure that the right pack BLEED TRIP OFF light on the P5-10 air conditioning panel comes on.

7) Make sure that the AIR COND and MASTER CAUTION lights on the P7 glareshield panel come on.

8) Remove the jumper wire that was installed between pins 1 and 2 of connector D528 on the ships' wiring.

9) Reconnect electrical connector D528 to the left engine air overtemperature switch S21.

10) Depress the TRIP RESET switch on the P5-10 air conditioning panel.

11) Make sure that the right pack BLEED TRIP OFF light on the P5-10 air conditioning panel goes off.

12) Push and release one of the two MASTER CAUTION lights on the P7 glareshield panel.

13) Make sure the AIR COND and MASTER CAUTION lights on the P7 glareshield panel go off.

(f) Do a test of the right engine start sense relay:

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE FLAPS AND SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

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

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

3) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-802-F00.

4) For the right thrust reverser, do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.

5) Do this task: Open the Fan Cowl Panels, TASK 71-11-02-010-801-F00.

6) Disconnect the electrical connector DP1102 from the engine 2 bleed air regulator.

7) Connect a voltmeter set on the DC voltage scale between pin 5 and pin 6 of electrical connector DP1102.

8) Make sure that the voltmeter shows less than 10V dc.

9) Set the BLEED 2 switch on the P5-10 air conditioning panel to ON.

10) Make sure the voltmeter shows 20 to 29V dc.

11) Manually turn the engine 2 pneumatic start valve 30 degrees clockwise.

12) Make sure the voltmeter shows less than 10V dc.

13) Move the voltmeter lead from pin 5.

14) Connect the voltmeter positive lead to pin 7.

15) Make sure the voltmeter shows 20 to 29V dc.

16) Release the pneumatic start valve.

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17) Make sure the voltmeter shows less than 10V dc.
18) Connect the electrical connector DP1102 to the engine 2 bleed air regulator.
19) Set the BLEED 2 switch on the P5-10 air conditioning panel to OFF.

(g) Do a test of the right pack flow mode relays:

1) Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

2) Disconnect these connectors from the left pack valve:
   a) D392
   b) D962
   c) D488
   d) D40844P
3) Disconnect these connectors from the right pack valve:
   a) D394
   b) D964
   c) D492
   d) D40846
4) Retract the trailing edge flaps to the full up position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.
5) Set the BLEED 1 and BLEED 2 switches on the P5-10 panel to the ON position.
6) Set the L PACK, R PACK and APU BLEED switches on the P5-10 panel to OFF.
7) Put the airplane in the air mode. To put the airplane in the air mode, do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.
8) Use an analog voltmeter to make the voltage measurements in this procedure.
9) Make sure that there is 0 VDC between pins 1 and 3 of connector D492.
10) Set the L PACK and R PACK switches on the P5-10 panel to AUTO.
11) Make sure that there is 28V dc between pins 1 and 3 of connector D492.
12) Make sure that there is 28V dc between pins 1 and 2 of connector D964.
13) Set the BLEED 1 and BLEED 2 switches on the P5-10 panel to OFF.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-02-420-002

(1) Connect all electrical connectors that were disconnected.

SUBTASK 21-51-02-410-004-002

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-51-02-410-005

(3) Close all access panels that were opened.

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SUBTASK 21-51-02-410-006

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

(4) If opened, close the thrust reverser. To close the thrust reverser, do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-804-F00

SUBTASK 21-51-02-860-012-002

(5) If electrical power is not necessary, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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HEAT EXCHANGER AND PLENUM/DIFFUSER ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the primary and secondary heat exchangers.

NOTE: The plenum/diffuser assembly is attached to the heat exchangers.

(2) An installation of the primary and secondary heat exchangers.

TASK 21-51-03-000-805-002

2. Heat Exchanger and Plenum/Diffuser Assembly Removal

(Figure 401, Figure 402, Figure 403)

A. General

(1) It is recommended that you remove the primary heat exchanger, the secondary heat exchanger, the primary plenum/diffuser, the secondary plenum/diffuser and the air cycle machine as one unit. You may remove and install a heat exchanger separately if you determine this best suits your maintenance needs. However, this procedure is written to remove and install the heat exchangers, the plenum/diffusers and the air cycle machine as a unit.

(2) The heat exchangers, the plenum/diffusers and air cycle machine together weigh approximately 125 pounds. If the adapter, SPL-1608, is not used, a minimum of three persons will be necessary to complete this task.

B. References

Reference	Title
36-00-00-860-806	Remove Pressure from 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-1570	Fixture - Lift, Engine Accessory, 325 Pound Limit Part #: A71015-108 Supplier: 81205
SPL-1608	Jack Adapter - Installation/Removal, Air Conditioning Pack Part #: C21005-70 Supplier: 81205 Opt Part #: C21005-62 Supplier: 81205

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

E. Access Panels

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

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F. Prepare for the Removal

SUBTASK 21-51-03-040-005-002

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-03-860-029-002

(2) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-51-03-860-038

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R

SUBTASK 21-51-03-010-023-002

(4) To remove the heat exchangers for the left pack, do these steps:

Remove this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-03-010-024-002

(5) To remove the heat exchangers for the right pack, do these steps in this sequence:

Remove this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

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G. Heat Exchanger and Plenum/Diffuser Assembly Removal

SUBTASK 21-51-03-020-153

(1) Disconnect the flexible hose [71] from the spud on the top of the heat exchanger inlet duct [15]:

(a) Loosen the hose clamp [70] and slide the flexible hose [71] aft toward the NGS heat exchanger until the flexible hose is off the spud on the heat exchanger inlet duct.

SUBTASK 21-51-03-020-112-002

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE HOT DUCTS CAN CAUSE INJURY TO PERSONS.

(2) Do these steps to remove the outer seal for the ECS access door:

(a) Remove the bolt [10], at 30 locations.

(b) Remove the retainer [13], the seal [12] and the deflector [11].

SUBTASK 21-51-03-020-113-002

(3) Do these steps to remove the ram air exhaust elbow [2] from the primary heat exchanger plenum/diffuser:

(a) Loosen the clamp [4].

(b) If necessary for the removal of the ram air exhaust elbow [2], you can remove the bolts [106] and the ram air exhaust duct [107].

(c) Remove the clamp [4] and the hose [5].

(d) Remove the bolt [6] and the washers [7].

(e) Remove the ram air exhaust elbow [2].

SUBTASK 21-51-03-020-114-002

(4) Do these steps to remove the heat exchanger inlet duct [15]:

(a) Loosen the clamp [14].

(b) Move the flexible hose off the heat exchanger inlet duct [15].

(c) Remove the screws [16], and the washer [17], at 25 locations.

(d) Move the heat exchanger inlet duct [15] down to disengage the upper flange from the retainer on the lower wing beam.

SUBTASK 21-51-03-010-025-002

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.

(5) To remove the compressor outlet duct [29], do these steps:

(a) Disconnect the flex hose [105]from the duct.

(b) Remove the electrical connector [18] from the ram air control sensor.

(c) Remove the electrical connector [22] from the compressor discharge overheat switch.

(d) Remove the nut [27] and the washer [28] that hold the bonding jumper to the clamp on the duct.

(e) Remove the clamp [24] at the air cycle machine [39].

1) Lift the three latch pawls at the same time to release the clamp [24].

(f) Move the sleeve [25] to the compressor outlet duct [29].

(g) Remove the clamp [19] at the heat exchanger.

(h) Remove the compressor outlet duct [29].

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(i) Remove and discard the packing [20] at the heat exchanger.

(j) Remove and discard the packings [26].

SUBTASK 21-51-03-020-115-002

(6) Disconnect the inlet duct [31] from the turbine of the air cycle machine [39]:

(a) Remove the clamp [32].

1) Lift the three latch pawls at the same time to release the clamp [32].

(b) Move the sleeve [33] to the inlet duct [31], away from the ACM.

(c) Remove and discard the o-rings [34].

SUBTASK 21-51-03-020-116-002

(7) Do these steps to disconnect the compressor inlet duct from the ACM:

(a) Remove the bolt [44] that holds the ground clip [45] to the air cycle machine [39].

(b) Move the bonding jumper [46] away from the air cycle machine [39].

1) Do not remove the ground clip from the bonding jumper [46].

(c) Remove the bolts [47].

(d) Remove and discard the o-ring [43].

SUBTASK 21-51-03-020-117-002

(8) Disconnect the hoses and sense line from the air cycle machine [39]:

(a) Disconnect the flex hose 1 [35] from the ACM.

(b) Disconnect the flex hose 2 [42] from the ACM.

(c) Disconnect the sense line [30] from the ACM.

SUBTASK 21-51-03-020-118-002

(9) Remove the clamp [40] that connects the air cycle machine to mix muff.

SUBTASK 21-51-03-020-119-002

(10) Remove the clamp [21] from the outboard duct of the secondary heat exchanger.

SUBTASK 21-51-03-020-120-002

(11) Do these steps to disconnect the ACM from the tie rod assembly:

(a) Remove the nut [53] and the washer [52] from the bolt [48] that holds the air cycle machine to the tie rod.

(b) Remove the bolt [48] and the washer [49] from the tie rod.

(c) Remove the bushing [50] from the tie rod.

SUBTASK 21-51-03-020-121-002

(12) Do this step to disconnect the tie rod assemblies from the forward and aft end of each of the two heat exchangers:

(a) Remove the bolt [54], washer [55] and bushing [56] from each of the four tie rod assemblies.

SUBTASK 21-51-03-020-168

(13) Do these steps to remove the duct [108]:

(a) Remove the clamp [109]and clamp [110].

(b) Remove the duct [108].

SUBTASK 21-51-03-020-122-002

(14) Remove the clamp [1] from primary heat exchanger outlet and bleed air inlet ducts.

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SUBTASK 21-51-03-020-148-002

(15) If the hoist adapter, SPL-1608 is to be used, do these steps to install the adapter:

(a) Install the adapter, SPL-1608 on the engine accessory lift fixture, SPL-1570.

(b) Put the engine accessory lift fixture, SPL-1570 in its position under the heat exchangers.

(c) Make sure the frame of the adapter, SPL-1608 is horizontal.

NOTE: There is a square drive socket [104] to adjust the angle of the frame at the bottom of the adapter, SPL-1608.

(d) Lift the engine accessory lift fixture, SPL-1570 until it touches the heat exchangers.

1) Make sure that the strap [101] are not caught between the adapter, SPL-1608 and the heat exchangers.

(e) If it is necessary, adjust the sliding tray [103] to make sure both heat exchangers are firmly seated the in the trays.

1) Loosen the nut [102], at 12 locations.

2) Move the sliding tray [103] forward or aft.

3) Make sure the heat exchangers are between the end pieces of the trays and the flanges of the heat exchangers are not on the tabs.

4) Tighten the nut [102], at 12 locations.

(f) Put the straps [101] around the heat exchangers.

(g) Tighten the straps [101].

SUBTASK 21-51-03-020-123-002

WARNING: IF YOU ARE NOT USING THE HOIST ADAPTER, HAVE A MINIMUM OF 2 PERSONS HELP YOU WHEN YOU REMOVE THE HEAT EXCHANGERS. THE HEAT EXCHANGERS WEIGH APPROXIMATELY 125 POUNDS, AND IF THEY FALL, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(16) Do these steps to disconnect the heat exchangers from the lower wing beam:

(a) Remove the bolts [59] and the washers [60], at nine locations, that attach the primary heat exchanger [9] and secondary heat exchanger [58] to the lower wing beam.

(b) Remove the bolts [57], at 16 locations, that attach the primary heat exchanger [9] and secondary heat exchanger [58] to the lower wing beam.

CAUTION: KEEP THE HEAT EXCHANGERS LEVEL IN RELATION TO EACH OTHER. IF THE HEAT EXCHANGERS BEND AT THE FLEXIBLE DUCT, DAMAGE TO THE DIFFUSERS AND THE FLEXIBLE DUCT CAN OCCUR.

(c) Carefully lower the heat exchangers from the ECS bay.

SUBTASK 21-51-03-020-124-002

(17) Remove and discard the o-ring [41] that was between the air cycle machine and the mix muff.

SUBTASK 21-51-03-480-005-002

(18) Put covers on the duct openings to keep out unwanted materials.

SUBTASK 21-51-03-020-125-002

(19) Do these steps to separate the primary plenum/diffuser from the secondary plenum/diffuser:

(a) Remove the clamps [61] that attach the flexible duct [62] to the plenum/diffusers.

(b) Carefully move one heat exchanger away from the other.

(c) Move the flexible duct [62] off the plenum/diffuser.

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SUBTASK 21-51-03-020-126-002

(20) When the secondary plenum/diffuser [23] will be replaced, do these steps to remove the air cycle machine [39]:

(a) Make a record of the air cycle machine's position on the plenum/diffuser. The air cycle machine must be installed in the same position on the new plenum/diffuser.

(b) Remove the bolts [37] and the washers [38] that connect the air cycle machine to the secondary plenum/diffuser [23].

(c) Carefully pull the air cycle machine [39] from the secondary plenum/diffuser [23].

(d) Remove and discard the gasket [36] on the air cycle machine.

SUBTASK 21-51-03-020-127-002

(21) Do these steps to remove the secondary heat exchanger [58] from the secondary plenum/diffuser [23] or the primary heat exchanger [9] from the primary plenum/diffuser [8]:

(a) To remove the plenum from the heat exchanger, do these steps:

1) Remove the bolts [63] and washers [64] which attach the clip assembly [65] to the heat exchanger.

a) Remove the clip assembly [65].

2) Remove the bolts [63] and washers [64] which attach the clip assembly [66] to the heat exchanger.

3) Remove the clip assembly [66].

4) Remove the bolts [67] and washers [68] which attach the plenum to the heat exchanger.

5) Remove the primary plenum/diffuser [8] from the primary heat exchanger [9] or the secondary plenum/diffuser [23] from the secondary heat exchanger [58].

AKS ALL PRE HONEYWELL SB 2215240-21-2806 AND PRE HONEYWELL SB 2215280-21-2808; AIRPLANES WITHOUT METAL SHIM

6) Remove and discard the gaskets [69].

AKS ALL POST HONEYWELL SB 2215240-21-2806 OR POST HONEYWELL SB 2215280-21-2808; AIRPLANES WITH METAL SHIM

7) Remove the metal shim [75] and discard the gaskets [69].

AKS ALL

SUBTASK 21-51-03-020-128-002

(22) To remove the primary diffuser assembly [82] from the plenum, do these steps (Figure 402):

(a) Remove the screw [81].

(b) Remove the bolts [83] and washers [84].

(c) Make a record of the orientation of the primary diffuser with respect to its position in the plenum so that it can be reinstalled in the same orientation:

1) Note that the smaller diameter end of the diffuser is installed forward.

2) Note which side of the diffuser is up and which side is down with respect to the installed position on the aircraft.

NOTE: The primary diffuser has a fan bypass check valve which is installed in the down position. The primary diffuser is aft of the secondary diffuser.

(d) Remove the primary diffuser assembly [82] from the primary plenum.

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SUBTASK 21-51-03-020-167

(23) To remove the secondary diffuser [85] from the secondary plenum, do these steps (Figure 402):

(a) Remove the bolts [83] and washers [84].

(b) Make a record of the orientation of the secondary diffuser with respect to its position in the plenum so that it can be reinstalled in the same orientation:

1) Note that the smaller diameter end of the diffuser is installed forward.

2) Note which side of the diffuser is up and which side is down with respect to the installed position on the aircraft.

(c) Remove the secondary diffuser [85] from the secondary plenum.

SUBTASK 21-51-03-212-002

(24) Inspect the primary diffuser assembly [82] from the primary plenum/diffuser as follows:

(a) Make sure that the fan bypass check valve door is installed.

(b) Make sure that the fan bypass check valve door operates normally.

(c) If the fan bypass check valve door is not installed or does not operate normally, replace the diffuser assembly with a serviceable unit.

H. Inspection of the Air Cycle Machine

SUBTASK 21-51-03-211-002

(1) If the air cycle machine [39] was removed from the secondary plenum/diffuser [23], do these steps to inspect the impeller blades [74] of the ACM [39]:

(a) Make sure that the chord length (width) of each impeller blade tip is a minimum of 0.38 inch (9.65mm).

(b) Do a visual check that no impeller blades are broken or cracked.

(c) Replace the air cycle machine [39] with a new or serviceable unit if the inspection is unsatisfactory.

SUBTASK 21-51-03-700-003

(2) Do a check of the torque necessary to turn the rotating assembly of the ACM as follows:

(a) Put the ACM in a horizontal position.

(b) Put a torque wrench on one of the two nuts [72] or [73].

NOTE: A torque wrench with a gage that shows the torque applied is recommended.

1) You will have to turn nut [72] if the ACM was not removed from the secondary plenum/diffuser [23].

CAUTION: TURN THE ROTATING COMPONENTS OF THE ACM ONLY IN THE DIRECTION THAT THEY TURN WHEN IN OPERATION. IF YOU TURN THE ACM ROTATING COMPONENTS IN THE INCORRECT DIRECTION, YOU CAN CAUSE DAMAGE TO THE FOIL AIR BEARINGS.

(c) Make sure that you turn nut [72] clockwise or nut [73] counterclockwise while you turn the rotating assembly.

(d) Record the torque necessary to turn the rotating assembly.

(e) If the torque was more than 20 in.-lb., replace the air cycle machine with a new or serviceable unit.

END OF TASK

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Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 1 of 11)

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HEAT EXCHANGER INLET DUCT

B

H09635 S0006562989_V3

Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 2 of 11)

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G68026 S0006562990_V5

Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 3 of 11)

I

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Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 4 of 11)

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CLAMSHELL CLAMP INSTALLATION (EXAMPLE)

F

G68566 S0006562992_V3

Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 5 of 11)

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H06147 S0006562993_V3

Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 6 of 11)

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FLEXIBLE DUCT

K

H06858 S0006562994_V3

Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 7 of 11)

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PRIMARY HEAT EXCHANGER
(SECONDARY HEAT EXCHANGER IS EQUIVALENT)

L

H06865 S0006562995_V3

Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 8 of 11)

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PRIMARY HEAT EXCHANGER (SECONDARY HEAT EXCHANGER IS EQUIVALENT)

L

2476709 S0000581176_V1

Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 9 of 11)

EFFECTIVITY
AKS ALL POST HONEYWELL SB 2215240-21-2806 OR POST HONEYWELL SB 2215280-21-2808; AIRPLANES WITH METAL SHIM

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FLEXIBLE HOSE

M

1871250 S0000338014_V3

Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 10 of 11)

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AIR CYCLE MACHINE (ACM)

N

IMPELLER BLADE

O

2160815 S0000474997_V3

Heat Exchanger and Plenum/Diffuser Assembly Installation
Figure 401/21-51-03-990-808-002 (Sheet 11 of 11)

I

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J88625 S0000183191_V4

Diffuser Assembly Installation
Figure 402/21-51-03-990-809-002 (Sheet 1 of 4)

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PRIMARY PLENUM/DIFFUSER (EXAMPLE)

B

PRIMARY PLENUM/DIFFUSER

C

1 INSTALL PRIMARY PLENUM/DIFFUSER SO THAT FAN BYPASS CHECK VALVE IS AT BOTTOM OF DIFFUSER WHEN PLENUM/DIFFUSER IS INSTALLED ON PRIMARY HEAT EXCHANGER.

H13312 S0006562996_V4

Diffuser Assembly Installation
Figure 402/21-51-03-990-809-002 (Sheet 2 of 4)

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VIEW IN THE FORWARD DIRECTION
(RIGHT SIDE ASSEMBLY IS SHOWN,
LEFT SIDE ASSEMBLY IS SIMILAR) 1

1 ABOVE VIEW SHOWS CORRECT ORIENTATION OF THE AIR CONDITIONING PLENUM/DIFFUSER FAN BYPASS CHECK VALVE LOCATED AT THE BOTTOM

2389052 S0000549299_V1

Diffuser Assembly Installation
Figure 402/21-51-03-990-809-002 (Sheet 3 of 4)

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SECONDARY PLENUM/DIFFUSER
(EXAMPLE)

D

SECONDARY PLENUM/DIFFUSER

E

1917338 S0000354204_V2

Diffuser Assembly Installation
Figure 402/21-51-03-990-809-002 (Sheet 4 of 4)

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HOIST ADAPTER

A

L05956 S0006562997_V3

Heat Exchanger Tool Installation
Figure 403/21-51-03-990-814-002

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TASK 21-51-03-400-804-002

3. **Heat Exchanger and Plenum/Diffuser Installation**
(Figure 401, Figure 402, Figure 403)

A. **General**

(1) This task installs the heat exchanger and plenum/diffuser.

B. **References**

Reference	Title
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from 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-1570	Fixture - Lift, Engine Accessory, 325 Pound Limit Part #: A71015-108 Supplier: 81205
SPL-1608	Jack Adapter - Installation/Removal, Air Conditioning Pack Part #: C21005-70 Supplier: 81205 Opt Part #: C21005-62 Supplier: 81205

D. **Consumable Materials**

Reference	Description	Specification
C00852	Compound - Antiseize, Molybdenum Disulfide-Petrolatum	MIL-PRF-83483
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008
D00602	Lubricant - Fluorinated	BMS3-25
D00649	Lubricant - O-Ring - Krytox GPL206	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF- 27617 Type III

E. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
8	Primary plenum/diffuser	21-51-03-06-070	AKS ALL
		21-51-03-06-160	AKS ALL
9	Primary heat exchanger	21-51-03-01A-245	AKS ALL
		21-51-03-05A-138	AKS ALL
		21-51-03-05A-400	AKS ALL
		21-51-03-06-200	AKS ALL
20	Packing	21-51-03-05A-040	AKS ALL
		21-51-03-05A-200	AKS ALL

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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
23	Secondary plenum/diffuser	21-51-03-05A-090	AKS ALL
		21-51-03-05A-280	AKS ALL
26	Packing	21-51-03-05A-210	AKS ALL
34	O-ring	21-51-03-05A-055	AKS ALL
		21-51-03-05A-210	AKS ALL
36	Gasket	21-51-03-05A-075	AKS ALL
		21-51-03-05A-230	AKS ALL
41	O-ring	21-51-17-04A-015	AKS ALL
		21-51-17-05A-020	AKS ALL
43	O-ring	21-51-03-05A-025	AKS ALL
		21-51-03-05A-185	AKS ALL
58	Secondary heat exchanger	21-51-03-05A-138	AKS ALL
		21-51-03-05A-365	AKS ALL
		21-51-03-05A-400	AKS ALL
69	Gasket	21-51-03-05A-134	AKS ALL
		21-51-03-05A-395	AKS ALL
		21-51-03-06-195	AKS ALL
82	Primary diffuser assembly	21-51-03-05A-080	AKS ALL
		21-51-03-05A-235	AKS ALL
		21-51-03-06-030	AKS ALL

F. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

G. Access Panels

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

H. Assemble the Heat Exchanger and Plenum/Diffuser

SUBTASK 21-51-03-420-019-002

(1) Do these steps to install the primary diffuser assembly [82] in the primary plenum Figure 402.

NOTE: The diffuser assembly with the fan bypass check valve is installed in the primary plenum/diffuser assembly.

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CAUTION: MAKE SURE THAT THE FAN BYPASS CHECK VALVE IS INSTALLED AT THE BOTTOM OF THE DIFFUSER. THE AIR CONDITIONING PACK WILL OVERHEAT IF THE FAN BYPASS CHECK VALVE IS NOT INSTALLED AT THE BOTTOM OF THE DIFFUSER.

(a) Put the primary diffuser assembly [82] in its position in the primary plenum with the smaller diameter end of the diffuser assembly forward and with the fan bypass check valve at the bottom with respect to the installed position on the aircraft.

(b) Lubricate the threads of the screws [81] and the bolts [83] with anti-seize compound, C00852.

(c) Align the forward diffuser brackets with the forward plenum brackets and loosely install the bolts [83] and washers [84].

1) Determine the run-on torque as you install the bolts [83] if they have a self-locking feature as follows:

a) Use a 1/4-inch drive torque wrench to measure the torque required to turn the bolt before the washer [84] contacts the bracket.

b) It is preferable to use a torque wrench with an inch-pound indicating gauge with a maximum range of 100 inch-pounds.

(d) Loosely install the bolts [83] through the holes in the plenum into the aft brackets on the diffuser assembly.

1) Find the run-on torque as you install the bolts [83] if they have a self-locking feature.

a) Use a 1/4-inch drive torque wrench to measure the torque required to turn the screw before the screw head contacts the plenum.

b) It is preferable to use a torque wrench with an inch-pound indicating gauge with a maximum range of 100 inch-pounds.

(e) Position the primary diffuser assembly [82] to the dimension shown in detail C of Figure 402.

(f) Verify that the fan bypass check valve is installed at the bottom of the diffuser.

(g) Tighten the bolts [83] and screws [81] at 22 - 26 inch-pounds plus the value of the run-on torque of the fastener.

SUBTASK 21-51-03-420-029

(2) Do these steps to install the secondary diffuser [85] in the secondary plenum:

(a) Put the secondary diffuser [85] in the large end of the secondary plenum with the smaller diameter end of the diffuser assembly forward with respect to the installed position on the aircraft.

(b) Lubricate the threads of the bolts [83] with anti-seize compound, C00852.

(c) Align the secondary diffuser brackets with the secondary plenum brackets and loosely install the bolts [83] and washers [84].

1) Find the run-on torque as you install the bolts [83] if they have a self-locking feature.

a) Use a 1/4-inch drive torque wrench to measure the torque required to turn the bolt before the washer contacts the bracket.

b) It is preferable to use a torque wrench with an inch-pound indicating gauge with a maximum range of 100 inch-pounds.

(d) Position the secondary diffuser [85] to the dimension shown in detail E of Figure 402.

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(e) Tighten the bolts [83] at 22 -26 inch-pounds plus the value of the run-on torque of the bolt.

SUBTASK 21-51-03-420-020-002

(3) Do these steps to attach the secondary heat exchanger [58] to the secondary plenum/diffuser [23] or the primary heat exchanger [9] to the primary plenum/diffuser [8]:

(a) Do these steps to attach the heat exchanger to the plenum:

AKS ALL PRE HONEYWELL SB 2215240-21-2806 AND PRE HONEYWELL SB 2215280-21-2808; AIRPLANES WITHOUT METAL SHIM

1) Install a new gasket [69] in its position on the primary heat exchanger [9].

AKS ALL POST HONEYWELL SB 2215240-21-2806 OR POST HONEYWELL SB 2215280-21-2808; AIRPLANES WITH METAL SHIM

2) Install a new gasket [69] and then reinstall the metal shim [75] in their position on the primary heat exchanger [9].

AKS ALL

3) Install a new gasket [69] in its position on the secondary heat exchanger [58].

4) Put the primary plenum/diffuser [8] on the primary heat exchanger [9] or the secondary plenum/diffuser [23] on the secondary heat exchanger [58].

5) Install the clip assembly [65] using the bolts [63] and the washers [64] as follows:

a) Lubricate the threads of the bolts [63] with anti-seize compound, C00852.

b) Tighten the bolts [63] at 22 -26 inch-pounds plus the value of the run-on torque of the bolt.

6) Install the clip assembly [66] using the bolts [63] and the washers [64] as follows:

a) Lubricate the threads of the bolts [63] with anti-seize compound, C00852.

b) Tighten the bolts [63] at 22 -26 inch-pounds plus the value of the run-on torque of the bolt.

7) Install the bolts [67] and the washers [68] as follows:

a) Lubricate the threads of the bolts [67] with anti-seize compound, C00852.

b) Tighten the bolts [67] at 22 -26 inch-pounds plus the value of the run-on torque of the bolt.

SUBTASK 21-51-03-020-129-002

(4) When the secondary plenum/diffuser [23] was replaced, do these steps to install the air cycle machine [39]:

(a) Install a new gasket [36] on the air cycle machine. Align the holes in the gasket with holes on the plenum.

(b) Carefully put the air cycle machine [39] in its position on the secondary plenum/diffuser [23].

NOTE: The air cycle machine must be installed in the correct position or the ducts will not be aligned correctly when the pack is installed in the ECS bay.

(c) Install the bolts [37] and the washers [38] that connect the air cycle machine to the secondary plenum/diffuser [23].

SUBTASK 21-51-03-020-130-002

(5) Do these steps to join the primary plenum/diffuser to the secondary plenum/diffuser:

(a) Put the flexible duct [62] in its position on the end of the secondary plenum.

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(b) Carefully move the heat exchangers together while you align the diffusers.

NOTE: The end of the diffuser in the secondary plenum must be installed in the end of the diffuser in the primary plenum.

(c) Move the ends of the flexible duct [62] over the ends of the plenums.

(d) Install the clamps [61] that attach the flexible duct [62] to the plenum/diffusers.

I. Heat Exchanger and Plenum/Diffuser Installation

SUBTASK 21-51-03-080-005-002

(1) Remove the covers from the duct openings.

SUBTASK 21-51-03-600-001

(2) Lubricate the new o-ring [41] with lubricant, D00602.

SUBTASK 21-51-03-020-131-002

(3) Install the new o-ring [41] on the duct of the mix muff.

SUBTASK 21-51-03-020-149-002

(4) If the hoist adapter, SPL-1608, is to be used, do the steps that follow:

(a) Put the heat exchangers in their position on the adapter, SPL-1608.

(b) Put the straps [101] around the heat exchangers.

(c) Tighten the straps [101].

(d) Put the engine accessory lift fixture, SPL-1570, in its position below the ECS bay.

SUBTASK 21-51-03-020-132-002

WARNING: IF YOU ARE NOT USING THE HOIST ADAPTER, HAVE A MINIMUM OF 2 PERSONS HELP YOU WHEN YOU INSTALL THE HEAT EXCHANGERS. THE HEAT EXCHANGERS WEIGH APPROXIMATELY 125 POUNDS, AND IF THEY FALL, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(5) Do these steps to attach the heat exchangers to the lower wing beam:

(a) Examine the gasket that is bonded to the lower wing beam.

1) If the gasket is damaged replace the gasket.

CAUTION: KEEP THE HEAT EXCHANGERS LEVEL IN RELATION TO EACH OTHER. IF THE HEAT EXCHANGERS BEND AT THE FLEXIBLE DUCT, DAMAGE TO THE DIFFUSERS AND THE FLEXIBLE DUCT CAN OCCUR.

(b) Carefully raise the primary heat exchanger [9] and secondary heat exchanger [58] to their position in the ECS bay.

(c) Install the bolts [57] which attach the primary heat exchanger [9] and secondary heat exchanger [58] to the lower wing beam.

(d) Install the bolts [59] and the washers [60], at nine locations.

SUBTASK 21-51-03-020-150-002

(6) If the hoist adapter, SPL-1608 is being used, do the steps that follow:

(a) Release the straps on the adapter, SPL-1608.

(b) Lower the engine accessory lift fixture, SPL-1570 and remove it from the ECS bay.

SUBTASK 21-51-03-420-030

(7) Do these steps to install the duct [108]:

(a) Put the duct [108] in its position.

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(b) Install the clamp [109] and clamp [110].

1) Tighten the clamp [109] and clamp [110] to 52.5 ±2.5 in-lb (5.9 ±0.3 N·m).

SUBTASK 21-51-03-820-005-002

(8) Do these steps to install the tie rod assemblies on the forward and aft ends of the primary heat exchanger [9] and secondary heat exchanger [58]:

(a) Install the bolts [54], the washers [55] and the bushings [56] on each of the four tie rod assemblies.

(b) Adjust the tie rod assemblies to align the duct connections on the heat exchangers and the air cycle machine with the ducts in the ECS bay.

(c) Install the lock pins on the tie rods.

SUBTASK 21-51-03-420-021-002

(9) Install the tie rod assembly on the ACM:

(a) Adjust the tie rod as necessary to align the tie rod with the mounting tabs on the ACM.

1) Install the lock pin on the tie rod [51].

(b) Install the bushing [50] in the mounting tab on the ACM.

(c) Put the washer [49] on the shank of the bolt [48].

NOTE: The countersunk side of the washer must be adjacent to the bolt head.

(d) Push the bolt [48] with the washer [49] through the tie rod [51] and the bushing [50].

(e) Install the washer [52] and nut [53] on the bolt [48].

SUBTASK 21-51-03-020-133-002

(10) Install the clamps [1] for the primary heat exchanger outlet and bleed air inlet ducts.

(a) Tighten the nut on the clamps 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

SUBTASK 21-51-03-020-134-002

(11) Install the clamp [21] on the outboard duct of the secondary heat exchanger.

(a) Tighten the nut on the clamp 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

SUBTASK 21-51-03-420-022-002

(12) To connect the sense line and the hoses to the ACM, do these steps:

(a) Apply a light coat of Never-Seez NSBT compound, D00006, to the threads of the sense line [30].

(b) Connect the sense line [30] to the air cycle machine.

(c) Apply a light coat of Never-Seez NSBT compound, D00006, to the threads of the flex hose 1 [35].

(d) Install the flex hose 1 [35] on the air cycle machine.

(e) Apply a light coat of Never-Seez NSBT compound, D00006, to the threads of the flex hose 2 [42].

(f) Connect the flex hose 2 [42] to the air cycle machine.

SUBTASK 21-51-03-020-135-002

(13) Install the clamp [40] that connects the air cycle machine to the mix muff:

(a) Make sure the o-ring [41] is correctly aligned in the duct.

(b) Tighten the nut on the clamp 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

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SUBTASK 21-51-03-020-136-002

(14) Do these steps to connect the compressor inlet duct to the ACM:

(a) Apply a light coat of Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, to the o-ring [43].

(b) Install the o-ring [43] for the compressor inlet duct.

(c) Apply a light coat of compound, C00852, to the threads of the bolt [44] and bolts [47].

(d) Put the ground clip [45] onto the bolt [44].

(e) Install the ground clip [45] and bolt [44] on the ACM compressor inlet flange.

1) Do not tighten the bolt [44] fully.

(f) Install the bolts [47] on the ACM compressor inlet flange.

(g) Tighten the bolt [44] and bolt [47] to 22 to 26 pound-inches (2.5 to 2.9 newton-meters).

SUBTASK 21-51-03-020-137-002

(15) Connect the inlet duct [31] for the turbine of the ACM:

(a) Apply a light coat of Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, to the o-rings [34].

(b) Install the o-rings [34] on the end of the ducts.

(c) Move the sleeve [33] over the duct connections.

(d) Install the clamp [32] over the duct connections.

SUBTASK 21-51-03-410-011-002

(16) To install the compressor outlet duct, do these steps:

(a) Apply a light coat of Krytox GPL206 lubricant, D00649, or Krytox 240AC perfluoropolyether grease, D50063, to the packing [20] and the packings [26].

(b) Install the packings [26] on the duct ends.

(c) Install the packing [20] at the heat exchanger.

(d) Put the compressor outlet duct [29] into its position.

(e) Install the clamp [19] at the heat exchanger.

1) Do not tighten the clamp [19] fully.

(f) Move the sleeve [25] over the outlet duct connection.

(g) Install the clamp [24] over the outlet duct connection.

(h) Tighten the nut on the clamp [19] to 45 to 50 pound-inches (5.1 to 5.6 newton-meters).

(i) Apply a light coat of Never-Seez NSBT compound, D00006, to the threads of the flex hose.

(j) Connect the flex hose [105] to the duct.

(k) Install the electrical connector [18] for the ram air control sensor.

(l) Install the electrical connector [22] for the compressor discharge overheat switch.

(m) Put the bonding jumper on the clamp on the compressor outlet duct [29].

(n) Install the nut [27] and the washer [28] that hold the bonding jumper to the clamp on the duct.

SUBTASK 21-51-03-020-138-002

(17) Do these steps to install the elbow of the ram air exhaust duct:

(a) Examine the gasket [3].

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1) Replace the gasket [3] if necessary.

(b) Put the ram air exhaust elbow [2] in its position.

(c) Install the bolts [6] and the washers [7].

(d) If not already done, install the ram air exhaust duct [107] and the bolts [106].

(e) Install the hose [5] and clamps [4].

SUBTASK 21-51-03-020-139-002

(18) Do these steps to install the heat exchanger inlet duct [15]:

(a) Examine the gasket on the heat exchanger inlet duct.

1) Install a new gasket if necessary.

(b) Put the heat exchanger inlet duct [15] in a position which engages the upper flange under the retainer on the lower wing beam.

CAUTION: MAKE SURE THAT YOU INSTALL THE SCREWS THAT HAVE THE CORRECT DIAMETER. THE INCORRECT SCREWS CAN BREAK THE NUT PLATE.

(c) Install the screws [16], and the washers [17].

NOTE: There are three different screw diameters.

(d) Move the flexible hose on to the heat exchanger inlet duct [15].

(e) Tighten the clamp [14].

(f) Connect the flexible hose [71] from the NGS heat exchanger to the heat exchanger inlet duct [15]:

1) Slide the flexible hose [71] over the spud on the top of the inlet duct.

2) Tighten the hose clamp [70] to 15.5 ±2.5 in-lb (1.8 ±0.3 N·m).

SUBTASK 21-51-03-020-140-002

(19) Install the outer seal for the ECS access door:

(a) Put the deflector [11], the seal [12] and the retainer [13] in the their position on the lower wing beam.

(b) Install the bolts [10], at 30 locations.

SUBTASK 21-51-03-860-030-002

(20) Remove the DO-NOT-OPERATE TAGS from these switches on the P5-10 air conditioning panel:

(a) The L PACK and R PACK switches

(b) The BLEED 1 and BLEED 2 switches

(c) The BLEED APU switch.

SUBTASK 21-51-03-860-039

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L

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(Continued)

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R

J. Heat Exchanger and Plenum/Diffuser Installation Test

SUBTASK 21-51-03-860-031-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-03-860-032-002

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-51-03-860-033-002

(3) Put the applicable L PACK or R PACK switch, on the P5-10 Air Conditioning Panel, to the AUTO position.

SUBTASK 21-51-03-790-004-002

(4) Do a soap bubble test of all the applicable duct joints.

NOTE: No leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches in the OFF position.

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) Loosen the clamps.

3) Make sure the ducts are aligned at the joints.

4) Tighten the clamps.

5) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

6) Put the L PACK and R PACK switches in the AUTO position.

7) Make sure the leak has been repaired.

K. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-03-860-034-002

(1) Put the applicable L PACK or R PACK switches to the OFF position.

SUBTASK 21-51-03-860-035-002

(2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-03-410-012-002

(3) Close these panels when the heat exchangers for the left pack were removed.

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Close this access panel:

Number	Name/Location
192CL	ECS Access Door

Install this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-03-410-013-002

(4) Close these panels in the specified sequence when the heat exchangers for the right pack were removed.

Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Install this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-03-860-036-002

(5) Remove electrical power if it is not necessary (TASK 24-22-00-860-812).

——— END OF TASK ———

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HEAT EXCHANGER AND PLENUM/DIFFUSER ASSEMBLY - CLEANING/PAINTING

1. **General**
   A. This procedure contains scheduled maintenance task data.
   B. This procedure has these tasks to clean the primary and secondary heat exchangers:
      (1) A heat exchanger and plenum/diffuser assembly on-wing cleaning procedure with backflush equipment that uses air and water
      (2) Heat exchangers off-wing cleaning with vendor CMM procedures (alternative to on-wing cleaning procedure with backflush equipment)
      (3) Heat exchangers on-wing cleaning with nitrogen gas (supplemental procedure).

TASK 21-51-03-000-801

2. **Heat Exchanger and Plenum/Diffuser Assembly Cleaning**
(Figure 701)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) You can use either a ground air source or airplane pneumatic air to do this procedure. If you use airplane pneumatic air, you must operate the APU.

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)
21-51-24-000-801	Ram Air Ducts Removal (P/B 401)
21-51-24-400-801	Ram Air Ducts Installation (P/B 401)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-806	Remove Pressure from 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-1607	Equipment - Backflush, A/C Pack Heat Exchanger Part #: C21003-155 Supplier: 81205 Part #: C21003-156 Supplier: 81205 Opt Part #: C21003-133 Supplier: 81205 Opt Part #: C21003-134 Supplier: 81205 Opt Part #: C21003-80 Supplier: 81205 Opt Part #: C21003-81 Supplier: 81205 Opt Part #: C21003-82 Supplier: 81205
SPL-2462	Deactivator - Check Valve Part #: C21006-7 Supplier: 81205 Opt Part #: C21006-1 Supplier: 81205 Opt Part #: PF80-012-500 Supplier: 053H3

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(Continued)

Reference	Description
SPL-13921	Backflush Equipment - Bleed Air Hose Part #: C21003-135 Supplier: 81205
STD-3926	Water Source - Cold, Regulated, 0 to 60 PSIG

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

E. Access Panels

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Prepare for the Cleaning

SUBTASK 21-51-03-040-001

(1) Set the L PACK and R PACK switches on the P5-10 Air Conditioning Panel to the OFF position and install DO-NOT-OPERATE tags on the switches.

SUBTASK 21-51-03-860-037

(2) Set the ISOLATION VALVE switch on the P5-10 air conditioning panel to the OPEN position.

SUBTASK 21-51-03-010-001

(3) To get access to the Left pack heat exchangers, do this step:

Open this access panel:

Number	Name/Location
192CL	ECS Access Door

Remove this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-03-010-002

(4) To get access to the Right pack heat exchangers, do this step:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

Remove this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

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SUBTASK 21-51-03-010-003

(5) Remove the bolts and the washers that attach the ram air inlet duct access panel to the ram air inlet duct.

SUBTASK 21-51-03-010-004

(6) Remove the ram air inlet duct access panel.

NOTE: You must remove the access panel so that the cleaning water will not accumulate in the ram air inlet duct.

SUBTASK 21-51-03-010-005

(7) Remove the bolts and washers that attach the plenum/diffuser access panels to the plenum/diffuser assemblies for the primary and secondary heat exchangers.

SUBTASK 21-51-03-020-001

(8) Remove the bolt, washers, and nut that attach the bonding jumper to the forward access panel.

SUBTASK 21-51-03-010-006

(9) Remove the plenum/diffuser access panels and the gaskets.

SUBTASK 21-51-03-480-006

(10) To install the backflusher, SPL-1607 heat exchanger cleaning heads, do these steps:

(a) Install the backflush units (cleaning heads) in these locations:

1) The applicable backflush unit is used to clean the left pack primary heat exchanger or the right pack secondary heat exchanger.

2) The applicable backflush unit is used to clean the left pack secondary heat exchanger or the right pack primary heat exchanger.

CAUTION: DO NOT APPLY FORCE TO THE PLENUM/DIFFUSER ASSEMBLY WHEN YOU INSTALL THE CLEANING HEADS OF THE HEAT EXCHANGER. YOU CAN CAUSE DAMAGE TO THE PLENUM/DIFFUSER ASSEMBLY.

(b) Carefully insert the supply tubes of the cleaning head into the access holes in the plenum/diffuser assembly so that the ends of the supply tubes point toward the exit of the heat exchanger.

CAUTION: DO NOT TIGHTEN THE SCREWS ON THE CLEANING HEAD TOO MUCH. TOO MUCH TORQUE WILL CAUSE DAMAGE TO THE PLENUM/DIFFUSER.

(c) Carefully tighten the screws on the cleaning head so that the rubber seals of the cleaning head just make good contact with the plenum/diffuser.

(d) Do the above steps again to install the cleaning head for the other heat exchanger.

SUBTASK 21-51-03-480-008

(11) If the SPL-1607 backflusher has a water supply valve and air supply valve, make sure that they are closed.

NOTE: Not all configurations of the backflush equipment have the water supply valve and air supply valve.

SUBTASK 21-51-03-480-011

(12) Install plastic sheeting to seal off the plenum/diffuser as follows:

(a) Remove the two clamps that attach the flexible duct between the elbow duct at the aft end of the plenum/diffuser and the ram air exhaust duct (TASK 21-51-24-000-801).

(b) Remove the flexible duct.

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(c) Install a piece of plastic sheeting to cover the opening of the elbow duct that is attached to the aft end of the plenum/diffuser.

(d) Secure the plastic sheeting to the end of the elbow duct with the clamps that are used to install the flexible duct.

SUBTASK 21-51-03-940-002

(13) Connect the water line of the 0 to 60 PSIG regulated cold water source, STD-3926, to the water supply hose of the backflush equipment.

(a) Do not start the flow of water at this time.

SUBTASK 21-51-03-941-001

(14) Do these steps if you want to use the airplane APU pneumatic air to back flush the heat exchangers:

(a) Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

(b) Look at the dual duct pressure indicator on the P5-10 air conditioning panel to make sure that there is no pressure in the pneumatic system.

1) If there is pressure in the pneumatic system, then remove the pressure as follows:

a) Do this step: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

(c) Do the two steps that follow at the same time to prepare to supply pneumatic air to the backflush equipment:

WARNING: WEAR GLOVES THAT WILL GIVE YOU PROTECTION FROM HOT SURFACES WHEN YOU CONNECT OR DISCONNECT PNEUMATIC FITTINGS. THE GROUND AIR CONNECTOR CAN BE VERY HOT IF THE PACKS HAVE BEEN OPERATED IMMEDIATELY BEFORE THIS PROCEDURE. YOU CAN BADLY BURN YOUR HANDS IF YOU TOUCH A HOT GROUND AIR CONNECTOR.

1) Install the deactivator, SPL-2462, in the ground pneumatic connector to hold the check valve open.

2) Connect the bleed air hose, SPL-13921, supplied with the backflush equipment to the ground pneumatic connector.

NOTE: The air hose connector holds the deactivator, SPL-2462, in position.

(d) Connect the other end of the air hose that you just connected to the ground pneumatic connector to the air inlet fitting on the backflush equipment air hose.

SUBTASK 21-51-03-941-002

(15) If you use a ground pneumatic air source to back flush the heat exchangers, do this step:

(a) Connect the ground pneumatic air supply line to the air inlet fitting on the backflush equipment.

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G. Heat Exchanger Cleaning

SUBTASK 21-51-03-020-002

CAUTION: DO NOT USE SOAP OR A DETERGENT SOLUTION TO CLEAN THE HEAT EXCHANGERS. USE COLD WATER ONLY. SOAP OR A DETERGENT SOLUTION CAN CAUSE DAMAGE TO THE AIR CYCLE MACHINE.

(1) Use the backflusher, SPL-1607 to clean the heat exchanger:

NOTE: You must do these steps for each of the heat exchangers.

(a) Connect the air hose to the cleaning head.

(b) Connect the water supply hose to the cleaning head.

(c) If you are using airplane pneumatic system air for the air source, do this step:

1) Do this task:Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803

(d) If you are using ground pneumatic air for the air source, do this step:

CAUTION: DO NOT SUPPLY MORE THAN 30 PSIG OF GROUND AIR PRESSURE TO THE HEAT EXCHANGERS. TOO MUCH PRESSURE CAN CAUSE DAMAGE TO THE HEAT EXCHANGERS OR THE RAM AIR EXIT DUCTS.

1) Start the ground air source and adjust the pressure regulator to a maximum of 30 psig.

(e) If installed, slowly open the air supply valve on the manifold of the cleaning tool.

(f) Slowly open the water supply valve on the water source (0-60 PSIG).

(g) If installed, slowly open the water supply valve on the manifold of the cleaning tool.

(h) Clean the heat exchanger for 5 minutes.

(i) Close the water supply valve on the water source (0-60 PSIG) and continue to supply air for an additional 2 minutes.

(j) If you are using airplane pneumatic system air, set the APU BLEED switch on the P5-10 panel to OFF.

(k) If you are using ground pneumatic air for the air source, set the valve on the ground pneumatic cart to the off position.

WARNING: PUT ON GLOVES FOR PROTECTION FROM THE HOT WATER IN THE HOSES. HOT WATER CAN BURN YOU.

(l) Disconnect the air hose from the cleaning head.

WARNING: PUT ON GLOVES FOR PROTECTION FROM THE HOT WATER IN THE HOSES. HOT WATER CAN BURN YOU.

(m) Disconnect the water supply hose from the cleaning head.

(n) Do the steps above, as necessary, for the other heat exchangers.

SUBTASK 21-51-03-020-003

(2) If not already done, close the valve at the water source.

SUBTASK 21-51-03-030-001

(3) Disconnect the water line from the water source (0-60 PSIG) and the water supply hose of the backflush equipment.

(4) If you used a ground air supply for the air source, do this step:

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

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(b) Disconnect the ground air supply line from the air hose inlet fitting.

SUBTASK 21-51-03-880-002

(5) If you used airplane pneumatic system air for the air source, do these steps:

(a) If not already done, set the APU BLEED switch on the P5-10 panel to the OFF position.

(b) If installed, open the air supply valve on the backflusher equipment.

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.

(c) Disconnect the bleed air hose, SPL-13921, from the ground pneumatic connector and from the air hose inlet fitting.

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.

(d) Remove the check valve deactivator from the ground pneumatic connector.

(e) Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-51-03-020-151

(6) To remove the heat exchanger cleaning heads, do these steps:

(a) If not already done, disconnect the air hose from the cleaning head.

(b) If not already done, disconnect the water supply hose from the cleaning head.

(c) Loosen the screws on the cleaning head.

(d) Carefully remove the cleaning head.

SUBTASK 21-51-03-420-003

(7) Install the plenum/diffuser access panels and the gaskets with the bolts and washers.

SUBTASK 21-51-03-410-014

(8) Put the bonding jumper in its position and install the bolts, washers, and nut.

SUBTASK 21-51-03-420-004

(9) Install the ram air inlet access panel with the bolts and washers.

SUBTASK 21-51-03-080-009

(10) Remove the plastic sheeting from the elbow duct at the aft end of the plenum/diffuser as follows:

(a) Remove the clamp that secures the plastic sheeting to the elbow duct.

(b) Remove the plastic sheeting.

(c) Install the flexible duct between the elbow duct at the aft end of the plenum/diffuser and the ram air exhaust duct (TASK 21-51-24-400-801).

(d) Install the clamps to secure the flexible duct:

1) Tighten the clamps to 15 (± 2) inch-pounds.

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SUBTASK 21-51-03-880-001

(11) Operate the air conditioning pack for five minutes. To operate the pack, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

NOTE: This will remove any remaining water in the ram air ducts and the air cycle machine bearings.

SUBTASK 21-51-03-880-003

(12) Stop the air conditioning pack. To stop the pack, do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

H. Put the Airplane Back to its Usual Condition

SUBTASK 21-51-03-860-002

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-03-100-001

(2) If you cleaned the left pack heat exchangers, do this step:

Close this access panel:

Number	Name/Location
192CL	ECS Access Door

Install this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-03-100-002

(3) If you cleaned the right pack heat exchangers, do this step:

Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Install this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-03-860-003

(4) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812

END OF TASK

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Heat Exchanger and Plenum/Diffuser Assembly Cleaning
Figure 701/21-51-03-990-801 (Sheet 1 of 3)

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1 IF INSTALLED

2 AIRPLANES WITH
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Heat Exchanger and Plenum/Diffuser Assembly Cleaning
Figure 701/21-51-03-990-801 (Sheet 2 of 3)

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Heat Exchanger and Plenum/Diffuser Assembly Cleaning
Figure 701/21-51-03-990-801 (Sheet 3 of 3)

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TASK 21-51-03-160-801

3. Heat Exchangers Off-Wing Cleaning - Alternate Procedure

A. References

Reference	Title
21-51-03-000-805-002	Heat Exchanger and Plenum/Diffuser Assembly Removal (P/B 401)
21-51-03-400-804-002	Heat Exchanger and Plenum/Diffuser Installation (P/B 401)

B. General

SUBTASK 21-51-03-100-005

(1) This procedure may be done as an alternative to this task: Heat Exchanger and Plenum/Diffuser Assembly Cleaning, TASK 21-51-03-000-801.

C. Preparation for Heat Exchangers Off-Wing Cleaning

SUBTASK 21-51-03-020-165

(1) Remove the heat exchangers and plenum/diffuser assembly. Do this task: Heat Exchanger and Plenum/Diffuser Assembly Removal, TASK 21-51-03-000-805-002.

NOTE: This procedure separates the ACM and the plenum/diffusers from the heat exchangers.

D. Heat Exchangers Cleaning

SUBTASK 21-51-03-160-002

(1) Clean the primary and secondary exchangers using the procedures in the vendor component maintenance manual.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-03-410-020

(1) Install the heat exchangers and plenum/assembly. Do this task: Heat Exchanger and Plenum/Diffuser Installation, TASK 21-51-03-400-804-002.

END OF TASK

TASK 21-51-03-160-802

4. Heat Exchangers Cleaning with Nitrogen Gas/Compressed Air - Supplemental Procedure

A. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A
G50321	Air - Clean, Dry	BAC5402 Table I

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

C. Access Panels

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door

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(Continued)

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. General

SUBTASK 21-51-03-100-006

(1) This procedure can be used as a supplement to Heat Exchanger and Plenum/Diffuser Assembly Cleaning, TASK 21-51-03-000-801 when decreased heat exchanger performance is found in service. This procedure can improve heat exchanger performance between scheduled maintenance intervals.

E. Tools/Equipment

SUBTASK 21-51-03-800-001

(1) Cleaning Wand Equipment - Heat Exchanger, B21005-3

NOTE: This equipment is used on the 767-200/-300 aircraft.

SUBTASK 21-51-03-800-002

(2) Nitrogen Source (1800 psi), commercially available

SUBTASK 21-51-03-800-003

(3) Compressed Air (125 psig), commercially available

F. Preparation for the Cleaning

SUBTASK 21-51-03-860-042

(1) Set the L PACK and R PACK switches on the P5-10 air conditioning panel to the OFF position and install DO-NOT-OPERATE tags on the switches.

SUBTASK 21-51-03-860-043

(2) Set the ISOLATION VALVE switch on the P5-10 air conditioning panel to the CLOSE position.

SUBTASK 21-51-03-020-158

(3) To get access to the left pack heat exchangers, do these steps:

Open these access panels:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door

SUBTASK 21-51-03-020-159

(4) To get access to the right pack heat exchangers, do these steps:

Open these access panels:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

G. Cleaning

SUBTASK 21-51-03-020-169

(1) Remove the bolts and washers that attach the ram air inlet duct access panel to the ram air inlet duct.

SUBTASK 21-51-03-020-170

(2) Remove the ram air inlet duct access panel.

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SUBTASK 21-51-03-020-171

(3) Remove the bolts and washers that attach the plenum/diffuser access panels to the plenum/diffuser assemblies for the primary and secondary heat exchangers.

SUBTASK 21-51-03-020-172

(4) Remove the bolt, washers, and nut that attach the bonding jumper to the forward access panel.

SUBTASK 21-51-03-020-173

(5) Remove the plenum/diffuser access panels and gaskets.

SUBTASK 21-51-03-480-009

(6) Attach cleaning wand B21005-3 to the regulator on a nitrogen bottle or compressed air bottle.

SUBTASK 21-51-03-820-006

(7) Adjust the regulator on a nitrogen, G00018 bottle or clean dry air, G50321 bottle to supply a maximum of 80 psi to the cleaning wand.

NOTE: If a clean dry air, G50321 bottle is used, the moisture contaminant or water concentration in the air of 0.00002 grams maximum is not required.

SUBTASK 21-51-03-160-003

(8) Insert the cleaning wand through the plenum/diffuser access openings and blow nitrogen gas or compressed air through the cooling fins of the primary and secondary heat exchangers:

(a) Make sure that you do not damage the cooling fins of the heat exchangers when you insert the cleaning wand through the plenum/diffuser access panel openings.

1) Do not touch the cooling fins of the heat exchangers with the tip of the cleaning wand when you blow the nitrogen gas or compressed air through the heat exchangers.

(b) Blow the nitrogen gas or compressed air through the heat exchangers until all debris is blown out of the cooling fins:

1) Make sure that the pressure gauge on the cleaning wand does not indicate more than 80 psi when you operate the wand.

2) Blow the nitrogen gas or compressed air through all the areas of the heat exchangers.

3) Make sure that dirt, sand, gravel or plant fiber is no longer being blown out on the opposite side (inlet side) of the heat exchanger.

4) Continue blowing the nitrogen or compressed air through the heat exchangers until debris is no longer detected being blown out.

(c) Make sure that you remove all loose dirt, sand, gravel, and plant fiber from the ram air inlet that was blown out of the heat exchangers.

SUBTASK 21-51-03-080-008

(9) Remove the cleaning wand from the inside of the plenum/diffuser access opening and decrease the nitrogen or compressed air pressure to zero psi.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-03-410-015

(1) Install the plenum/diffuser access panels and the gaskets with the bolts and washers.

SUBTASK 21-51-03-420-027

(2) Put the bonding jumper in its position and install the bolts, washers and nut.

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SUBTASK 21-51-03-410-016

(3) Install the ram air inlet access panels with the bolts and washers.

SUBTASK 21-51-03-410-017

(4) If you cleaned the left pack heat exchangers, do this step:

(a) Close these access panels:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door

SUBTASK 21-51-03-410-018

(5) If you cleaned the right pack heat exchangers, do this step

(a) Close these access panels:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

——— END OF TASK ———

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Heat Exchanger Cleaning
Figure 702/21-51-03-990-816

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AIR CYCLE MACHINE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the air cycle machine

(2) An installation of the air cycle machine

B. There is an air cycle machine (ACM) for each pack. The ACMs are located in the forward area of the air conditioning bays.

C. The ACM, together with the heat exchangers, converts high temperature, high pressure airflow to low temperature, low pressure airflow.

D. The high pressure water system mix muff must be removed before the removal of the air cycle machine.

TASK 21-51-04-000-802-002

2. Air Cycle Machine (ACM) Removal

(Figure 401)

A. References

Reference	Title
21-51-17-000-801	High Pressure Water Separator Mix Muff Removal (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-04-860-011-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-04-860-012-002

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-04-860-013-002

(3) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

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(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-51-04-010-003-002

(4) When the air cycle machine for the left pack will be removed, open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-04-010-004-002

(5) When the air cycle machine for the right pack will be removed, open these access panels in this sequence:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

E. Air Cycle Machine Removal

SUBTASK 21-51-04-010-005-002

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) To remove the compressor outlet duct, do these steps:

(a) Disconnect the flex hose from the duct.

(b) Remove the electrical connector [1] from the ram air control sensor.

(c) Remove the electrical connector [4] from the compressor discharge overheat switch.

(d) Remove the clamshell clamp [6] at the ACM.

NOTE: Lift the three latch pawls at the same time to release the clamp.

(e) Move the sleeve [7] to the outlet duct [11].

(f) Remove the coupling [2] at the heat exchanger.

(g) Remove the compressor outlet duct [11].

(h) Remove and discard the packing [3] at the heat exchanger.

(i) Remove and discard the packings [8].

SUBTASK 21-51-04-860-014-002

(2) Remove the mix muff. To remove the mix muff, do this task: High Pressure Water Separator Mix Muff Removal, TASK 21-51-17-000-801.

SUBTASK 21-51-04-210-003

(3) Do a check of the flexible duct [36] that is connected to the high pressure water separator condenser for any of the conditions listed below:

(a) Fraying

(b) discoloration

(c) rips

(d) splits

(e) tears

(f) rupture defects.

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(g) If any of the above conditions are found, remove the flexible duct [36] from the condenser as follows:

1) Loosen the clamp [37] that attaches the flexible duct to the water separator condenser.

2) Remove the flexible duct from the water separator condenser.

3) Discard the flexible duct.

SUBTASK 21-51-04-020-002-002

(4) To disconnect the hoses and sense line from the air cycle machine [5], do these steps:

(a) Remove the flex hose 1 [19] from the ACM.

(b) Disconnect the flex hose 2 [23] from the ACM.

(c) Disconnect the sense line [12] from the ACM.

(d) If the air cycle machine will be replaced, then remove the three unions [13] and discard the three o-rings [14].

NOTE: Keep the unions for installation on the new air cycle machine.

SUBTASK 21-51-04-020-003-002

(5) To remove the air cycle machine, do these steps:

(a) Remove the clamshell clamp [16].

NOTE: Lift the three latch pawls at the same time to release each clamp.

(b) Slide the sleeve [17] away from the ACM and onto the adjacent duct.

(c) Remove and discard the o-rings [18].

(d) Do these steps to disconnect the compressor inlet duct:

1) Remove the bolt [31] that holds the ground clip [32] to the air cycle machine [5].

2) Move the bonding jumper [33] away from the ACM.

NOTE: Do not remove the ground clip from the bonding jumper.

3) Remove the bolt [29] that hold the duct to the ACM.

4) Remove and discard the o-ring [30].

(e) Remove the bolt [21] and washer [22] that hold the air cycle machine [5] to the secondary heat exchanger.

WARNING: HAVE A SECOND PERSON HOLD THE ACM WHEN YOU REMOVE THE NUT. THE ACM CAN FALL WHEN THE NUT IS REMOVED. IF THE ACM FALLS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(f) Remove the nut [28] and the washer [27] from the bolt [24] that holds the air cycle machine [5] to the tie rod.

WARNING: HAVE A SECOND PERSON HOLD THE ACM WHEN YOU REMOVE THE BOLT. THE ACM CAN FALL WHEN THE BOLT IS REMOVED. IF THE ACM FALLS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(g) Remove the bolt [24] and the washer [25] from the tie rod.

(h) Carefully move forward then lower the air cycle machine [5] to remove it from the air conditioning bay.

(i) Remove the bushing [26] from the tie rod.

(j) Remove the gasket [20].

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(k) Examine the gasket [20] for damage or deterioration.

(l) Discard the gasket [20] if there is damage or deterioration.

SUBTASK 21-51-04-620-002-002

(6) Put covers on the duct openings to prevent the entry of unwanted materials.

SUBTASK 21-51-04-220-002

(7) Do these steps to inspect the air cycle machine impeller blades [34]:

(a) Make sure that the chord length (width) of each impeller blade tip is a minimum of 0.38 inch (9.65 mm).

(b) Do a visual check that no impeller blades are broken or cracked.

(c) Replace the air cycle machine with a new or serviceable unit if the inspections are unsatisfactory.

SUBTASK 21-51-04-700-002

(8) Do a check of the torque necessary to turn the rotating assembly of the ACM [5] as follows:

(a) Put the ACM in a horizontal position.

(b) Put a torque wrench on the nut [35].

NOTE: A torque wrench with a gage that shows the torque applied is recommended.

CAUTION: TURN THE ROTATING COMPONENTS OF THE ACM ONLY IN THE DIRECTION THAT THEY TURN WHEN IN OPERATION. IF YOU TURN THE ACM ROTATING COMPONENTS IN THE INCORRECT DIRECTION, YOU CAN CAUSE DAMAGE TO THE FOIL AIR BEARINGS.

(c) Make sure that you turn the nut [35] counterclockwise while you turn the rotating assembly.

(d) Record the torque necessary to turn the rotating assembly.

(e) If the torque was more than 20 in.-lb., replace the air cycle machine with a new or serviceable unit.

END OF TASK

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G60502 S0006563031_V6

Air Cycle Machine Installation
Figure 401/21-51-04-990-802-002 (Sheet 1 of 6)

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G60534 S0006563032_V3

Air Cycle Machine Installation
Figure 401/21-51-04-990-802-002 (Sheet 2 of 6)

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G60539 S0006563033_V3

Air Cycle Machine Installation
Figure 401/21-51-04-990-802-002 (Sheet 3 of 6)

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CLAMSHELL CLAMP INSTALLATION (EXAMPLE)

E

COMPRESSOR INLET DUCT

F

G60563 S0006563034_V3

Air Cycle Machine Installation
Figure 401/21-51-04-990-802-002 (Sheet 4 of 6)

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AIR CYCLE MACHINE (ACM)

G

IMPELLER BLADE

H

2085734 S0000439621_V4

Air Cycle Machine Installation
Figure 401/21-51-04-990-802-002 (Sheet 5 of 6)

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FLEXIBLE DUCT

I

2303552 S0000522836_V3

Air Cycle Machine Installation
Figure 401/21-51-04-990-802-002 (Sheet 6 of 6)

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TASK 21-51-04-400-802-002

3. Air Cycle Machine Installation

(Figure 401)

A. References

Reference	Title
21-51-03-000-805-002	Heat Exchanger and Plenum/Diffuser Assembly Removal (P/B 401)
21-51-12-000-801	Condenser Removal (P/B 401)
21-51-13-000-801	Reheater Removal (P/B 401)
21-51-14-000-801	Water Extractor Removal (P/B 401)
21-51-15-000-801	Water Extractor Duct Removal (P/B 401)
21-51-16-000-801	Water Spray Nozzle Removal (P/B 401)
21-51-17-400-801	High Pressure Water Separator Mix Muff Installation (P/B 401)
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
C00852	Compound - Antiseize, Molybdenum Disulfide-Petrolatum	MIL-PRF-83483
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008
D00504	Grease - Petrolatum	VV-P-236
G01061	Water - Distilled	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Packing	21-51-03-05A-040	AKS ALL
		21-51-03-05A-200	AKS ALL
5	Air cycle machine	21-51-04-01-025	AKS ALL
		21-51-04-01-060	AKS ALL
		21-51-04-01-510	AKS ALL
8	Packing	21-51-03-05A-210	AKS ALL
14	O-ring	21-51-53-04A-208	AKS 001-021
		21-51-53-05-188	AKS 001-021
18	O-ring	21-51-41-07-037	AKS ALL
20	Gasket	21-51-03-05A-075	AKS ALL
		21-51-03-05A-230	AKS ALL
30	O-ring	21-51-03-05A-025	AKS ALL
		21-51-03-05A-185	AKS ALL

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D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. General

SUBTASK 21-51-04-630-009-002

(1) Do the steps in the Cooling Pack Water Removal/Ice Protection System Inspection. If the water removal paths are blocked, ice can form in the ACM. The ice can cause failure of the ACM.

G. Cooling Pack Water Removal/Ice Protection System Inspection

SUBTASK 21-51-04-200-001-002

(1) If the cause of the ACM failure is unknown, then do all of the steps that follow.

SUBTASK 21-51-04-200-002-002

(2) If the cause of the ACM failure is known, then do applicable steps that follow.

SUBTASK 21-51-04-630-010-002

(3) Do the steps that follow if the ACM was replaced due to bearing failure or damage to the compressor:

(a) Disconnect the water drain lines from the bottom of the water extractors. (TASK 21-51-14-000-801)

1) Use compressed air to remove unwanted material from the water drain lines.

2) Reconnect the water drain lines to the bottom of the water extractors. (TASK 21-51-14-000-801)

(b) Disconnect the water line and the air line which are attached to the water spray nozzle. (TASK 21-51-16-000-801)

1) Use compressed air to remove unwanted material from the water and air lines.

2) Reconnect the water line and the air line which are attached to the water spray nozzle. (TASK 21-51-16-000-801)

(c) Remove the flex hose 1 [19] and flex hose 2 [23].

1) Use compressed air to remove unwanted material from the flex hoses.

2) Reconnect the flex hose 2 [23].

NOTE: The flex hose 1 will be installed after the ACM is installed.

SUBTASK 21-51-04-630-011-002

(4) Do the steps that follow if the ACM was replaced due to damage to the compressor:

(a) Inspect the components that follow for damage or unwanted materials:

1) Heat Exchangers (TASK 21-51-03-000-805-002)

2) Water Extractor Duct (TASK 21-51-15-000-801)

3) Water Extractors (TASK 21-51-14-000-801)

4) Reheater (TASK 21-51-13-000-801)

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5) Condenser (TASK 21-51-12-000-801)

6) Water Spray Nozzle (TASK 21-51-16-000-801)

(b) Replace the components that have damage or unwanted materials.

SUBTASK 21-51-04-630-012-002

(5) Do the steps that follow if the ACM was replaced due to damage to the fan impeller:

(a) Do the steps that follow to remove the plenum/diffuser access panels:

1) Remove the bolts and washers that attach the plenum/diffuser access panels to the plenum diffuser assemblies for the primary and secondary heat exchangers.

2) Remove the bolt, washers, and nut that attach the bonding jumper to the forward access panel.

3) Remove the plenum/diffuser access panels and the gaskets.

(b) Inspect the plenum for unwanted materials.

(c) Do the steps that follow to install the plenum/diffuser access panels:

1) Install the plenum/diffuser access panels and the gaskets with the bolts and washers.

2) Put the bonding jumper in its position and install the bolts, washers, and nut.

H. Air Cycle Machine Installation

SUBTASK 21-51-04-630-002-002

(1) Remove the duct covers.

SUBTASK 21-51-04-210-002-002

(2) Make sure there are no unwanted materials in the ducts.

SUBTASK 21-51-04-420-002-002

(3) To install the air cycle machine, do these steps:

(a) Install the gasket [20].

NOTE: The holes in the gasket must be aligned with the bolt holes in the ACM and the secondary heat exchanger.

(b) Do these steps that follow to install the o-ring [30] for the compressor inlet duct:

1) If a lubricant is required to aide in working the o-ring [30] into its' installed position, use distilled water, G01061, to wet the surface of the o-ring [30].

2) If the use of the distilled water, G01061, is not adequate to install the o-ring [30] or if a lubricant is needed to hold the o-ring [30] in place for the installation, apply a light coat of grease, D00504 to the o-ring [30].

(c) Install the bushing [26] in the tie rod.

(d) Put the air cycle machine [5] into its position.

(e) Put the washer [25] on the shank of the bolt [24].

NOTE: The countersunk side of the washer must be adjacent to the bolt head.

WARNING: HAVE A SECOND PERSON HOLD THE ACM WHEN YOU INSTALL THE BOLT. THE ACM CAN FALL WHEN THE BOLT IS LOOSE. IF THE ACM FALLS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(f) Push the bolt [24] with the washer [25] through the tie rod and bushing [26].

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WARNING: HAVE A SECOND PERSON HOLD THE ACM WHEN YOU INSTALL THE NUT. THE ACM CAN FALL WHEN THE NUT IS LOOSE. IF THE ACM FALLS, INJURY TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(g) Install the washer [27] and the nut [28] on the bolt [24].

NOTE: Do not tighten the nut [28] fully.

(h) Apply a light coat of compound, C00852 to the threads of the bolt [21].

(i) Install the bolt [21] and washer [22] that hold the air cycle machine [5] to the secondary heat exchanger.

NOTE: Do not tighten the bolts fully.

(j) To connect compressor inlet duct to the ACM, do these steps:

1) Apply a light coat of compound, C00852 to the threads of the bolts [29] and the bolt [31].

2) Put the ground clip [32] onto the bolt [31].

NOTE: Do not remove the ground clip from the bonding jumper.

3) Install the ground clip [32] and bolt [31] on the ACM compressor inlet flange.

NOTE: Do not tighten the bolt fully.

4) Install the bolts [29] on the ACM compressor inlet flange.

NOTE: Do not tighten the bolts fully.

(k) Apply a light coat of grease, D00504 on the two o-rings [18].

(l) Install the two o-rings [18] for the turbine inlet duct.

(m) Move the sleeve [17] on the ACM and duct connections.

(n) Install the clamshell clamp [16] over the duct connections.

(o) Tighten the bolt [21] 40 to 45 pound-inches (4.5 to 5.1 newton-meters).

(p) Tighten the bolt [29] and the bolt [31] 22 to 26 pound-inches (2.5 to 2.9 newton-meters).

(q) Tighten the nut [28] 50 to 65 pound-inches (5.6 to 7.3 newton-meters).

SUBTASK 21-51-04-420-003-002

(4) To connect the sense line and the hoses to the ACM, do these steps:

(a) If you are installing a new air cycle machine, do these steps:

1) Put a new o-rings [14] on each of the three unions [13].

2) Apply a light coat of Never-Seez NSBT compound, D00006 to the threads of the three unions [13].

3) Install the union [13] onto the air cycle machine [5], at three locations.

(b) Apply a light coat of Never-Seez NSBT compound, D00006 to the threads of the sense line [6].

(c) Connect the sense line [12] to the air cycle machine [5].

(d) Apply a light coat of Never-Seez NSBT compound, D00006 to the threads of the flex hose 1 [19].

(e) Install the flex hose 1 [19] on the ACM.

(f) Apply a light coat of Never-Seez NSBT compound, D00006 to the threads of the flex hose 2 [23].

(g) Connect the flex hose 2 [23] to the ACM.

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SUBTASK 21-51-04-420-004

(5) If the flexible duct [36] was discarded after inspection, install a new flexible duct [36] as follows:

(a) Loosely position the two clamps [37] onto the flexible duct [36].

(b) Install the new flexible duct [36] onto the water separator condenser.

(c) Position the forward clamp [37] to retain the flexible duct onto the water separator condenser.

(d) Tighten the forward clamp [37] to 13 to 17 in-lbs (1.5 to 1.9 Nm.).

NOTE: The aft clamp is connected in the installation of the HPWS Mix Muff in the next step.

SUBTASK 21-51-04-860-015-002

(6) Do this task: High Pressure Water Separator Mix Muff Installation, TASK 21-51-17-400-801.

SUBTASK 21-51-04-410-003-002

(7) To install the compressor outlet duct, do these steps:

(a) Apply a light coat of grease, D00504 to the packing [3] and the packings [8].

(b) Install the packings [8] on the duct ends.

(c) Install the packing [3] at the heat exchanger.

(d) Put the compressor outlet duct [11] into its position.

(e) Install the coupling [2] at the heat exchanger.

NOTE: Do not tighten the coupling fully.

(f) Move the sleeve [7] over the outlet duct [11] connection.

(g) Install the clamshell clamp [6] over the outlet duct [11] connection.

(h) Tighten the nut on the coupling [2] to 45 to 50 pound-inches (5.1 to 5.6 newton-meters).

(i) Apply a light coat of Never-Seez NSBT compound, D00006 to the threads of the flex hose.

(j) Connect the flex hose to the duct.

(k) Install the electrical connector [1] for the ram air control sensor.

(l) Install the electrical connector [4] for the compressor discharge overheat switch.

I. ACM Installation Test

SUBTASK 21-51-04-860-016-002

(1) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-51-04-860-017-002

(2) Put the applicable pack L PACK or R PACK switch on the P5-10 air conditioning panel to the AUTO position.

SUBTASK 21-51-04-790-002-002

(3) Do a soap bubble test of all the duct joints at the mix muff and at the ACM.

NOTE: No air leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches to the OFF position.

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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.

2) Loosen the clamps.

3) Make sure the ducts are aligned at the joints.

4) Tighten the clamps.

5) Put the L PACK and R PACK switches to the AUTO position.

6) Make sure the leak has been repaired.

SUBTASK 21-51-04-740-001

(4) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-04-860-018-002

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-04-410-004-002

(2) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-04-410-005-002

(3) Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-51-04-860-019-002

(4) Put these switches on the P5 forward overhead panel to the OFF position:

(a) L PACK

(b) R PACK

SUBTASK 21-51-04-860-020-002

(5) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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CONDITIONED AIR CHECK VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the conditioned air check valve

(2) An installation of the conditioned air check valve.

(3) There is a conditioned air check valve for each pack. The valves are found in the forward end of the air conditioning bays.

TASK 21-51-07-000-802-002

2. Conditioned Air Check Valve Removal

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-07-860-010-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-07-860-011-002

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-07-860-012-002

(3) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE identifiers.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE identifiers.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE identifier.

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SUBTASK 21-51-07-010-003-002

(4) For the left conditioned air check valve open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-07-010-004-002

(5) For the right conditioned air check valve, open these access panels in the specified sequence:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

E. Conditioned Air Check Valve Removal

SUBTASK 21-51-07-020-002-002

(1) To disconnect the sense line from the valve, do these steps:

(a) Loosen the b-nut to disconnect the sense line.

(b) Remove the union [5].

(c) Remove and discard the o-ring [6].

SUBTASK 21-51-07-020-003-002

(2) Remove the conditioned air check valve [1] as follows:

(a) Make a record of the position of the check valve to make sure it is installed in the same position.

(b) Remove the clamp assembly [2] from the conditioned air check valve [1] as follows:

1) Remove the washers [11] and nuts [12].

2) Remove the brackets [13].

3) Loosen the nuts [4] on the clamps of the clamp assembly [2] so that the clamps are free to slide.

4) Slide the flexible duct [3] aft until it is free of the conditioned air check valve [1].

(c) Remove the bolt [10], the washers [8], and the nut [9], at 14 locations, that hold the check valve to the bulkhead penetration duct assembly [15].

(d) Remove the conditioned air check valve [1].

(e) Leave the flexible duct [3] on the condensor outlet duct.

SUBTASK 21-51-07-620-002-002

(3) Put covers on the duct openings to prevent the entry of unwanted materials.

END OF TASK

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LEFT ECS BAY
(RIGHT ECS BAY IS EQUIVALENT)

A

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Conditioned Air Check Valve Installation
Figure 401/21-51-07-990-802-002 (Sheet 1 of 2)

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CONDITIONED AIR CHECK VALVE

B

G60835 S0006563075_V4

Conditioned Air Check Valve Installation
Figure 401/21-51-07-990-802-002 (Sheet 2 of 2)

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TASK 21-51-07-400-802-002

3. Conditioned Air Check Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-51-07-04A-050	AKS ALL
6	O-ring	21-51-53-04A-208	AKS 001-021
		21-51-53-05-199	AKS 001-021
7	Gasket	21-51-07-04A-040	AKS ALL

D. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Conditioned Air Check Valve Installation

SUBTASK 21-51-07-630-002-002

(1) Remove the duct covers.

SUBTASK 21-51-07-420-002-002

(2) Install the conditioned air check valve [1] as follows:

(a) Examine the gasket [7] on the flange of the bulkhead penetration duct assembly [15].

(b) Replace the gasket [7] if it is damaged or worn.

(c) Put the conditioned air check valve [1] in its position.

1) Make sure the check valve is installed in the same orientation as when it was removed.

(d) Install the bolts [10], the washers [8], and the nuts [9] that attach the check valve [1] to the bulkhead penetration duct assembly [15].

(e) Slide the forward end of the flexible duct [3] forward onto the aft end of the conditioned air check valve [1].

(f) Position the individual clamps [14] so that these conditions are met:

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1) Make sure the clamps are not installed on the duct bead.
2) Keep a 0.125 in. (3.175 mm) minimum distance between the clamps and the edge of the flexible duct.
3) Make sure that the two forward clamps are located forward of the bead on the aft end of the check valve.
4) Make sure the aft clamp is located aft of the bead on the forward end of the condensor outlet duct [16].
5) Make sure that the forward clamp is located inside (aft) of the bead on the flexible duct [3].
6) Make sure that the aft clamp is located inside (forward) of the bead on the flexible duct [3].
7) Install the brackets [13] that connect the clamps [14] together.
   a) If necessary, reposition the clamps axially so that the brackets [13] can be installed.
   b) Make sure that the clamps are positioned so that the position requirements are still met.
   c) Install the washers [11] and nuts [12] that retain the brackets [13] to the clamps [14].
   d) Tighten the nuts [12] to a torque of 63 - 67 inch-pounds.

(g) Install the nuts [4] on the clamps [14].

(h) Determine the run-on torque value of the nuts on the T-bolts for each nut and T-bolt combination as follows:
1) Rotate the nut [4] onto the T-bolt until it is approximately one turn from seating and at least 3 T-bolt threads are protruding from the top of the nut.
2) Measure the torque value required to turn the nut [4] the last revolution before it seats.
3) Make a record of this torque value.

NOTE: The torque value should be between 2 - 18 inch-pounds.

(i) Tighten the nuts [4] to a torque of 8 - 12 inch-pounds plus the run-on torque value determined for each nut.
1) For example, if the measured run-on torque value for a nut was 5 inch-pounds, then add 5 to 8 - 12 to determine a final torque value of 13 - 17 inch-pounds.

SUBTASK 21-51-07-020-004-002

(3) Do these steps to install the sense line:
(a) Install a new o-ring [6] on the union [5].
(b) Apply a layer of Never-Seez NSBT compound, D00006 to the threads of the union [5].
(c) Install the union [5] in the check valve [1].
(d) Connect the sense line to the union [5].

G. Conditioned Air Check Valve Installation Test

SUBTASK 21-51-07-860-013-002

(1) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

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SUBTASK 21-51-07-860-014-002

(2) Remove the DO-NOT-OPERATE TAGS from these switches on the P5-10 air conditioning panel:

(a) L PACK and R PACK

(b) BLEED 1 and BLEED 2

(c) BLEED APU

SUBTASK 21-51-07-860-015-002

(3) Put the applicable L PACK or R PACK switch on the P5-10 air conditioning panel to the AUTO position:

SUBTASK 21-51-07-790-002-002

(4) Do a soap bubble test of the joints at the ends of the conditioned air check valve.

NOTE: No leakage is permitted.

(a) If there is leakage, tighten the clamps an additional 4 - 6 inch-pounds.

NOTE: The maximum torque allowed is 18 inch-pounds.

(b) If there is still leakage, do these steps:

1) Put the L PACK and R PACK switches on the P5-10 air conditioning panel in the OFF position.

2) Loosen the clamps [1].

3) Make sure the valve is aligned with the ducts.

4) Tighten the clamps.

5) Put the L PACK and R PACK switches on the P5-10 air conditioning panel in the AUTO position.

6) Make sure the leak has been repaired.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-07-010-005-002

(1) When the left conditioned air check valve was replaced close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-07-010-006-002

(2) When the right conditioned air check valve was replaced close the access panels in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-07-860-016-002

(3) Put these switches on the P5-10 air conditioning panel to the OFF position:

(a) L PACK

(b) R PACK

SUBTASK 21-51-07-860-017-002

(4) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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SUBTASK 21-51-07-860-018-002

(5) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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HIGH PRESSURE WATER SEPARATOR (HPWS) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the high pressure water separator (HPWS).

(2) An installation of the high pressure water separator (HPWS).

(3) The high-pressure water separator (HPWS) contains: a condenser, a reheater, two water extractors, and a frame assembly.

TASK 21-51-08-000-802

2. High Pressure Water Separator Removal

Figure 401

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	HPWS	21-51-17-01-170	AKS ALL
17	O-ring	21-51-17-01-065	AKS ALL

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for the Removal

SUBTASK 21-51-08-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-08-860-002

(2) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-51-08-010-001

(3) To get access to the HPWS for the left cooling pack, open this access panel

Number	Name/Location
192CL	ECS Access Door

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SUBTASK 21-51-08-010-002

(4) To get access to the HPWS for the right cooling pack, open these access panels in the sequence that follows:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

F. High Pressure Water Separator Removal

SUBTASK 21-51-08-010-003

(1) When removing the HPWS [1] for the left cooling pack do this step:

(a) Remove the screw [3], the washer [4], and the nut [5] that hold the two clamps together.

SUBTASK 21-51-08-010-004

(2) Remove the sense line [2].

SUBTASK 21-51-08-010-005

(3) Remove the water extractor duct drain line [6].

SUBTASK 21-51-08-010-006

(4) Do these steps to disconnect the lines for the water spray nozzle from the manifold:

(a) Loosen the b-nut to disconnect the air line from the manifold.

(b) Loosen the b-nut to disconnect the water line from the manifold.

SUBTASK 21-51-08-010-007

(5) To remove the coupling assembly from the condenser, do these steps:

(a) Remove the coupling [7].

(b) Move the sleeve [8] and ring [9] onto the duct.

(c) Remove the retainer [10].

SUBTASK 21-51-08-010-008

(6) Remove the two clamps [11] from the flexible duct [12].

SUBTASK 21-51-08-010-009

(7) Remove the flexible duct [12].

SUBTASK 21-51-08-010-010

(8) Disconnect the condenser outlet sense line from the condenser.

SUBTASK 21-51-08-010-011

(9) Disconnect the de-icing hose from the condenser.

SUBTASK 21-51-08-020-001

(10) For the left HPWS [1], disconnect these electrical connectors:

(a) Disconnect the electrical connector D3866 from the pack temperature sensor.

(b) Disconnect the electrical connector D3930 from the pack temperature bulb.

SUBTASK 21-51-08-020-002

(11) For the right HPWS [1], disconnect these electrical connectors:

(a) Disconnect the electrical connector D3876 from the pack temperature sensor.

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(b) Disconnect the electrical connector D3982 from the pack temperature bulb.

SUBTASK 21-51-08-020-003

(12) Do these steps to disconnect the two ducts from the reheater:

(a) Remove the bolts [13], the washers [14], the washers [15], and the nuts [16].

(b) Remove and discard the o-rings [17] from each of the two ducts.

SUBTASK 21-51-08-020-004

WARNING: BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.

(13) To remove the HPWS [1] from the airplane, do these steps:

(a) For the two forward attach points do the steps that follow:

1) Remove the nut [21], the washer [20], the countersunk washer [19], and the bolt [18].

2) Remove the bushing [22] from the bracket.

(b) For the two aft attach points do the steps that follow:

1) Remove the nut [21], the washer [20], the countersunk washer [19], and the bolt [23].

2) Remove the two bushings [24] from the bracket.

(c) Carefully lower the HPWS [1] from the ECS bay.

SUBTASK 21-51-08-480-001

(14) Put covers on the ducts and lines to keep out unwanted materials.

END OF TASK

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High Pressure Water Separator Installation
Figure 401/21-51-08-990-801 (Sheet 1 of 3)

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LEFT ECS BAY
(RIGHT ECS BAY IS EQUIVALENT)

B

REHEATER DUCTS

C

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High Pressure Water Separator Installation
Figure 401/21-51-08-990-801 (Sheet 2 of 3)

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COUPLING ASSEMBLY (EXAMPLE)

D

FORWARD ATTACH POINT

E

AFT ATTACH POINT

F

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High Pressure Water Separator Installation
Figure 401/21-51-08-990-801 (Sheet 3 of 3)

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TASK 21-51-08-400-802

3. High Pressure Water Separator Installation

Figure 401

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	HPWS	21-51-17-01-170	AKS ALL
17	O-ring	21-51-17-01-065	AKS ALL

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. High Pressure Water Separator Installation

SUBTASK 21-51-08-480-002

(1) Remove the duct and line covers.

SUBTASK 21-51-08-420-001

WARNING: BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.

(2) To install the HPWS [1] assembly on the airplane, do these steps:

(a) Carefully position the HPWS [1] in the ECS bay.

(b) For the two forward attach points do the steps that follow:

1) Install the bushing [22] in the bracket.

2) Install the nut [21], the washer [20], the countersunk washer [19], and the bolt [18].

a) Position the countersunk side of the washer [19] under the bolt head.

(c) For the two aft attach points do the steps that follow:

1) Install the two bushings [24] in the bracket.

2) Install the nut [21], the washer [20], the countersunk washer [19], and the bolt [23].

a) Position the countersunk side of the washer [19] under the bolt head.

(d) For the right HPWS installation, make sure there is a minimum of 0.10 inch clearance between the supply duct to the trim air PRSOV and the water collection manifold.

1) If there is not a minimum of 0.10 inch clearance, do one of these steps to provide the minimum clearance:

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a) Reposition the supply duct to the trim air PRSOV.

b) Remove material from the water collection manifold.

SUBTASK 21-51-08-420-002

(3) Do these steps to connect the two ducts from the reheater:

(a) Apply a thin coat of grease to the new o-ring [17].

1) Use Dow Corning DC44 medium vacuum grease or an equivalent.

(b) Install a new o-ring [17] for each of the two ducts.

(c) Install the bolts [13], the washers [14], the washers [15], and the nuts [16].

SUBTASK 21-51-08-420-003

(4) Install the flexible duct [12] on the mix muff and the condenser.

SUBTASK 21-51-08-420-004

(5) Install the two clamps [11] on the flexible duct [12].

SUBTASK 21-51-08-420-005

(6) Install the de-icing hose on the condenser.

(a) Install the de-icing hose with a new fitting and o-ring.

(b) Tighten the b-nut to 280 ±14 in-lb (32 ±2 N·m).

SUBTASK 21-51-08-420-006

(7) Install the condenser outlet sense line on the condenser.

SUBTASK 21-51-08-420-007

(8) For the HPWS on the left cooling pack, install these electrical connectors:

(a) Install the electrical connector D3866 on the pack temperature sensor.

(b) Install the electrical connector D3930 on the pack temperature bulb.

SUBTASK 21-51-08-420-008

(9) For the HPWS on the right cooling pack, install these electrical connectors:

(a) Install the electrical connector D3876 on the pack temperature sensor.

(b) Install the electrical connector D3982 on the pack temperature bulb.

SUBTASK 21-51-08-420-009

(10) To install the coupling assembly on the condenser, do these steps:

(a) Put the retainer [10] over the duct bead and the bead on the condenser.

(b) Move the sleeve [8] and ring [9] over the retainer [10].

(c) Install the coupling [7].

SUBTASK 21-51-08-420-010

(11) Do these steps to connect the lines for the water spray nozzle to the manifold:

(a) Tighten the b-nut to connect the air line to the manifold.

(b) Tighten the b-nut to connect the water line to the lower port on the manifold.

SUBTASK 21-51-08-210-001

(12) Make sure that there is not a plastic plug in the water overflow port in the water collection manifold:

NOTE: This port must be open in the case the water spray nozzle becomes clogged.

(a) Remove the plastic plug if it is installed.

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SUBTASK 21-51-08-420-011

(13) Install the sense line [2].

SUBTASK 21-51-08-420-012

(14) Install the water extractor duct drain line [6].

SUBTASK 21-51-08-420-013

(15) For the HPWS on the left cooling pack do this step:

(a) Install the screw [3], the washer [4], and the nut [5] that hold the two clamps together.

F. Post Installation Test

SUBTASK 21-51-08-860-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-08-860-004

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-51-08-860-005

(3) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the applicable L or R PACK switch to the AUTO position.

(b) Set the BLEED 1 and 2 switches to the ON position.

(c) Set the BLEED APU switch to the ON position.

SUBTASK 21-51-08-790-001

(4) Do a soap bubble test of all the applicable duct joints.

NOTE: No leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches in the OFF position.

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. HOT DUCTS CAN CAUSE INJURIES TO PERSONNEL.

2) Loosen the clamps.

3) Make sure the ducts are aligned at the joints.

4) Tighten the clamps.

5) Put the L PACK and R PACK switches in the AUTO position.

6) Make sure the leak has been repaired.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-08-860-006

(1) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position.

SUBTASK 21-51-08-860-007

(2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-08-860-008

(3) If it is not necessary, remove electrical power. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

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SUBTASK 21-51-08-410-001

(4) If the HPWS for the right cooling pack was removed, close these access panels in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-08-410-002

(5) If the HPWS for the left cooling pack was removed, close this access panel:

Number	Name/Location
192CL	ECS Access Door

——— END OF TASK ———

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TEMPERATURE CONTROL VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the temperature control valve

(2) An installation of temperature control valve.

B. There are two temperature control valves, one for each cooling pack. The valves are located in the aft area of each air conditioning bay, inboard of the heat exchanger.

TASK 21-51-10-000-801

2. Temperature Control Valve Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-10-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-10-860-002

(2) Put the L PACK and R PACK switches on the P5-10 panel in the OFF position and attach DO-NOT-OPERATE tags.

SUBTASK 21-51-10-860-003

(3) For the left temperature control valve, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

(b) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-10-010-001

(4) For the right temperature control valve, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(b) Open these access panels in the sequence that follows:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

E. Temperature Control Valve Removal

SUBTASK 21-51-10-020-001

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 connector [7] from the valve.

SUBTASK 21-51-10-020-002

(2) Remove the screw [3], the washer [4] and the nut [5] that hold the bonding jumper [2] to the temperature control valve [1].

SUBTASK 21-51-10-020-003

(3) Hold the temperature control valve [1] while you remove the two clamps [6].

SUBTASK 21-51-10-160-001

(4) Carefully remove the temperature control valve [1] from its position between the ducts.

——— END OF TASK ———

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Temperature Control Valve Installation
Figure 401/21-51-10-990-801 (Sheet 1 of 2)

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TEMPERATURE CONTROL VALVE

B

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Temperature Control Valve Installation
Figure 401/21-51-10-990-801 (Sheet 2 of 2)

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TASK 21-51-10-400-801

3. Temperature Control Valve Installation

(Figure 401)

A. References

Reference	Title
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Temperature Control Valve Installation

SUBTASK 21-51-10-160-002

(1) Carefully put the temperature control valve [1] into its position between the air ducts.

SUBTASK 21-51-10-020-004

(2) Install the clamps [6] that hold the valve to the ducts.

NOTE: Do not fully tighten the clamps.

SUBTASK 21-51-10-420-001

(3) Do the steps to connect the bonding jumper to the valve:

(a) Put the bonding jumper [2] in its position on the temperature control valve [1].

(b) Install the screw [3], the washer [4] and the nut [5] that hold the bonding jumper [2] to the valve.

NOTE: Make sure the bonding jumper [2], the screw [3], the washer [4], and the nut [5] are clean.

SUBTASK 21-51-10-420-002

(4) Install the electrical connector [7] on the valve [1].

SUBTASK 21-51-10-420-003

(5) Tighten the clamps [6] to 55 to 60 pound-inches (6.2 to 6.8 newton-meters).

SUBTASK 21-51-10-860-004

(6) If the left temperature control valve was replaced, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-51-10-860-005

(7) If the right temperature control valve was replaced, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

E. Temperature Control Valve Installation Test

SUBTASK 21-51-10-860-006

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-10-740-001

(2) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

SUBTASK 21-51-10-860-007

(3) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-51-10-860-008

(4) Do these steps on the P5-10 air conditioning panel:

(a) Set the L and R PACK switches to the AUTO position and remove the DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the ON position.

(c) Set the BLEED APU switch to the ON position.

SUBTASK 21-51-10-860-009

(5) Do these steps on the P5-17 Cabin Temperature Panel:

(a) Set the TRIM AIR switch to the ON position.

(b) Set the cabin temperature selectors (CONT CAB, FWD CAB, and AFT CAB) to the AUTO position.

SUBTASK 21-51-10-790-001

(6) Do a soap bubble test of the duct joints at the temperature control valve.

NOTE: No air leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches to the OFF position.

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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.

2) Loosen the clamps.
3) Make sure the ducts are aligned at the joints.
4) Tighten the clamps.
5) Put the L PACK and R PACK switches to the AUTO position.
6) Make sure the leak has been repaired.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-10-860-010

(1) For the left temperature control valve, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-10-010-002

(2) For the right temperature control valve, close these access panels in the sequence that follows:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-10-860-011

(3) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-10-860-012

(4) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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STANDBY TEMPERATURE CONTROL VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the standby temperature control valve

(2) An installation of standby temperature control valve.

B. There are two standby temperature control valves, one for each cooling pack. The valves are found in the aft, outboard area of each air conditioning bay.

TASK 21-51-11-000-801

2. Standby Temperature Control Valve Removal

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door
192JL	Air Conditioning Panel - Aft
192JR	Air Conditioning Panel - Aft

D. Prepare for the Removal

SUBTASK 21-51-11-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-11-860-002

(2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-11-860-003

(3) Put the L PACK and R PACK switches on the P5-10 panel in the OFF position and attach DO-NOT-OPERATE tags.

SUBTASK 21-51-11-860-004

(4) For the left standby temperature control valve, open these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-51-11-010-001

(5) For the right standby temperature control valve, open these access panels in this sequence:

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Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

Open this access panel:

Number	Name/Location
192JR	Air Conditioning Panel - Aft

E. Standby Temperature Control Valve Removal

SUBTASK 21-51-11-020-001

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 connector [3] from the valve [1].

SUBTASK 21-51-11-020-002

(2) Do these steps to disconnect the four sense lines from the valve:

(a) Make a record of the sense line connections to make sure they are installed in the same locations.

(b) Remove the screw [15] and the washer [16] that hold the sense line clamps to the structure.

(c) Remove the screw [5], the washer [6], and the nut [7] that hold the sense line clamps together.

(d) Remove the sense line for the conditioned air check valve [11].

(e) Remove the sense line for the condensor outlet pressure [9].

(f) Remove the sense line for the turbine outlet pressure [4].

(g) Remove the sense line for the condensor inlet pressure [10].

SUBTASK 21-51-11-020-003

(3) Remove the screw [14], the washer [13] and the nut [12] that hold the bonding jumper [2] to the standby temperature control valve [1].

SUBTASK 21-51-11-020-004

(4) Hold the standby temperature control valve [1] while you remove the two clamps [8].

SUBTASK 21-51-11-160-001

(5) Carefully remove the standby temperature control valve [1] from its position between the ducts.

SUBTASK 21-51-11-020-005

(6) Remove the reducer [19], from the conditioned air check valve sense line [11] location.

SUBTASK 21-51-11-020-012

(7) Remove the unions [17], at the remaining three sense line locations.

SUBTASK 21-51-11-020-006

(8) Remove and discard the packing [20], from the conditioned air check valve sense line [11] location.

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SUBTASK 21-51-11-020-011

(9) Remove and discard the packings [18], at the remaining three sense line locations.

——— END OF TASK ———

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Standby Temperature Control Valve Installation
Figure 401/21-51-11-990-801 (Sheet 1 of 4)

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STANDBY TEMPERATURE CONTROL VALVE

B

BONDING JUMPER

C

G44962 S0006563094_V5

Standby Temperature Control Valve Installation
Figure 401/21-51-11-990-801 (Sheet 2 of 4)

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G45086 S0006563095_V5

Standby Temperature Control Valve Installation
Figure 401/21-51-11-990-801 (Sheet 3 of 4)

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CONDITIONED AIR CHECK VALVE SENSE LINE

F

2061770 S0000424412_V3

Standby Temperature Control Valve Installation
Figure 401/21-51-11-990-801 (Sheet 4 of 4)

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TASK 21-51-11-400-801

3. **Standby Temperature Control Valve Installation**
(Figure 401)

A. **References**

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. **Consumable Materials**

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008

C. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-51-11-04A-140	AKS ALL
		21-51-11-05A-160	AKS ALL
18	Packing	21-51-11-04A-135	AKS ALL
		21-51-11-05A-150	AKS ALL
20	Packing	21-51-11-04A-130	AKS ALL
		21-51-11-05A-155	AKS ALL

D. **Location Zones**

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. **Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door
192JL	Air Conditioning Panel - Aft
192JR	Air Conditioning Panel - Aft

F. **Standby Temperature Control Valve Installation**

SUBTASK 21-51-11-420-001

(1) Install the reducer [19] on the new valve. Do these steps for the reducer at the conditioned air check valve sense line [11] location:

(a) Install a new packing [20], on the reducer [19].

(b) Apply a thin layer of Never-Seez NSBT compound, D00006 to the threads of the reducer [19].

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(c) Install the reducer [19], on the valve [1].

SUBTASK 21-51-11-420-005

(2) Install the union on the new valve. Do these steps for each of the remaining three unions:

(a) Install a new packing [18], on the union [17].

(b) Apply a thin layer of Never-Seez NSBT compound, D00006 to the threads of the union [17].

(c) Install the union [17] on the valve [1].

SUBTASK 21-51-11-160-002

(3) Carefully put the standby temperature control valve [1] into its position between the air ducts.

SUBTASK 21-51-11-020-007

(4) Install the clamps [8] that hold the valve to the ducts.

(a) Do not fully tighten the clamps.

SUBTASK 21-51-11-420-002

(5) Do the steps to connect the bonding jumper to the valve:

(a) Put the bonding jumper [2] in its position on the standby temperature control valve [1].

(b) Install the screw [14], the washer [13] and the nut [12] that hold the bonding jumper [2] to the valve.

1) Make sure the bonding jumper [2], the screw [14], the washer [13], and the nut [12] are clean.

SUBTASK 21-51-11-420-003

(6) Install the electrical connector [3] on the standby temperature control valve [1].

SUBTASK 21-51-11-020-008

(7) To connect the four sense lines to the standby temperature control valve, do these steps:

(a) Make sure they are installed in the positions they were before the removal.

(b) Install the sense line for the condenser inlet pressure [10].

(c) Install the sense line for the turbine outlet pressure [4].

(d) Install the sense line for the condenser outlet pressure [9].

(e) Install the sense line for the conditioned air check valve [11].

(f) Align the three sense line clamps and the wire bundle clamp with the spacer plate nut on the structure.

(g) Install the screw [15] and the washer [16] that hold clamps to the spacer plate nut.

(h) Align the two sense line clamps and the wire bundle clamp.

(i) Install the screw [5], the washer [6], and the nut [7] that hold the clamps together.

SUBTASK 21-51-11-420-004

(8) Tighten the clamps [8] to 55 to 60 pound-inches (6.2 to 6.8 newton-meters).

G. Standby Temperature Control Valve Installation Test

SUBTASK 21-51-11-020-009

(1) Remove the electrical connector D3862 (left pack) or D3872 (right pack) from the applicable temperature control valve.

SUBTASK 21-51-11-860-005

(2) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

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SUBTASK 21-51-11-860-006

(3) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-51-11-860-007

(4) Do these steps on the P5-10 air conditioning panel for the pack with the new standby temperature control valve:

(a) Set the PACK switch to the AUTO position and remove the DO-NOT-OPERATE tag.

1) Keep the other PACK switch in the OFF position.

(b) Set the BLEED 1 and 2 switches to the ON position.

(c) Set the BLEED APU switch to the ON position.

SUBTASK 21-51-11-860-008

(5) Do these steps on the P5-17 Cabin Temperature Panel:

(a) Put the TRIM AIR switch to the ON position.

(b) Put the cabin temperature selectors (CONT CAB, FWD CAB, and AFT CAB) to the AUTO position.

(c) Put the AIR TEMP selector to the pack with the new valve.

SUBTASK 21-51-11-860-009

(6) Operate the pack for two minutes to let the output temperature become stable.

SUBTASK 21-51-11-970-001

(7) Make a record of the pack temperature displayed on the gage of the P5-17 panel.

SUBTASK 21-51-11-860-010

(8) Move the cabin temperature selectors (CONT CAB, FWD CAB, and AFT CAB) to the fully cold position.

SUBTASK 21-51-11-970-002

(9) Make sure the pack temperature shown on the gage decreases.

SUBTASK 21-51-11-860-011

(10) Operate the pack for two minutes to let the output temperature become stable.

SUBTASK 21-51-11-860-012

(11) Move the cabin temperature selectors (CONT CAB, FWD CAB, and AFT CAB) to the fully warm position.

SUBTASK 21-51-11-970-003

(12) Make sure the pack temperature shown on the gage increases.

SUBTASK 21-51-11-860-013

(13) Operate the pack for two minutes to let the output temperature become stable.

SUBTASK 21-51-11-860-014

(14) Move the cabin temperature selectors (CONT CAB, FWD CAB, and AFT CAB) to the AUTO position.

SUBTASK 21-51-11-790-001

(15) Do a soap bubble test of the duct joints and sense line connections of the standby temperature control valve.

NOTE: No air leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches to the OFF position.

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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.

2) Loosen the clamps.

3) Make sure the ducts are aligned at the joints.

4) Tighten the clamps.

5) Put the L PACK and R PACK switches to the AUTO position.

6) Make sure the leak has been repaired.

SUBTASK 21-51-11-020-010

(16) Install the electrical connector D3862 (left pack) or D3872 (right pack) on the applicable temperature control valve.

SUBTASK 21-51-11-740-001

(17) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-11-860-015

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

SUBTASK 21-51-11-860-016

(2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-11-860-017

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 21-51-11-860-018

(4) For the left standby temperature control valve, close these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-51-11-010-002

(5) For the right standby temperature control valve, close these access panels in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door
192JR	Air Conditioning Panel - Aft

SUBTASK 21-51-11-010-003

(6) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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CONDENSER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the condenser.

(2) An installation of the condenser.

(3) You must first remove the HPWS from the plane. You can then remove the condenser from the HPWS.

TASK 21-51-12-000-801

2. Condenser Removal

(Figure 401)

A. References

Reference	Title
21-51-08-000-802	High Pressure Water Separator Removal (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

C. Prepare for the Removal

SUBTASK 21-51-12-860-011

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-12-020-025

(2) Do this task: High Pressure Water Separator Removal, TASK 21-51-08-000-802

NOTE: You must first remove the HPWS from the plane. You can then remove the condenser from the HPWS.

D. Condenser Removal

SUBTASK 21-51-12-020-005

(1) To remove the water extractor drain lines and manifold, do these steps:

(a) Remove the clamps [41] that connect the drain lines to the water extractors.

(b) Remove the screws [51], the washers [50], and the shim [49] that hold the manifold to the condenser [55].

(c) Remove the screw [45], the washers [46] and the nut [47] that connect the drain line support clamps [48].

(d) Remove the two drain line support clamps [48].

(e) Move the six hoses off the water extractors to complete the removal.

SUBTASK 21-51-12-020-006

(2) To remove the condenser [55] from the frame assembly, do these steps:

(a) Remove the clamps [42] that connect the water extractor hoses to the condenser duct.

(b) Remove the bolts [52] and the washers [53].

(c) Remove the bolt [44] and the washers [43] that connect the condenser [49] to the support assembly.

(d) Remove the condenser [55] from the frame assembly [54].

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SUBTASK 21-51-12-020-007

(3) Remove the coupling [59].

(a) Discard the two packings [58] on the coupling [59].

SUBTASK 21-51-12-020-008

(4) Remove the plug [56] and the packing [57] from the condenser [49].

(a) Discard the packing [57].

SUBTASK 21-51-12-480-002

(5) Put covers on the ducts and lines to keep out unwanted materials.

END OF TASK

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HIGH PRESSURE WATER SEPARATOR

MANIFOLD

A

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Condenser Installation
Figure 401/21-51-12-990-802 (Sheet 1 of 2)

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CONDENSER

B

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Condenser Installation
Figure 401/21-51-12-990-802 (Sheet 2 of 2)

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TASK 21-51-12-400-802

3. **Condenser Installation**

(Figure 401)

A. **References**

Reference	Title
21-51-08-400-802	High Pressure Water Separator Installation (P/B 401)

B. **Consumable Materials**

Reference	Description	Specification
D50104	Grease - Molykote 44 High Temperature Bearing Grease (Medium) (Formerly Dow Corning DC-44)	

C. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
55	Condenser	21-51-12-02-075	AKS ALL
57	Packing	21-51-17-01-150	AKS ALL
58	Packing	21-51-13-04-030	AKS ALL

D. **Location Zones**

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

E. **Condenser Installation**

SUBTASK 21-51-12-480-006

(1) Remove the duct and line covers.

SUBTASK 21-51-12-020-021

(2) Do these steps to install the plug [56]:

(a) Apply a thin coat of Molykote 44 grease, medium, D50104 to the new packing [57].

(b) Install the new packing [57] on the plug [56].

(c) Install the plug [56] in the condenser [55].

SUBTASK 21-51-12-020-022

(3) Do these steps to install the coupling [59].

(a) Apply a thin coat of Molykote 44 grease, medium, D50104 to the new packings [58].

(b) Install the new packings [58] on the coupling [59].

(c) Install the coupling [59] in duct of the reheater.

SUBTASK 21-51-12-020-023

(4) To install the condenser [55] on the frame assembly, do these steps:

(a) Put the condenser [55] in its position in the frame assembly.

(b) While you put the condenser [55] in the frame assembly, do these steps:

1) Move the hoses on the water extractors over the ducts on the condenser [55].

2) Be careful not to damage the packing [58] as you position the duct on the condenser [55] over the coupling [59].

(c) Install the bolts [52] and the washers [53].

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(d) Install the bolt [44] and the washers [43] that connect the condenser [55] to the support assembly.

NOTE: Make sure one of the washers [43] is installed between the condenser and the support assembly.

(e) Install the clamps [42] on the water extractor hoses.

SUBTASK 21-51-12-020-024

(5) To install the water extractor drain lines and manifold, do these steps:

(a) Move the six hoses over the drain line ports of the water extractors.

(b) Install the screws [51], the washers [50], and the shim [49] that hold the manifold to the condenser [55].

1) If you install a replacement manifold, make sure you remove the plastic plug from the overflow port of the water collection manifold.

(c) Install the clamps [41] that connect the drain line hoses to the water extractors.

(d) Put the two drain line support clamps [48] on the condenser ducts.

(e) Align the drain line support clamps [48] with the clamp on the water extractor drain line.

(f) Install the screw [45], the washers [46] and the nut [47] that connect the drain line support clamps [48].

SUBTASK 21-51-12-410-003

(6) Install the high pressure water separator. To install the high pressure water separator, do this task: High Pressure Water Separator Installation, TASK 21-51-08-400-802.

END OF TASK

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REHEATER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the reheater.

(2) An installation of the reheater.

(3) You must first remove the HPWS from the plane. You can then remove the reheater from the HPWS.

TASK 21-51-13-000-801

2. Reheater Removal

Figure 401

A. References

Reference	Title
21-51-08-000-802	High Pressure Water Separator Removal (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

C. Prepare for the Removal

SUBTASK 21-51-13-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-13-020-019

(2) Do this task: High Pressure Water Separator Removal, TASK 21-51-08-000-802

NOTE: You must first remove the HPWS from the plane. You can then remove the reheater from the HPWS.

D. Reheater Removal

SUBTASK 21-51-13-020-007

(1) Remove the couplings [47] and packings [48] from the water extractors.

(a) Discard the two packings [48].

SUBTASK 21-51-13-020-008

(2) To remove the reheater [49] from the frame assembly, do these steps:

(a) Remove the bolts [43], the washers [41] and the bushings [42].

(b) Remove the bolts [50] and the washers [41].

(c) Remove the reheater [49] from the frame assembly [44].

SUBTASK 21-51-13-020-009

(3) Remove the coupling [45].

(a) Discard the two packings [46] on the coupling [45].

SUBTASK 21-51-13-480-002

(4) Put covers on the ducts and lines to keep out unwanted materials.

END OF TASK

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REHEATER

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Reheater Installation
Figure 401/21-51-13-990-802

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TASK 21-51-13-400-801

3. Reheater Installation

Figure 401

A. References

Reference	Title
21-51-08-400-802	High Pressure Water Separator Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-804	Supply Pressure to the Pneumatic System with One or Both Engines (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
46	Packing	21-51-13-04-030	AKS ALL
48	Packing	21-51-14-01-100	AKS ALL
49	Reheater	21-51-13-04-035	AKS ALL

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

D. Reheater Installation

SUBTASK 21-51-13-480-003

(1) Remove the duct and line covers.

SUBTASK 21-51-13-020-010

(2) Do these steps to install the coupling [45].

(a) Apply a thin coat of grease to the new packings [46].

NOTE: Use Dow Corning DC44 medium vacuum grease or an equivalent.

(b) Install the new packings [46] on the coupling [45].

(c) Install the coupling [45] in the condenser.

SUBTASK 21-51-13-020-011

(3) To install the reheater [49] on the frame assembly [44], do these steps:

(a) Put the bushings [42] in their positions in the frame assembly [44].

(b) Put the reheater [49] in its position in the frame assembly.

(c) While you put the reheater [49] in the frame assembly, do these steps:

1) Be careful not to damage the packing [46] as you position the duct on the reheater [49] over the coupling [45].

(d) Install the bolts [43] and the washers [41].

(e) Install the bolts [50] and the washers [41].

SUBTASK 21-51-13-020-012

(4) To install the coupling for the water extractors, do these steps:

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(a) Apply a thin coat of grease to the new packings [48].

NOTE: Use Dow Corning DC44 medium vacuum grease or an equivalent.

(b) Put the packings [48] in their positions on the ducts.

(c) Install the couplings [47] on the ducts.

(d) Tighten the couplings [47] 35 to 40 pound-inches (3.9 to 4.5 newton-meters).

SUBTASK 21-51-13-410-003

(5) Install the high pressure water separator. To install the high pressure water separator, do this task: High Pressure Water Separator Installation, TASK 21-51-08-400-802.

E. Reheater Installation Test

SUBTASK 21-51-13-860-003

WARNING: MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET AND EXIT DOORS, LINKAGES AND ACTUATORS BEFORE YOU DO THIS TEST. POSSIBLE INJURY TO PERSONNEL CAN OCCUR.

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-13-780-001

(2) To prepare for a leak check of the reheater installation, do one of the two steps, (a) or (b), that follow:

(a) Supply pneumatic pressure to the packs with the APU as follows:

1) Supply pressure to the pneumatic system with the APU: Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

2) Make sure that the aft outflow valve and a passenger door are open.

3) Set the applicable L PACK or R PACK switch on the P5-10 air conditioning panel to AUTO.

(b) Supply pneumatic pressure to the packs with an engine as follows:

1) Supply pressure to the pneumatic system with one or both engines as follows: Do this task:Supply Pressure to the Pneumatic System with One or Both Engines, TASK 36-00-00-860-804.

2) Make sure that the aft outflow valve and a passenger door are open.

3) Set the applicable L PACK or R PACK switch on the P5-10 air conditioning panel to AUTO.

SUBTASK 21-51-13-790-001

(3) Do a soap bubble test of all the applicable duct joints.

NOTE: No leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches in the OFF position.

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) Loosen the clamps.

3) Make sure the ducts are aligned at the joints.

4) Tighten the clamps.

5) Put the L PACK and R PACK switches in the AUTO position.

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6) Make sure the leak has been repaired.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-13-860-006

(1) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position.

SUBTASK 21-51-13-860-007

(2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-13-860-008

(3) If it is not necessary, remove electrical power. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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WATER EXTRACTOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the water extractor

(2) An installation of the water extractor.

(3) The water extractor is a component of the high-pressure water separator (HPWS). There are two water extractors on the HPWS. There is an HPWS for each of the two packs.

TASK 21-51-14-000-801

2. Water Extractor Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-14-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-14-860-002

(2) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-51-14-010-001

(3) To get access to the water extractor [1] for the left cooling pack, open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-14-010-002

(4) To get access to the water extractor [1] for the right cooling pack, open these access panels in this sequence:

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Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

E. Water Extractor Removal

SUBTASK 21-51-14-020-001

(1) To disconnect the drain lines from the water extractor, do these steps:

(a) Remove the clamps [6] that hold the hoses of the drain lines to the water extractor [1].

(b) Remove the screw [3], the washers [4] and the nut [5] that connect the drain line support clamps.

(c) Move the hoses off the water extractor.

SUBTASK 21-51-14-020-002

(2) Remove the clamp [2] that connects the water extractor hose to the condenser duct.

SUBTASK 21-51-14-020-003

(3) Hold the water extractor [1] while you remove the coupling [7] and packing [8].

(a) Discard the packing [8].

SUBTASK 21-51-14-020-004

(4) Carefully lower the water extractor [1].

SUBTASK 21-51-14-480-001

(5) Put covers on the ducts and lines to keep out unwanted materials.

——— END OF TASK ———

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Water Extractor Installation
Figure 401/21-51-14-990-801 (Sheet 1 of 2)

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WATER EXTRACTOR (EXAMPLE)

B

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Water Extractor Installation
Figure 401/21-51-14-990-801 (Sheet 2 of 2)

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TASK 21-51-14-400-801

3. Water Extractor Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-804	Supply Pressure to the Pneumatic System with One or Both Engines (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
135	Area Above Wing Center Section, Body Station 540 to Body Station 663.75 - Left
136	Area Above Wing Center Section, Body Station 540 to Body Station 663.75 - Right
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Water Extractor Installation

SUBTASK 21-51-14-480-002

(1) Remove the duct and line covers.

SUBTASK 21-51-14-020-005

(2) To install the water extractors, do these steps:

(a) Apply a thin coat of grease to the new packing [8].

NOTE: Use Dow Corning DC44 medium vacuum grease or an equivalent.

(b) Put the packing [8] in its position on the duct.

(c) Move the hose over the end of the water extractor.

(d) Hold the water extractor [1] in position.

(e) Loosely install the coupling [7].

(f) Loosely install the clamp [2].

SUBTASK 21-51-14-420-001

(3) Make sure the water extractor does not touch the condenser.

SUBTASK 21-51-14-420-002

(4) Tighten the coupling [7] to 35 to 40 pound-inches (3.9 to 4.5 newton-meters).

SUBTASK 21-51-14-420-003

(5) Tighten the clamp [2] to 16 to 18 pound-inches (1.8 to 2.0 newton-meters).

SUBTASK 21-51-14-020-006

(6) To install the drain lines on the water extractor, do these steps:

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(a) Put the hoses on the drain ports of the water extractor.

(b) Install the clamps [6] that hold the hoses of the drain lines to the water extractor [].

(c) Install the screw [3], the washers [4] and the nut [5] that connect the drain line support clamps.

E. Water Extractor Installation Test

SUBTASK 21-51-14-860-003

WARNING: MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET AND EXIT DOORS, LINKAGES AND ACTUATORS BEFORE YOU DO THIS TEST. POSSIBLE INJURY TO PERSONNEL CAN OCCUR.

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-14-780-001

(2) To prepare for a leak check of the water extractor installation, do one of the two steps, (a) or (b), that follow:

(a) Supply pneumatic pressure to the packs with the APU as follows:

1) Supply pressure to the pneumatic system with the APU: Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

2) Make sure that the aft outflow valve and a passenger door are open.

3) Set the applicable L PACK or R PACK switch on the P5-10 air conditioning panel to AUTO.

(b) Supply pneumatic pressure to the packs with an engine as follows:

1) Supply pressure to the pneumatic system with one or both engines as follows: Do this task:Supply Pressure to the Pneumatic System with One or Both Engines, TASK 36-00-00-860-804.

2) Make sure that the aft outflow valve and a passenger door are open.

3) Set the applicable L PACK or R PACK switch on the P5-10 air conditioning panel to AUTO.

SUBTASK 21-51-14-790-001

(3) Do a soap bubble test of all the applicable duct joints.

NOTE: No leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches in the OFF position.

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) Loosen the clamps.

3) Make sure the ducts are aligned at the joints.

4) Tighten the clamps.

5) Put the L PACK and R PACK switches in the AUTO position.

6) Make sure the leak has been repaired.

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F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-14-860-006

(1) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position.

SUBTASK 21-51-14-860-007

(2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-14-860-008

(3) If it is not necessary, remove electrical power. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 21-51-14-410-001

(4) If the water extractor for the right cooling pack was removed, close these access panels in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-14-410-002

(5) If the water extractor for the left cooling pack was removed, close this access panel:

Number	Name/Location
192CL	ECS Access Door

——— END OF TASK ———

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WATER EXTRACTOR DUCT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the water extractor duct.

(2) An installation of the water extractor duct.

(3) There is a water extractor duct installed for each of the two air conditioning packs.

TASK 21-51-15-000-801

2. Water Extractor Duct Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-15-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-15-860-002

(2) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-51-15-010-001

(3) To get access to the water extractor duct [1] for the left cooling pack, open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-15-010-002

(4) To get access to the water extractor duct [1] for the right cooling pack, open these access panels in this sequence:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

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Open this access panel:

Number	Name/Location
192CR	ECS Access Door

E. Water Extractor Duct Removal

SUBTASK 21-51-15-020-001

(1) To disconnect the drain line [5] for the water extractor duct, do these steps:

(a) Remove the screw [2], the washer [3], and the nut [4] that connect the drain line clamps together.

(b) Loosen the b-nut [13] to disconnect the drain line.

(c) Remove the union [12].

(d) Remove and discard the o-ring [11].

SUBTASK 21-51-15-020-002

(2) Do these steps to remove the coupling assembly:

(a) Remove the clamp [7].

(b) Move the sleeve [8] to the adjacent duct.

(c) Move the ring [10] to the adjacent duct.

(d) Remove the retainer [9].

SUBTASK 21-51-15-020-003

(3) Hold the water extractor duct [1] while you remove the clamp [6].

SUBTASK 21-51-15-020-004

(4) Carefully lower the water extractor duct [1].

SUBTASK 21-51-15-480-001

(5) Put covers on the ducts and lines to keep out unwanted materials.

——— END OF TASK ———

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Water Extractor Duct Installation
Figure 401/21-51-15-990-801 (Sheet 1 of 2)

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Water Extractor Duct Installation
Figure 401/21-51-15-990-801 (Sheet 2 of 2)

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TASK 21-51-15-400-801

3. Water Extractor Duct Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008

C. Location Zones

Zone	Area
135	Area Above Wing Center Section, Body Station 540 to Body Station 663.75 - Left
136	Area Above Wing Center Section, Body Station 540 to Body Station 663.75 - Right
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Water Extractor Duct Installation

SUBTASK 21-51-15-480-002

(1) Remove the duct and line covers.

SUBTASK 21-51-15-020-005

(2) To install the water extractor duct [1], do these steps:

(a) Hold the water duct [1] in position.

NOTE: Make sure the flow arrow on the water extractor duct points in the forward direction.

(b) Loosely install the clamp [6].

(c) Install the retainer [9] that holds the water extract duct [1] to the adjacent duct.

(d) Move the ring [10] over the retainer [9].

(e) Move the sleeve [8] over the ring [10].

(f) Install the clamp [7] over the sleeve [8].

(g) Tighten the clamp [7] 100 to 105 pound-inches (11.3 to 11.8 newton-meters).

(h) Tighten the clamp [6] 55 to 60 pound-inches (6.2 to 6.8 newton-meters).

SUBTASK 21-51-15-020-006

(3) To connect the drain line [5] to the water extractor duct, do these steps:

(a) Install a new o-ring [11] on the union [12].

(b) Apply a thin coating of Never-Seez NSBT compound, D00006 to the threads of the union.

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(c) Install the union [12] on the water extractor duct.

(d) Tighten the b-nut [13] to connect the drain line to the duct.

(e) Install the screw [2], the washer [3], and the nut [4] that hold the drain line clamps together.

F. Water Extractor Duct Installation Test

SUBTASK 21-51-15-860-003

WARNING: MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET AND EXIT DOORS, LINKAGES AND ACTUATORS BEFORE YOU DO THIS TEST. POSSIBLE INJURY TO PERSONNEL CAN OCCUR.

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-15-860-004

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-51-15-860-005

(3) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the applicable L or R PACK switch to the AUTO position.

(b) Set the BLEED 1 and 2 switches to the ON position.

(c) Set the BLEED APU switch to the ON position.

SUBTASK 21-51-15-790-001

(4) Do a soap bubble test of all the applicable duct joints.

NOTE: No leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches in the OFF position.

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) Loosen the clamps.

3) Make sure the ducts are aligned at the joints.

4) Tighten the clamps.

5) Put the L PACK and R PACK switches in the AUTO position.

6) Make sure the leak has been repaired.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-15-860-006

(1) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position.

SUBTASK 21-51-15-410-001

(2) If the water extractor duct for the right cooling pack was removed, close these access panels in this sequence:

Number	Name/Location
192CR	ECS Access Door

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(Continued)

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-51-15-410-002

(3) If the water extractor duct for the left cooling pack was removed, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-15-860-007

(4) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-15-860-008

(5) If it is not necessary, remove electrical power. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— 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.

TASK 21-51-16-000-801

2. Water Spray Nozzle Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-16-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-16-010-001

(2) Do these steps to get access to the water spray nozzle [1] for the left cooling pack:

Open this access panel:

Number	Name/Location
192CL	ECS Access Door

Open this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-16-010-002

(3) Do these steps in the specified sequence to get access to the water spray nozzle [1] for the right cooling pack:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

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Open this access panel:

Number	Name/Location
192CR	ECS Access Door

Open this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-16-010-003

(4) Remove the access panel on the bottom of the ram air inlet duct:

(a) Remove the screws [3] and the washers [4], at 20 locations.

(b) Carefully remove the access panel [2].

E. Water Spray Nozzle Removal

SUBTASK 21-51-16-020-001

(1) To disconnect the water line from the water spray nozzle, do these steps:

(a) Loosen the b-nut on the water line.

(b) Remove the union [5] from the water spray nozzle.

(c) Remove and discard the o-ring [6].

SUBTASK 21-51-16-020-002

(2) To disconnect the air line from the water spray nozzle, do these steps:

(a) Loosen the b-nut on the air line.

(b) Remove the union [10].

(c) Remove and discard the o-ring [9].

SUBTASK 21-51-16-020-003

(3) To remove the water spray nozzle [1], do these steps:

(a) Remove the bolts [11], the washers [8] and the nuts [7], at five locations.

NOTE: You must reach through the access hole in the ram air inlet to access the bolt [11] and washer [8].

(b) Remove the water spray nozzle [1].

END OF TASK

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LEFT ECS BAY
(RIGHT ECS BAY IS EQUIVALENT)

A

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Water Spray Nozzle Installation
Figure 401/21-51-16-990-801 (Sheet 1 of 3)

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Water Spray Nozzle Installation
Figure 401/21-51-16-990-801 (Sheet 2 of 3)

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Water Spray Nozzle Installation
Figure 401/21-51-16-990-801 (Sheet 3 of 3)

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TASK 21-51-16-400-801

3. Water Spray Nozzle Installation

(Figure 401)

A. References

Reference	Title
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Nozzle	21-51-53-04A-220	AKS 001-021
		21-51-53-05-210	AKS ALL
6	O-ring	21-51-53-04A-210	AKS 001-021
		21-51-53-05-200	AKS ALL
9	O-ring	21-51-53-04A-208	AKS 001-021

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Water Spray Nozzle Installation

SUBTASK 21-51-16-420-001

(1) To install the water spray nozzle, do these steps:

(a) Put the water spray nozzle [1] in its position.

(b) Install the bolts [11], the washers [8] and the nuts [7], at five locations.

SUBTASK 21-51-16-020-004

(2) To connect the water line to the water spray nozzle, do these steps:

(a) Install a new o-ring [6] on the union [5].

(b) Apply a thin layer of Never-Seez NSBT compound, D00006 to the threads of the union [5].

(c) Install the union [5] on the water spray nozzle.

(d) Connect the water line to the water spray nozzle.

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SUBTASK 21-51-16-020-005

(3) To connect the air line to the water spray nozzle, do these steps:

(a) Install a new o-ring [9] on the union [10].

(b) Apply a thin layer of Never-Seez NSBT compound, D00006 to the threads of the union [10].

(c) Install the union [10] on the water spray nozzle.

(d) Connect the air line to the water spray nozzle.

G. Water Spray Nozzle - Post Installation Test

SUBTASK 21-51-16-860-002

(1) Do this task:(Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801).

SUBTASK 21-51-16-860-003

(2) Set the L(R) PACK switches to HIGH on the P5-10 overhead panel.

SUBTASK 21-51-16-860-004

(3) Set the trim air switch to the ON position.

SUBTASK 21-51-16-860-005

(4) Set the CONT CAB, FWD CAB and AFT CAB zone temperature selectors to the AUTO-C (fully cold) position.

SUBTASK 21-51-16-710-001

(5) Use a flashlight to see that a spray of air and water comes of the L(R) water spray nozzle.

NOTE: The quantity of water is a function of the air humidity and the pack air flow.

SUBTASK 21-51-16-860-009

(6) Set the CONT CAB, FWD CAB and AFT CAB zone temperature selectors to the OFF position.

SUBTASK 21-51-16-860-006

(7) Set the trim air switch to the OFF position.

SUBTASK 21-51-16-860-007

(8) Set the L(R) PACK switches to the OFF position.

SUBTASK 21-51-16-860-008

(9) Do this task:Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-16-410-001

(1) Install the access panel on the ram air inlet duct:

(a) Examine the gasket on the access panel [2].

(b) Replace the gasket if it is damaged or deteriorated.

(c) Hold the access panel [2] in its position while you install the bolts [3] and the washers [4], at 20 locations.

SUBTASK 21-51-16-410-002

(2) Do these steps if you installed the water spray nozzle [1] for the left cooling pack:

Close this access panel:

Number	Name/Location
192CL	ECS Access Door

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Close this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-16-410-003

(3) Do these steps, in the specified sequence, if you installed the water spray nozzle [1] for the right cooling pack:

Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Close this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

——— END OF TASK ———

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WATER SPRAY NOZZLE - INSPECTION/CHECK

TASK 21-51-16-200-801

1. **Water Spray Nozzle Check**

Figure 601

A. General

(1) This procedure has instructions to do a check of the water spray nozzle and water spray lines of each pack. If these components have blockage, the Air Cycle Machine can get ice.

B. References

Reference	Title
21-51-16-000-801	Water Spray Nozzle Removal (P/B 401)
21-51-16-400-801	Water Spray Nozzle Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Tools/Equipment

Reference	Description
STD-123	Brush - Soft Bristle

D. Consumable Materials

Reference	Description	Specification
B50117	Detergent - General	
B50126	Solvent - Degreasing, General Purpose	MIL-PRF-680
G50256	Water, Regular	

E. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

F. Access Panels

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

G. Prepare for the Check

SUBTASK 21-51-16-010-004

(1) Do these steps to get access to the water spray nozzle for the left cooling pack:

Open this access panel:

Number	Name/Location
192CL	ECS Access Door

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Open this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-16-010-005

(2) Do these steps in the specified sequence to get access to the water spray nozzle for the right cooling pack:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

Open this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-16-860-011

(3) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

H. Water Spray Nozzle Check

SUBTASK 21-51-16-860-021

(1) Supply pneumatic pressure to the pneumatic system with the APU. Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-51-16-860-012

(2) Set the L(R) PACK switches to HIGH on the P5-10 overhead panel.

SUBTASK 21-51-16-860-013

(3) Set the trim air switch to the ON position.

SUBTASK 21-51-16-860-014

(4) Set the CONT CAB, FWD CAB and AFT CAB zone temperature selectors to the AUTO-C (fully cold) position.

SUBTASK 21-51-16-210-001

(5) Use a flashlight to see that a spray of air and water comes of the L(R) water spray nozzle.

NOTE: The quantity of water is a function of the air humidity and the pack air flow.

(a) Make sure the water spray pattern from each spray nozzle is approximately the same.

(b) Make sure the water sprays are approximately circular and are continuous.

(c) If the water sprays are not satisfactory, do the following steps to examine these parts for leakage or blockage:

1) The water collector manifold

2) The water extractor

3) The water extractor duct

4) The water spray nozzle

5) The air and water supply lines from the water extractor to the water spray nozzle.

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SUBTASK 21-51-16-860-015

(6) Set the L(R) PACK switches to the OFF position.

SUBTASK 21-51-16-210-002

(7) Check the water collection manifold for leakage or blockage.

(a) Disconnect the water output port line [2] at the water collection manifold.

(b) Set the L(R) PACK switches to HIGH on the P5-10 overhead panel.

(c) Feel for air or water to come out of the hole in the water collection manifold where you removed the line.

(d) If there is no air or water, examine the water collection manifold for leakage or blockage.

SUBTASK 21-51-16-420-002

(8) Connect the water output port line [2] at the water collection manifold.

SUBTASK 21-51-16-860-016

(9) Set the L(R) PACK switches to the OFF position.

SUBTASK 21-51-16-210-003

(10) Check the water extractor for leakage or blockage.

(a) Disconnect the water drain lines [1] at each water drain nipple of the water extractors.

(b) Set the L(R) PACK switches to HIGH on the P5-10 overhead panel.

(c) Feel for air or water to come out of the hole in the water extractor where you removed the line.

(d) If there is no air or water, examine the water extractor for leakage or blockage.

SUBTASK 21-51-16-420-003

(11) Connect the water drain lines [1] at each water drain nipple of the water extractors.

SUBTASK 21-51-16-860-017

(12) Set the L(R) PACK switches to the OFF position.

SUBTASK 21-51-16-210-004

(13) Check the water extractor duct for leakage or blockage.

(a) Disconnect the drain line [3] at the water extractor duct.

(b) Set the L(R) PACK switches to HIGH on the P5-10 overhead panel.

(c) Feel for air or water to come out of the hole in the water extractor duct where you removed the line.

(d) If there is no air or water, examine the water extractor duct for leakage or blockage.

SUBTASK 21-51-16-420-004

(14) Connect the drain line [3] at the water extractor duct.

SUBTASK 21-51-16-110-001

(15) If the water spray nozzle is blocked or clogged, do the steps that follow to clean the nozzle:

(a) Remove the nozzle from the airplane. Do this task: Water Spray Nozzle Removal, TASK 21-51-16-000-801.

(b) Soak the nozzle assembly in solvent degreasing solvent, B50126.

(c) Use compressed air to blow out loose particles from the nozzle.

(d) Do steps (b) and (c) again if necessary to clean the inner areas of the nozzle.

(e) Use a soft bristle brush, STD-123 to remove external particles from the nozzle.

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(f) Soak the nozzle in general detergent, B50117 and water, G50256 to remove the solvent.

(g) Dry the nozzle with compressed air.

(h) Examine the nozzle to make sure that there is no external damage.

(i) 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.

1) Make sure that air flows freely through the air inlet and water inlet.

(j) Install the nozzle. Do this task: Water Spray Nozzle Installation, TASK 21-51-16-400-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-16-860-018

(1) Set the CONT CAB, FWD CAB and AFT CAB zone temperature selectors to the OFF position.

SUBTASK 21-51-16-860-019

(2) Set the L(R) PACK switches to the OFF position.

SUBTASK 21-51-16-860-020

(3) Set the trim air switch to the OFF position.

SUBTASK 21-51-16-860-022

(4) Remove the pneumatic pressure. Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-16-410-004

(5) Do these steps if you installed the water spray nozzle for the left cooling pack:

Close this access panel:

Number	Name/Location
192CL	ECS Access Door

Close this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-16-410-005

(6) Do these steps, in the specified sequence, for the right cooling pack:

Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Close this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

——— END OF TASK ———

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Water Spray Nozzle Check
Figure 601/21-51-16-990-802 (Sheet 1 of 3)

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WATER EXTRACTOR DUCT

B

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Water Spray Nozzle Check
Figure 601/21-51-16-990-802 (Sheet 2 of 3)

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WATER SPRAY NOZZLE

C

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Water Spray Nozzle Check
Figure 601/21-51-16-990-802 (Sheet 3 of 3)

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HIGH PRESSURE WATER SEPARATOR MIX MUFF - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the high pressure water separator mix muff.

(2) An installation of the high pressure water separator mix muff.

B. There is a mix muff for each air cooling pack in the forward area of the air conditioning bays.

C. The mix muff mixes cold air from the pack and warm bleed air from the mix valve and discharges cool air to the water separator.

D. The compressor outlet duct must be removed to get access to the mix muff.

TASK 21-51-17-000-801

2. High Pressure Water Separator Mix Muff Removal

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-17-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-17-860-002

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-17-860-003

(3) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE identifiers.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE identifiers.

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(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE identifier.

SUBTASK 21-51-17-010-001

(4) To get access to the left cooling pack open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-17-010-002

(5) To get access to the right cooling pack, open these access panels in the sequence that follows:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

SUBTASK 21-51-17-020-001

(6) Remove the compressor outlet duct [3] to get access to the mix muff:

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 [1] from the compressor outlet overheat switch.

(b) Disconnect the electrical connector [2] from the ram air control temperature sensor.

(c) Loosen the b-nut to remove the hose [9] from the compressor outlet duct.

(d) Remove the clamshell clamp [6].

NOTE: Lift the three latch pawls at the same time to release the clamp.

(e) Move the sleeve [7] to the adjacent duct

CAUTION: HOLD THE DUCT WHEN YOU LOOSEN THE CLAMP. THE DUCT CAN FALL WHEN THE CLAMP IS LOOSE. THE DUCT CAN BE DAMAGED IF IT FALLS.

(f) Remove the clamp [4] that holds the duct [3] to the heat exchanger.

(g) Remove the compressor outlet duct [3].

(h) Remove and discard the o-rings [8].

(i) Remove and discard the o-ring [5].

E. Mix Muff Removal

SUBTASK 21-51-17-020-002

(1) To remove the mix muff, do these steps:

(a) Disconnect the flex hose [10] from the mix muff [16].

(b) Loosen the clamps [14] that attach the flexible duct [15] to the mix muff [16].

(c) Move the flexible duct [15] off the mix muff [16].

(d) Remove the clamp [13].

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CAUTION: HOLD THE MIX MUFF WHEN YOU LOOSEN THE CLAMP. THE MIX MUFF CAN FALL WHEN THE CLAMP IS LOOSE. THE MIX MUFF CAN BE DAMAGED IF IT FALLS.

(e) Loosen the clamp [11] that attaches the mix muff [16] to the air cycle machine.

(f) Remove the mix muff [16].

(g) Remove and discard the o-ring [12].

SUBTASK 21-51-17-620-001

(2) Put covers on the duct openings to prevent the entry of unwanted materials.

END OF TASK

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High Pressure Water Separator (HPWS) Mix Muff Installation
Figure 401/21-51-17-990-801 (Sheet 1 of 3)

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HPWS MIX MUFF

B

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High Pressure Water Separator (HPWS) Mix Muff Installation
Figure 401/21-51-17-990-801 (Sheet 2 of 3)

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CLAMSHELL CLAMP INSTALLATION

C

V-CLAMP INSTALLATION

D

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High Pressure Water Separator (HPWS) Mix Muff Installation
Figure 401/21-51-17-990-801 (Sheet 3 of 3)

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TASK 21-51-17-400-801

3. High Pressure Water Separator Mix Muff Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008
D00602	Lubricant - Fluorinated	BMS3-25

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	O-ring	21-51-03-05A-040	AKS ALL
		21-51-03-05A-200	AKS ALL
8	O-ring	21-51-03-05A-055	AKS ALL
		21-51-03-05A-210	AKS ALL
12	O-ring	21-51-17-04A-015	AKS ALL
		21-51-17-05A-020	AKS ALL
16	Mix muff	21-51-17-04A-040	AKS ALL
		21-51-17-05A-045	AKS ALL

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Mix Muff Installation

SUBTASK 21-51-17-630-001

(1) Remove the duct covers.

SUBTASK 21-51-17-020-003

(2) To install the mix muff, do these steps:

(a) Lubricate a new o-ring [12] with lubricant, D00602.

(b) Install the new o-ring [12].

(c) Put the mix muff [16] into its position between the ducts.

NOTE: Hold the mix muff in position when you install the clamps. The duct connections are not self aligning.

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(d) Install the clamp [11] that holds the mix muff to the air cycle machine.

NOTE: Do not fully tighten the clamp.

(e) Install the clamp [13] that holds the mix muff to the temperature control duct.

NOTE: Do not fully tighten the clamp.

(f) Move the flexible duct [15] on the mix muff.

(g) Install the clamps [14] on the flexible duct. Tighten the clamp 13 to 17 pound-inches (1.5 to 1.9 newton-meters).

(h) Tighten the clamp [11] 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

(i) Tighten the clamp [13] 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

(j) Apply a light coating of Never-Seez NSBT compound, D00006 to the threads of the flex hose [10].

(k) Install the flex hose [10] on the mix muff [16].

G. Compressor Outlet Duct Installation

SUBTASK 21-51-17-020-004

(1) To install the compressor outlet duct, do these steps:

(a) Install new o-ring [5].

(b) Install a new o-rings [8] on the duct ends.

(c) Put the compressor outlet duct [3] into its position.

NOTE: Hold the duct in position when you install the clamps. The duct connections are not self aligning.

(d) Install the clamp [4] that holds the duct [3] to the heat exchanger.

NOTE: Do not fully tighten the clamp.

(e) Move the sleeve [7] over the duct ends.

(f) Install the clamp [6].

NOTE: Push the two halves of the clamp together until the three latch pawls are latched.

(g) Tighten the clamp [4] 45 to 50 pound-inches (5.1 to 5.6 newton-meters).

(h) Install the electrical connector [2] on the ram air control temperature sensor.

(i) Install the electrical connector [1] on the compressor outlet overheat switch.

(j) Apply a light coating of Never-Seez NSBT compound, D00006 to the threads of the hose [9].

(k) Reconnect the hose [9] to the compressor outlet duct.

H. Mix Muff Installation Test

SUBTASK 21-51-17-860-005

(1) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-51-17-860-006

(2) Put the applicable L PACK or R PACK switch on the P5-10 air conditioning panel to the AUTO position:

SUBTASK 21-51-17-790-001

(3) Do a soap bubble test of the joints at the mix muff and compressor outlet duct.

NOTE: No air leakage is permitted.

(a) If there is leakage, do these steps:

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1) Put the L PACK and R PACK switches on the P5-10 air conditioning panel in the OFF position.
2) Loosen the clamps.
3) Make sure the ducts are aligned at the joints.
4) Tighten the clamps.
5) Put the L PACK and R PACK switches on the P5-10 air conditioning panel in the AUTO position.
6) Make sure the leak has been repaired.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-17-860-007

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-17-860-008

(2) Put these switches on the P5-10 air conditioning panel to the OFF position:
   (a) L PACK
   (b) R PACK

SUBTASK 21-51-17-860-009

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 21-51-17-010-003

(4) If the mix muff for the left cooling pack was removed, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-17-010-004

(5) If the mix muff for the right cooling pack was removed, close these access panels in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

——— END OF TASK ———

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RAM AIR INLET ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the ram air inlet actuator

(2) An installation of the ram air inlet actuator.

TASK 21-51-21-000-801

2. Ram Air Inlet Actuator Removal

(Figure 401)

A. References

Reference	Title
33-42-02-960-802	Retractable Landing Light - Light Assembly Replacement (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
191FL	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191FR	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GL	Ram Air Actuator Panel - Forward
191GR	Ram Air Actuator Panel - Forward

D. Preparation for the Removal

SUBTASK 21-51-21-860-001

(1) To remove the ram air inlet actuator for the left pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

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SUBTASK 21-51-21-010-001

(2) Open these access panels to remove the ram air inlet actuator for the left pack:

Number	Name/Location
191FL	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-51-21-860-002

(3) To remove the ram air inlet actuator for the right pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-51-21-010-002

(4) Open these access panels to remove the ram air inlet actuator for the right pack:

Number	Name/Location
191FR	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GR	Ram Air Actuator Panel - Forward

SUBTASK 21-51-21-410-010

(5) Remove the light assembly for the applicable retractable landing light. To remove the light assembly, do this task:Retractable Landing Light - Light Assembly Replacement, TASK 33-42-02-960-802

(a) Do only the part of the task that removes the light assembly.

E. Ram Air Inlet Actuator Removal

SUBTASK 21-51-21-020-007

(1) Remove electrical connector [29] and electrical connector [30] from the actuator [15].

SUBTASK 21-51-21-020-006

(2) Remove the blue end of the bonding jumper [5] from the actuator [15] as follows:

(a) Remove enough of the sealant to get access to the screw [1] and nut [6].

(b) Remove the screw [1], the washer [3], the washers [4] and the nut [6] from the ground tab [19] on the actuator [15].

SUBTASK 21-51-21-020-004

(3) Disconnect the actuator [15] from the support [18] as follows:

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(a) Support the actuator [15] and remove the nut [12], the washer [9], the bolt [17], and the washer [16].

SUBTASK 21-51-21-020-005

(4) Remove the actuator [15].

——— END OF TASK ———

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Ram Air Inlet Actuator Installation
Figure 401/21-51-21-990-801 (Sheet 1 of 5)

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LEFT RAM AIR INLET ACTUATOR
(RIGHT RAM AIR INLET ACTUATOR IS OPPOSITE)

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Ram Air Inlet Actuator Installation
Figure 401/21-51-21-990-801 (Sheet 2 of 5)

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RAM AIR INLET

C

RAM AIR INLET DEFLECTOR DOOR LINKAGE

D

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Ram Air Inlet Actuator Installation
Figure 401/21-51-21-990-801 (Sheet 3 of 5)

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A-A

E

G25528 S0006563154_V4

Ram Air Inlet Actuator Installation
Figure 401/21-51-21-990-801 (Sheet 4 of 5)

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**(FORWARD AND AFT MODULATION PANELS
SHOWN IN FLIGHT FULL CLOSED POSITION)**

B-B

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**Ram Air Inlet Actuator Installation
Figure 401/21-51-21-990-801 (Sheet 5 of 5)**

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TASK 21-51-21-400-801

3. **Ram Air Inlet Actuator Installation**

(Figure 401)

A. **References**

Reference	Title
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
33-42-02-960-802	Retractable Landing Light - Light Assembly Replacement (P/B 201)

B. **Tools/Equipment**

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: C15292 (MODEL T477W) Supplier: 01014 Part #: M1 Supplier: 3AD17 Opt Part #: M1B Supplier: 3AD17
COM-12342	Scrapers, BAC5000, PSD 6-184 Approved Part #: 234350 Supplier: $0857 Part #: 311 Supplier: KA861 Part #: 411B60 Supplier: 3DN12 Part #: J5-0275-2010 Supplier: 435R8 Part #: TS1275-4 Supplier: 1DWR5

C. **Consumable Materials**

Reference	Description	Specification
A01076	Adhesive - Synthetic Rubber	BAC5010 Type 93 (BMS5-95 Class B)
B00062	Solvent - Acetone (99.5% Grade)	ASTM D 329 (Supersedes O-A-51)
B00065	Alcohol - Denatured, Ethyl (Ethanol)	AMS 3002 (Supersedes O-A-396)
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
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

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D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
191FL	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191FR	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GL	Ram Air Actuator Panel - Forward
191GR	Ram Air Actuator Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door

F. Preparation for the Installation

SUBTASK 21-51-21-010-006

(1) Open these access panels to install the left ram air inlet actuator:

Number	Name/Location
191FL	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-51-21-010-007

(2) Open these access panels to install the right ram air inlet actuator:

Number	Name/Location
191FR	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GR	Ram Air Actuator Panel - Forward

G. Ram Air Inlet Actuator Installation

SUBTASK 21-51-21-420-001

(1) Install the ram air inlet actuator [15] as follows:

(a) Put the ram air inlet actuator [15] in its position.

(b) Attach the actuator [15] to the support [18] as follows:

NOTE: Make sure that the bushings [28] are installed in the support [18].

1) Install the bolt [17], the washer [16], the washer [9], and the nut [12]:

a) Put the countersunk side of the washer [16] under the head of the bolt [17].

SUBTASK 21-51-21-420-003

(2) Attach the bonding jumper [5] to the ground tab [19] on the actuator [15] as follows:

(a) Remove all of the adhesive that remains on the screw [1], washer [3], washers [4], nut [6] and ground tab [19] as follows:

1) Use physical means such as a plastic scraper, COM-12342 to remove the majority of the adhesive.

2) Remove adhesive that remains with a cotton wiper, G00034 soaked in alcohol, B00065, solvent, B00062 or solvent, B00148 until all the adhesive is removed as follows:

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a) Pour the solvent onto the wiper to avoid contamination of the solvent container.

b) Wipe or scrub the surface to be cleaned with the solvent soaked wiper.

c) Immediately wipe the cleaned surfaces with a clean cotton wiper, G00034.

3) Use a clean cotton wiper, G00034 to remove all excess solvent that may remain on the parts.

4) Repeat the cleaning action until no discoloration shows on the wiper.

5) Dry surface before the solvent evaporates.

(b) Install the screw [1], washer [3], the washers [4] and the nut [6] and torque to 31.5 ±3.5 in-lb (4 ±1 N·m).

(c) Position the probes on the intrinsically safe approved bonding meter, COM-1550 so that one probe is on the bonding jumper [5] and the other probe is on the ground tab [19].

(d) Make sure that the bonding resistance is not more than 0.010 ohm.

(e) Apply adhesive, A01076 so that the bonding installation is totally encapsulated.

SUBTASK 21-51-21-860-019

(3) Install the electrical connector D3916 (D3918) on the ram air sensor, T481 (T482).

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(b) Wait for a minimum of 10 seconds and then continue.

NOTE: Opening the above circuit breakers for 10 seconds minimum and then closing will clear the SRADA internal fault memory and allow actuator movement during subsequent steps.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(d) Make sure the ram air inlet doors move towards the closed position.

(e) Make sure the RAM DOOR FULL OPEN light goes out.

H. Adjustment of the Ram Air Inlet Actuator

SUBTASK 21-51-21-020-008

(1) Disconnect tie rod assembly [22] from the forward and aft links.

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SUBTASK 21-51-21-020-009

(2) Make sure that the rod end of the actuator [15] is not attached to arm [10]:

(a) If the rod end is attached, remove nut [12], bolt [8] and washers [9].

SUBTASK 21-51-21-860-014

(3) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-21-860-015

(4) Extend the left and right trailing edge flaps to position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 21-51-21-860-016

(5) Simulate the air mode as follows: Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-51-21-860-017

(6) Retract the left and right trailing edge flaps to the full-up position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 21-51-21-020-010

(7) Disconnect electrical connector D3916 from the left ram air sensor and electrical connector D3918 from the right ram air sensor.

SUBTASK 21-51-21-700-003

(8) Make sure that the ram air actuator retracts.

NOTE: This position is approximately 0.90 inch from the fully retracted position.

SUBTASK 21-51-21-820-001

(9) Adjust the ram air actuator as follows:

(a) Rotate shaft assembly [21] until the rigging pin holes [11] in the shaft assembly [21] and bearing housing support [20] align.

(b) Install a 3/16-inch diameter rigging pin through the rigging pin holes [11].

(c) Attach the actuator rod end to the arm [10]:

1) Install the bolt [8], washers [9] and nut [12] to attach the actuator rod end to the arm [10].

2) If the hole in the rod end of the actuator does not align with the holes in the arm [10], do these steps:

a) Remove the lockwire [14] from the jamnut [13] on the actuator rod end.

b) Adjust the length of the rod end by plus or minus 0.25 inch to align the holes.

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c) Make sure that the jamnut is rotated so that when the actuator is fully extended (door closed) the jamnut does not interfere with the arm [10].

d) After adjustment of the actuator rod end, tighten the jamnut as follows:

<1> Hold the actuator rod end from turning and tighten the jamnut until it is seated on the rod.

<2> Tighten the jamnut to 110 (± 10) in-lbs [12.45 (± 1.15) Nm).

e) Install MS20995C32 lockwire, G01048 to hold the jamnut in place.

(d) Remove the 3/16-inch rigging pin.

SUBTASK 21-51-21-710-001

(10) Adjust the tie rod assembly [22] as follows:

(a) Extend the left and right trailing edge flaps to position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803

(b) Put the airplane in the ground mode. Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

(c) Install the tie rod assembly [22] as follows:

1) Adjust the length of the tie rod assembly [22] until contact is just made between the first set of over travel stops (Figure 401, Views A-A and E).

NOTE: The over travel stops are the extensions on the links [26]. One of the over travel stops will hit the clevis [27] before the other travel stop does. It is considered to be the first set of over travel stops.

2) Once contact is made, adjust the tie rod assembly [22] so that it is one full turn shorter.

NOTE: The tie rod can be adjusted without removing it by loosening both jamnuts and rotating the shaft to shorten or lengthen it.

(d) Do a check that the tie rod assembly [22] is properly adjusted as follows:

1) Push with 8-12 pounds of force at the joint location in the direction indicated by the arrow.

2) Make sure that the smaller of the two gaps (Figure 401, Views A-A and E) is 0.010 - 0.030 inch with the force applied.

NOTE: The inboard and outboard gaps on the deflector door linkage may or may not be the same.

3) If the gap is not within the acceptable limits, adjust the tie rod assembly [22] in 1/4 turn increments until the gap is within the 0.010 - 0.030 inch specification.

4) If the gap is within the acceptable limits, tighten both jamnuts on the tie rod assembly [22] to 50 (± 10) inch-pounds.

5) Install lockwire to retain the jamnuts in position.

SUBTASK 21-51-21-710-002

(11) Do this check of the deflection door and ram air inlet doors adjustment:

(a) Simulate the air mode as follows: Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

(b) Make sure the inlet doors move towards the closed position smoothly without hanging or binding.

(c) Make sure the deflector door retracts (closes) to the faired position.

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(d) Retract the left and right trailing edge flaps to the full-up position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

(e) Connect the electrical connectors D3916 (D3918) to the ram air sensor T481 (T482).

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(g) Wait for a minimum of 10 seconds and then continue.

NOTE: Opening the above circuit breakers for 10 seconds minimum and then closing will clear the SRADA internal fault memory and allow actuator movement during subsequent steps.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(i) Make sure the actuator drives to the fully extended position (flight fully closed).

NOTE: Dimension “A” should be approximately 1.40 inches.

(j) Put the airplane in the ground mode. Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

(k) Make sure that the ram air inlet doors return to the fully open position smoothly without any hanging or binding.

(l) Make sure the deflector door returns to the fully extended position.

I. Ram Air Inlet Actuator Test

SUBTASK 21-51-21-740-001

(1) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-21-410-011

(1) Install the applicable retractable landing light assembly. To install the light assembly, do this task: Retractable Landing Light - Light Assembly Replacement, TASK 33-42-02-960-802.

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SUBTASK 21-51-21-860-008

(2) For the ram air inlet actuator for the left pack, install these access panels:

Number	Name/Location
191FL	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-51-21-410-001

(3) For the left ram air inlet actuator, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-21-860-009

(4) For the ram air inlet actuator for the right pack, install these access panels:

Number	Name/Location
191FR	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GR	Ram Air Actuator Panel - Forward

SUBTASK 21-51-21-410-002

(5) For the right ram air inlet actuator, close this access panel:

Number	Name/Location
192CR	ECS Access Door

SUBTASK 21-51-21-860-010

(6) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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RAM AIR INLET DEFLECTOR DOOR AND SHAFT ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the ram air inlet deflector door

(2) An installation of the ram air inlet deflector door

(3) A removal of the shaft assembly for the ram air inlet deflector door

(4) An installation of the shaft assembly for the ram air inlet deflector door.

TASK 21-51-22-000-801

2. Ram Air Inlet Deflector Door Removal

(Figure 401, Figure 402)

A. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 21-51-22-860-001

(1) For the left pack ram air inlet deflector door, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-51-22-860-002

(2) For the right pack ram air inlet deflector door, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

C. Ram Air Inlet Deflector Door Removal

SUBTASK 21-51-22-020-001

(1) Remove the nut [11] and washer [8] from the ends of the bolt [9] that attach the ram air inlet deflector door [1] to the links.

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SUBTASK 21-51-22-020-002

(2) Remove the bolt [9] and washer [10] from the links.

NOTE: Hold the links while you remove the bolts [9]. There is tension applied to the links by the spring on the deflector door shaft.

SUBTASK 21-51-22-020-003

(3) Remove the screw [4], lockwasher [5], and washers [6] that attach the bonding jumper [7] to the ram air inlet deflector door [1].

SUBTASK 21-51-22-020-004

(4) Remove the bolts [2] and washers [3] that attach hinge of the ram air inlet deflector door [1] to the airplane.

SUBTASK 21-51-22-020-005

(5) Carefully lower the ram air inlet deflector door [1] from the airplane.

END OF TASK

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LEFT RAM AIR INLET DEFLECTOR DOOR
(RIGHT RAM AIR INLET DEFLECTOR DOOR IS OPPOSITE)

A

F71908 S0006563160_V2

Ram Air Inlet Deflector Door Installation
Figure 401/21-51-22-990-801 (Sheet 1 of 3)

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LEFT RAM AIR INLET DEFLECTOR DOOR
(RIGHT RAM AIR INLET DEFLECTOR DOOR IS OPPOSITE)

A

2364978 S0000536550_V2

Ram Air Inlet Deflector Door Installation
Figure 401/21-51-22-990-801 (Sheet 2 of 3)

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RIGHT RAM AIR INLET DEFLECTOR DOOR
(LEFT RAM AIR INLET DEFLECTOR DOOR IS OPPOSITE)

A

2364970 S0000536556_V2

Ram Air Inlet Deflector Door Installation
Figure 401/21-51-22-990-801 (Sheet 3 of 3)

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LEFT RAM AIR INLET DEFLECTOR DOOR SHAFT ASSEMBLY
(RIGHT RAM AIR INLET DEFLECTOR DOOR SHAFT ASSEMBLY IS OPPOSITE)

A

F71975 S0006563161_V3

Ram Air Inlet Deflector Door Shaft Assembly Installation
Figure 402/21-51-22-990-802 (Sheet 1 of 2)

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SPRING

B

BEARING SUPPORT ASSEMBLY

C

H04190 S0006563162_V3

Ram Air Inlet Deflector Door Shaft Assembly Installation
Figure 402/21-51-22-990-802 (Sheet 2 of 2)

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TASK 21-51-22-400-801

3. **Ram Air Inlet Deflector Door Installation**
(Figure 401, Figure 402)

A. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Deflector door	53-42-00-72D-320	AKS ALL

B. **Location Zones**

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
212	Flight Compartment - Right

C. **Procedure**

SUBTASK 21-51-22-420-001

(1) Put the ram air inlet deflector door [1] in its position.

SUBTASK 21-51-22-420-002

(2) Install the bolts [2] and the washers [3] that attach the hinge of ram air inlet deflector door [1] to the airplane.

SUBTASK 21-51-22-420-003

(3) Do the steps that follow to install the bonding jumper [7]:

NOTE: Make sure the bonding jumper [7], screw [4], lockwasher [5], and washers [6] are clean.

(a) Put the bonding jumper [7] in its position.

(b) Install the screw [4], lockwasher [5], and washers [6].

SUBTASK 21-51-22-420-004

(4) Install the bolt [9], washer [10], washer [8], and nut [11] that attach the ram air inlet deflector door [1] to the links.

NOTE: Make sure the spring is in its position on the support assembly and around the inboard link (Figure 402).

D. **Put the Airplane Back to Its Usual Condition**

SUBTASK 21-51-22-860-003

(1) For the left pack ram air inlet door deflector door, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-51-22-860-004

(2) For the right pack ram air inlet deflector door, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

——— END OF TASK ———

TASK 21-51-22-000-802

4. Ram Air Inlet Deflector Door Shaft Assembly Removal

(Figure 402)

A. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
212	Flight Compartment - Right

B. Access Panels

Number	Name/Location
191CL	Forward Wing To Body Fairing Panel - Middle
191CR	Forward Wing To Body Fairing Panel - Middle

C. Prepare for the Removal

SUBTASK 21-51-22-860-005

(1) For the left pack ram air inlet deflector door shaft assembly, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

(b) Remove this access panel:

Number	Name/Location
191CL	Forward Wing To Body Fairing Panel - Middle

SUBTASK 21-51-22-860-006

(2) For the right pack ram air inlet deflector shaft assembly, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(b) Remove this access panel:

Number	Name/Location
191CR	Forward Wing To Body Fairing Panel - Middle

D. Ram Air Inlet Deflector Door Shaft Assembly Removal

SUBTASK 21-51-22-020-006

(1) Do these steps to remove the arm assembly [40]:

(a) Remove the nut [46], washer [45], washer [41], and bolt [42] to disengage the link extension [37] from the arm assembly [40].

(b) Remove the nut [44], washer [43], washer [39], and bolt [38].

(c) Remove the arm assembly [40] from the end of the shaft [48].

SUBTASK 21-51-22-020-007

(2) Do these steps to remove the shaft [48]:

(a) Remove the nut [33], washer [32], and bolt [31], that attach the links [49] to the shaft [48].

(b) Remove the nut [51], washers [52], and bolt [54] that attach the bearing support assembly [53] to the support assembly.

(c) While you hold the links [49], carefully pull the shaft [48] in the inboard direction to remove it.

(d) Remove the nut [34], washer [35], bolt [36], and bushing [47] from the bottom end of the links [49].

(e) Remove the links [49].

——— END OF TASK ———

TASK 21-51-22-400-802

5. Ram Air Inlet Deflector Door Shaft Assembly Installation

(Figure 401, Figure 402)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
49	Link	53-42-00-72D-285	AKS ALL
		53-42-00-72D-832	AKS ALL
		53-42-00-72D-841	AKS ALL

B. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540

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(Continued)

Zone	Area
212	Flight Compartment - Right

C. **Access Panels**

Number	Name/Location
191CL	Forward Wing To Body Fairing Panel - Middle
191CR	Forward Wing To Body Fairing Panel - Middle

D. **Procedure**

SUBTASK 21-51-22-420-005

(1) Do these steps to install the shaft [48]:

NOTE: You must remove the link [49] from the shaft assembly before you can install the shaft [48] into the ram air inlet.

(a) Remove the nut [33], washer [32], and bolt [31], that attach the links [49] to the shaft [48].

(b) Remove the links [49] from the shaft [48].

(c) Put the links [49] in their positions.

NOTE: Make sure that the inboard and outboard links are opposite for the left and right side. The circular edge of each link must point down after the installation.

(d) Install the bushing [47], washer [35], bolt [36], and nut [34].

(e) While you hold the links [49], insert the shaft [48] into the ram air inlet in an outboard direction, through the spring [50] and the holes in the top ends of the links [49].

NOTE: Make sure you insert the shaft [48] so that the end without the hole goes in first.

(f) Install the bolt [31], washer [32], and nut [33] that attach the links [49] to the shaft [48].

CAUTION: DO NOT LUBRICATE THE BEARING WITH GREASE OR WD-40. IF YOU LUBRICATE, THE BEARING LINER CAN SWELL, DECREASING THE CLEARANCE AND LEADING TO INCREASED ROTATIONAL BREAK-AWAY TORQUE.

(g) Install the bolt [54], washers [52], and nut [51] that attach the bearing support assembly [53] to the support assembly.

NOTE: The bearing is self lubricating.

(h) Make sure the spring [50] is in its position on the support assembly and around the inboard link.

SUBTASK 21-51-22-420-006

(2) Do these steps to install the arm assembly [40]:

(a) Put the arm assembly [40] in its position on the end of the shaft [48] with the free end facing aft.

(b) Install the bolt [38], washer [39], washer [43], and nut [44].

(c) Put the link extension [37] in its position and install the bolt [42], washer [41], washer [45], and nut [46].

E. **Put the Airplane Back to Its Usual Condition**

SUBTASK 21-51-22-860-007

(1) For the left pack ram air inlet actuator, do these steps:

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(a) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

(b) Close this access panel:

Number	Name/Location
191CL	Forward Wing To Body Fairing Panel - Middle

SUBTASK 21-51-22-860-008

(2) For the right pack ram air inlet actuator, do these steps:

(a) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(b) Close this access panel:

Number	Name/Location
191CR	Forward Wing To Body Fairing Panel - Middle

——— END OF TASK ———

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RAM AIR INLET SYSTEM - ADJUSTMENT

1. General

A. This procedure has one task. The task is an adjustment of the ram air inlet deflector door and the ram air inlet modulation panels.

B. The left and right ram air inlet systems may be adjusted at the same time or adjusted separately.

TASK 21-51-22-400-803

2. Ram Air Inlet Deflector Door and Modulation Panels Adjustment

(Figure 501)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

B. Tools/Equipment

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

Reference	Description
SPL-1585	Kit - Rigging Pins, All Systems Part #: F70207-109 Supplier: 81205

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
191CL	Forward Wing To Body Fairing Panel - Middle
191CR	Forward Wing To Body Fairing Panel - Middle
191GL	Ram Air Actuator Panel - Forward
191GR	Ram Air Actuator Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door

E. Preparation for the Adjustment

SUBTASK 21-51-22-010-001

(1) For the adjustment of the left ram air inlet system, remove these panels:

Number	Name/Location
191CL	Forward Wing To Body Fairing Panel - Middle

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(Continued)

Number	Name/Location
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-51-22-010-002

(2) To get access to the left ram air temperature sensor, open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-22-010-003

(3) For the adjustment of the right ram air inlet system, remove these panels:

Number	Name/Location
191CR	Forward Wing To Body Fairing Panel - Middle
191GR	Ram Air Actuator Panel - Forward

SUBTASK 21-51-22-010-004

(4) To get access the right ram air temperature sensor, open this access panel:

Number	Name/Location
192CR	ECS Access Door

F. Ram Air Inlet System Adjustment/Rigging

SUBTASK 21-51-22-020-008

(1) Do these steps to disconnect the forward end of the tie rod assembly [1]:

(a) Remove the bolt [3], washers [4] and nut [5].

(b) Move the end of the tie rod assembly [1] away from the adjacent arm [2].

SUBTASK 21-51-22-860-009

(2) Do these steps to put the actuator in the flight position:

(a) If not already done, attach the electrical connectors [28] and [29] to the actuator.

(b) For the adjustment of the actuator for the left ram air system, do these steps:

1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

(c) For the adjustment of the actuator for the right ram air system, do these steps:

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1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(d) Extend the trailing edge flaps to position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

(e) To prevent the standby hydraulic pump from operating when the airplane is in air mode, do this step:

1) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

(f) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

(g) Retract the trailing edge flaps to full up position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

(h) Wait for the ram air actuator to fully extend.

(i) Remove the electrical connector D3916 (D3918) from the ram air sensor.

(j) Make sure that the actuator retracts to a postion that is approximately 0.90 inch from the fully retracted position when the connector D3916 (D3918) is removed.

SUBTASK 21-51-22-420-007

(3) Do these steps to attach the rod end of actuator [21] to the bellcrank [13]:

(a) Turn the shaft assembly [16] to align the rigging pin holes [14] in the shaft assembly [16] and the bearing housing support [15].

(b) Install a 1-3/4 inch long, 3/16-inch diameter rigging pin (part of rig pin kit, SPL-1585) through the rigging pin holes [14].

(c) If the hole in the rod end of the actuator [21] does not align with the holes in the bellcrank [13], do these steps:

1) Remove the lockwire [20] from the jamnut [19] on the actuator rod end.

2) Adjust the length of the rod end plus or minus 0.25 inch until the holes align.

(d) Tighten the jamnut [19] on the rod end of the actuator [21] as follows:

1) Rotate the jamnut [19] so that it does not interfere with the bellcrank [13] when the actuator is fully extended.

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2) Restrain the actuator rod end until the jamnut [19] is seated on the rod and tighten the jamnut [19] at 100 to 120 inch-pounds.

(e) Install lockwire [20] between the jamnut [19] on the actuator rod end and the rod end lockwasher next to it. To install the lockwire, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

(f) Remove the rigging pin.

SUBTASK 21-51-22-860-010

(4) Extend the trailing edge flaps to position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

NOTE: The actuator will retract slightly.

SUBTASK 21-51-22-860-011

(5) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

(a) Make sure the actuator retracts to the fully retracted position (ground fully open).

SUBTASK 21-51-22-820-001

(6) Do the steps that follow to adjust the tie rod assembly [1]:

(a) Remove the lockwire [6] from the jamnuts [7] on the tie-rod assembly [1].

(b) Loosen the jamnuts [7].

(c) Install the bolt [3], washers [4] and nut [5] that attach the tie rod assembly [1] to the arm [2] on the deflector door pivot shaft.

(d) Adjust the length of the tie rod assembly [1] until the over-travel stop on either the inboard or outboard link [25] just touches the applicable inboard or outboard clevis [26].

(e) Adjust the tie rod assembly [1] so that it is one full turn shorter as follows:

1) Rotate the shaft one full turn.

2) Tighten the jam nuts [7].

(f) Apply 8 to 12 pounds of force (35.6 to 53.4 newtons) to the link [25] (View A-A) as follows:

1) Apply the force through the axis of the bolt in a plane approximately parallel to the surface of the ram air inlet deflector door.

(g) As you apply the force, make sure that the smaller of the two gaps (either inboard or outboard) measures 0.010 to 0.030 inch (0.25 to 0.76 mm) between the over-travel arm of the link [25] and the clevis [26] (Sheet 4, View A-A of Figure 501.

NOTE: The gaps at the inboard and outboard links may or may not be the same.

(h) If the smaller gap is not within 0.010 to 0.030 inch (0.25 to 0.76 mm), adjust the tie rod assembly [1] in 1/4 turn increments until you get the specified gap.

(i) Tighten the jamnuts [7] on the tie rod assembly [1] at 40 to 60 inch-pounds.

(j) Install the lockwire [6] on the jamnuts [7]. To install the lockwire, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

SUBTASK 21-51-22-860-012

(7) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

(a) Make sure that the inlet doors move to a more closed position smoothly without binding.

(b) Make sure that the deflector door closes and is faired with the ram air inlet ramp.

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SUBTASK 21-51-22-860-013

(8) Retract the trailing edge flaps to full up position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 21-51-22-480-004

(9) Install the electrical connector D3916 (D3918) on the ram air sensor.

SUBTASK 21-51-22-860-019

(10) Do the following steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(b) Wait for a minimum of 10 seconds and then continue.

NOTE: Opening the above circuit breakers for 10 seconds minimum and then closing will clear the SRADA internal fault memory and allow actuator movement during subsequent steps.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-51-22-700-002

(11) Do a check of the dimension shown in Figure 501, View B-B.

(a) The dimension “A” should be approximately 0.85 inch (21.59 mm).

(b) This is a reference check only as no action is required at this point in the adjustment of the system.

SUBTASK 21-51-22-820-002

(12) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

(a) Make sure that the deflector door opens to the fully deployed position.

(b) Make sure that the modulation panels move smoothly to the fully open position without any binding.

(c) Apply 8 to 12 pounds of force (35.6 to 53.4 newtons) to the link [25] (View A-A) as follows:

1) Apply the force through the axis of the bolt in a plane approximately parallel to the surface of the ram air inlet deflector door.

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(d) As you apply the force, make sure that the smaller of the two gaps (either inboard or outboard) measures 0.010 to 0.030 inch (0.25 to 0.76 mm) between the over-travel arm of the link [25] and the clevis [26] (Sheet 4, View A-A of Figure 501).

NOTE: The gaps at the inboard and outboard links may or may not be the same.

(e) If the smaller gap is within 0.010 to 0.030 inch (0.25 to 0.76 mm), do these steps:

1) Tighten the jamnuts [7] on the tie rod assembly [1] at 40 to 60 inch-pounds.

2) Install the lockwire [6] on the jamnuts [5]. To install the lockwire, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

(f) If the smaller gap is not within 0.010 to 0.030 inch (0.25 to 0.76 mm), adjust the tie rod assembly [1] in 1/4 turn increments until you get the specified gap.

(g) Do steps 2.F.(7)(i) through 2.F.(14)(f) again to make sure the re-adjustment of the tie rod assembly is correct.

(h) Tighten the jamnuts [7] on the tie rod assembly [1] at 40 to 60 inch-pounds.

(i) Install the lockwire [6] on the jamnuts [7]. To install the lockwire, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

(j) Make sure that this circuit breaker is closed:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

SUBTASK 21-51-22-740-001

(13) Do a BITE test on the left pack/zone temperature controller (M1442) and the right pack/zone temperature controller (M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) Do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-22-860-015

(1) When the left ram air inlet system was adjusted, install these access panels:

Number	Name/Location
191CL	Forward Wing To Body Fairing Panel - Middle
191GL	Ram Air Actuator Panel - Forward

SUBTASK 21-51-22-410-003

(2) For the left ram air inlet system, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-22-860-016

(3) When the right ram air inlet system was adjusted, install these access panels:

Number	Name/Location
191CR	Forward Wing To Body Fairing Panel - Middle
191GR	Ram Air Actuator Panel - Forward

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SUBTASK 21-51-22-410-004

(4) For the right ram air inlet system, close this access panel:

Number	Name/Location
192CR	ECS Access Door

SUBTASK 21-51-22-860-017

(5) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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Ram Air Inlet System
Figure 501/21-51-22-990-803 (Sheet 1 of 6)

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RAM AIR INLET DEFLECTOR DOOR LINKAGE

B

H15021 S0006563170_V5

Ram Air Inlet System
Figure 501/21-51-22-990-803 (Sheet 2 of 6)

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LEFT RAM AIR INLET ACTUATOR
(RIGHT RAM AIR INLET ACTUATOR IS OPPOSITE)

C

LEFT ECS BAY
(RIGHT ECS BAY IS OPPOSITE)

D

2119802 S0000455992_V3

Ram Air Inlet System
Figure 501/21-51-22-990-803 (Sheet 3 of 6)

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LEFT RAM AIR INLET ACTUATOR
(RIGHT RAM AIR INLET ACTUATOR IS OPPOSITE)

C

LEFT ECS BAY
(RIGHT ECS BAY IS OPPOSITE)

D

2212806 S0000493551_V3

Ram Air Inlet System
Figure 501/21-51-22-990-803 (Sheet 4 of 6)

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1 THIS PART OF LINK [25] IS REFERRED TO AS THE OVER-TRAVEL STOP.

H15068 S0006563173_V6

Ram Air Inlet System
Figure 501/21-51-22-990-803 (Sheet 5 of 6)

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(FORWARD AND AFT MODULATION PANELS SHOWN IN FLIGHT FULL CLOSED POSITION)

B-B

H08104 S0006563155_V6

Ram Air Inlet System
Figure 501/21-51-22-990-803 (Sheet 6 of 6)

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RAM AIR INLET MODULATION PANELS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the ram air inlet modulation panels

(2) An installation of the ram air inlet modulation panels.

B. The ram air inlet modulation panels have a forward panel and an aft panel.

C. The modulation panels are installed at the forward end of the wing-to-body fairings below the wings.

TASK 21-51-23-000-801

2. Ram Air Inlet Modulation Panels Removal

(Figure 401)

A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

C. Preparation for the Removal

SUBTASK 21-51-23-860-002

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

SUBTASK 21-51-23-860-003

(2) For the modulation panels for the left ram air inlet, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-51-23-860-004

(3) For the modulation panels for the right ram air inlet, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

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D. Ram Air Inlet Modulation Panels Removal

NOTE: The ram air inlet modulation panels have a forward panel and an aft panel. It is necessary to remove the forward panel before you can remove the aft panel.

SUBTASK 21-51-23-020-001

(1) Remove the forward modulation panel [1] as follows:

(a) Remove the bolts [3] that attach the forward end of the aft modulation panel [2] to the aft end of the forward modulation panel [1].

NOTE: Let the forward modulation panel [1] come down. This will permit access to the bolts [4] and washers [5] that attach the forward end of the forward modulation panel [1] to the ram air inlet forward fairing support.

(b) Remove the bolts [4] and washers [5] from the forward hinge on the forward modulation panel [1].

(c) Remove the forward modulation panel [1] from the ram air inlet.

SUBTASK 21-51-23-020-002

(2) Remove the aft modulation panel [2] as follows:

(a) Disconnect the two clevis assemblies [8] from the aft modulation panel [2]:

1) Remove the nut [12], the washers [10], the bushing [11], and the bolt [9] that connect each clevis assembly [8] to the aft modulation panel [2].

(b) Pull the aft modulation panel [2] out of the ram air inlet.

END OF TASK

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F81310 S0006563183_V3

Ram Air Inlet Modulation Panels Installation
Figure 401/21-51-23-990-801 (Sheet 1 of 4)

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FORWARD MODULATION PANEL

B

AFT MODULATION PANEL

C

D36371 S0000153579_V4

Ram Air Inlet Modulation Panels Installation
Figure 401/21-51-23-990-801 (Sheet 2 of 4)

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CLEVIS ASSEMBLY
(EXAMPLE)

D

F82129 S0006563185_V2

Ram Air Inlet Modulation Panels Installation
Figure 401/21-51-23-990-801 (Sheet 3 of 4)

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2279159 S0000514431_V2

Ram Air Inlet Modulation Panels Installation
Figure 401/21-51-23-990-801 (Sheet 4 of 4)

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TASK 21-51-23-400-801

3. Ram Air Inlet Modulation Panels Installation

(Figure 401)

A. References

Reference	Title
21-51-22-400-803	Ram Air Inlet Deflector Door and Modulation Panels Adjustment (P/B 501)
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
191	Lower Wing-To-Body Fairing - Forward of Wing Box
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door

D. Ram Air Inlet Modulation Panels Installation

SUBTASK 21-51-23-420-001

(1) Install the aft modulation panel [2] in the ram air inlet as follows:

(a) Move the aft modulation panel [2] into its position in the ram air inlet.

(b) Make sure the slide blocks [7] are in the slide block channels [6].

(c) Install the bolts [9], washers [10], bushings [11] and nuts [12] to connect the clevis assemblies [8] to the aft modulation panel [2].

SUBTASK 21-51-23-420-002

(2) Install the forward modulation panel [1] in the ram air inlet as follows:

(a) Put the forward modulation panel [1] in its position in the ram air inlet with the forward hinge against the ram air inlet forward fairing support.

(b) Install the bolts [4] and washers [5] that attach the forward hinge on the forward modulation panel [1] to the ram air inlet forward fairing support.

(c) Adjust the forward modulation panel [1] and the aft modulation panel [2] until the aft hinge on the forward modulation panel [1] is against the forward edge of the aft modulation panel [2].

(d) Make sure that the slide blocks [7] are still in the slide block channels [6].

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(e) Install the bolts [3] that attach the forward modulation panel [1] and the aft modulation panel [2].

SUBTASK 21-51-23-860-005

WARNING: MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET MODULATION PANELS, LINKAGES AND ACTUATORS BEFORE YOU SUPPLY POWER TO THE RAM AIR ACTUATOR. POSSIBLE INJURY TO PERSONNEL CAN OCCUR.

(3) If you replaced a modulation panel for the left pack, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-51-23-860-006

WARNING: MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET MODULATION PANELS, LINKAGES AND ACTUATORS BEFORE YOU SUPPLY POWER TO THE RAM AIR ACTUATOR. POSSIBLE INJURY TO PERSONNEL CAN OCCUR.

(4) If you replaced a modulation panel for the right pack, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

E. Ram Air Inlet Modulation Panels Installation Test

SUBTASK 21-51-23-860-007

WARNING: MAKE SURE THAT PERSONNEL ARE CLEAR OF THE RAM AIR INLET MODULATION PANELS, LINKAGES AND ACTUATORS BEFORE YOU DO THIS TEST. POSSIBLE INJURY TO PERSONNEL CAN OCCUR.

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-23-860-018

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	15	C01355	LANDING GEAR AIR/GND SYS 2

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(Continued)

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	16	C01356	LANDING GEAR AIR/GND SYS 1
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	11	C00313	INDICATOR MASTER DIM SECT 1
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6

SUBTASK 21-51-23-860-008

(3) If you replaced the modulation panels for the left pack, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

(b) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-23-860-009

(4) If you replaced the modulation panels for the right pack, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

(b) Open this access panel:

Number	Name/Location
192CR	ECS Access Door

SUBTASK 21-51-23-860-011

(5) Set these switches on the P5-10 air conditioning panel to OFF:

(a) BLEED 1

(b) BLEED 2

(c) APU BLEED

(d) L PACK

(e) R PACK

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SUBTASK 21-51-23-730-003

(6) Disconnect the electrical connector D486 (D490) from the left (right) pack flow control and shutoff valve.

SUBTASK 21-51-23-010-001

WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF CONTROL SURFACE AREAS. MOVEMENT OF CONTROL SURFACES CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Extend the trailing edge flaps to Flaps Position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 21-51-23-860-012

(8) Put the airplane in the air mode. To put the airplane in the air mode, do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-51-23-700-001

(9) Make sure that the ram air inlet deflector door closes and is faired with the ram air inlet ramp.

SUBTASK 21-51-23-860-013

(10) Make sure that the left (right) modulation panels move in the direction of the closed position.

SUBTASK 21-51-23-730-005

(11) Retract the trailing edge flaps to the full up position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 21-51-23-730-006

(12) Make sure that the left (right) modulation panels move in the direction of the closed position.

SUBTASK 21-51-23-010-002

(13) Disconnect the electrical connector D3916 (D3918) from the left (right) ram air sensor.

SUBTASK 21-51-23-730-009

(14) Make sure that the ram air inlet modulation panels move to a more open position.

SUBTASK 21-51-23-410-001

(15) Connect the electrical connector D3916 (D3918) to the left (right) ram air sensor.

SUBTASK 21-51-23-860-020

(16) Do the following steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(b) Wait for a minimum of 10 seconds and then continue.

NOTE: Opening the above circuit breakers for 10 seconds minimum and then closing will clear the SRADA internal fault memory and allow actuator movement during subsequent steps.

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-51-23-410-002

(17) Make sure the ram air inlet modulation panels move to a more closed position.

SUBTASK 21-51-23-860-014

(18) Extend the trailing edge flaps to Flaps Position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 21-51-23-860-015

(19) Make sure that the left (right) ram air inlet modulation panels move to a more open position.

SUBTASK 21-51-23-860-016

(20) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-51-23-730-015

(21) Make sure the ram air inlet modulation panels move to a more open position.

SUBTASK 21-51-23-700-002

(22) Make sure that the ram air inlet deflector door opens to the fully deployed position.

SUBTASK 21-51-23-860-017

(23) Connect the electrical connector D486 (D490) to the pack flow control and shutoff valve.

SUBTASK 21-51-23-220-001

(24) If the dimension check is not correct or the modulation panels do not move smoothly, do this task: Ram Air Inlet Deflector Door and Modulation Panels Adjustment, TASK 21-51-22-400-803.

SUBTASK 21-51-23-740-001

(25) Do a BITE test on the left pack/zone temperature controller (M1442) and the right pack/zone temperature controller (M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) Do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-23-410-007

(1) Close the applicable access panels:

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door

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SUBTASK 21-51-23-860-019

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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RAM AIR DUCTS - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks:

(1) A removal of the ram air ducts

(2) An installation of the ram air ducts.

B. Each pack has a ram air inlet duct and a ram air exhaust duct.

(1) The ram air inlet duct has an anti-static coating that prevents the build up of electric charge on the surface of the duct.

(2) A bonding check is required after the installation of the ram air inlet duct to verify that the ground path is satisfactory.

TASK 21-51-24-000-801

2. Ram Air Ducts Removal

(Figure 401)

A. References

Reference	Title
21-51-23-000-801	Ram Air Inlet Modulation Panels Removal (P/B 401)
21-51-27-000-801	Ram Air Exhaust Actuator - Removal (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
191HL	Ram Air Inlet Lip Panel - Forward
191HR	Ram Air Inlet Lip Panel - Forward
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-24-860-001

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-24-860-002

(2) Do these steps on the P5-10 air conditioning panel (installed on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

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(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-51-24-010-001

(3) To remove the left ram air inlet duct, do these steps:

Remove this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

Remove this access panel:

Number	Name/Location
191HL	Ram Air Inlet Lip Panel - Forward

SUBTASK 21-51-24-010-002

(4) To remove the right ram air inlet duct, do these steps:

Remove this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

Remove this access panel:

Number	Name/Location
191HR	Ram Air Inlet Lip Panel - Forward

SUBTASK 21-51-24-010-003

(5) To get access to the left ram air exhaust duct, remove the applicable ram air inlet modulation panels. To remove them, do this task: Ram Air Inlet Modulation Panels Removal, TASK 21-51-23-000-801.

SUBTASK 21-51-24-010-004

(6) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-24-010-005

(7) To get access to the right ram air exhaust duct, open these access panels in the sequence that follows:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

E. Ram Air Inlet Duct Removal

SUBTASK 21-51-24-030-001

(1) Disconnect the cooling duct to the NGS heat exchanger at the aft, top portion of the left heat exchanger inlet duct [1] as follows:

(a) Loosen the two hose clamps [18] that attach the flexible hose [17] to the NGS heat exchanger [19] and the heat exchanger inlet duct [1].

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(b) Move the end of the flexible hose [17] off of the end of heat exchanger inlet duct [1].

SUBTASK 21-51-24-020-001

(2) Do these steps to remove the heat exchanger inlet duct [1]:

(a) Remove the bolt [20] and the washers [21] that hold each bonding jumper [22] to the airplane structure.

NOTE: These bolts are longer to accommodate the bonding jumper. Keep them separate from the other bolts for the installation.

(b) Remove the bolts [4], and the washers [5].

(c) Loosen the clamps [6].

(d) Move the end of the flexible hose [3] off the heat exchanger inlet duct [1].

(e) Move the heat exchanger inlet duct [1] down to disengage the upper flange from the retainer on the lower wing beam.

SUBTASK 21-51-24-020-002

(3) Remove the clamps [6].

SUBTASK 21-51-24-020-003

(4) Remove the flexible hose [3] from the transition duct [2].

SUBTASK 21-51-24-020-004

(5) Do these steps to remove the transition duct [2]:

(a) Open the clamp [7] that holds the transition duct [2].

(b) Remove the bolts [8] and the washers [9].

(c) Remove the transition duct [2].

SUBTASK 21-51-24-480-001

(6) Put covers on the duct openings to keep out unwanted materials.

F. Ram Air Exit Duct Removal

SUBTASK 21-51-24-020-009

(1) Remove the ram air exhaust actuator: Ram Air Exhaust Actuator - Removal, TASK 21-51-27-000-801.

SUBTASK 21-51-24-020-008

(2) Do these steps to remove the ram air exit duct:

(a) Loosen the aft clamp [32].

(b) Move the aft end of the flexible duct [40] forward off of the ram air exhaust duct [26].

(c) Disconnect bonding jumpers [36] and [37] from the rear spar [35] as follows:

1) Remove the nut [39] and washer [38].

2) Remove the bonding jumpers [36] and [37].

(d) Support the ram air exhaust duct [26] while you remove the bolts [16] and [27].

(e) Lower the ram air exhaust duct [26] out of the aircraft.

(f) Do these steps to remove the elbow [10]:

1) Remove the bolts [12] and washers [13] at the 7 locations without the bonding jumper.

2) At the flange location with the bonding jumper, remove the bolt [28], washer [29], bonding jumper [30] and washer [31].

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3) Remove the elbow [10] along with the flexible duct [40].

(g) Put a cover on the opening to the plenum/diffuser to keep out unwanted material.

——— END OF TASK ———

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G26359 S0006563191_V3

Ram Air Ducts Installation
Figure 401/21-51-24-990-801 (Sheet 1 of 8)

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G26363 S0006563192_V4

Ram Air Ducts Installation
Figure 401/21-51-24-990-801 (Sheet 2 of 8)

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Ram Air Ducts Installation
Figure 401/21-51-24-990-801 (Sheet 3 of 8)

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Ram Air Ducts Installation
Figure 401/21-51-24-990-801 (Sheet 4 of 8)

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Ram Air Ducts Installation
Figure 401/21-51-24-990-801 (Sheet 5 of 8)

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NITROGEN GENERATION SYSTEM (NGS)

G

J79500 S0000179429_V4

Ram Air Ducts Installation
Figure 401/21-51-24-990-801 (Sheet 6 of 8)

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NGS HEAT EXCHANGER

H

BONDING JUMPER (EXAMPLE)

I

J79521 S0000179624_V4

Ram Air Ducts Installation
Figure 401/21-51-24-990-801 (Sheet 7 of 8)

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1900634 S0000348492_V3

Ram Air Ducts Installation
Figure 401/21-51-24-990-801 (Sheet 8 of 8)

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TASK 21-51-24-400-801

3. **Ram Air Ducts 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)
21-51-23-400-801	Ram Air Inlet Modulation Panels Installation (P/B 401)
21-51-27-400-801	Ram Air Exhaust Actuator - Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. **Consumable Materials**

Reference	Description	Specification
A50260	Tape - Skyflex GUA1301-1 Aircraft Sealant Tape	
A50261	Tape - Skyflex GUA1302-1 Aircraft Sealant Tape	
B00062	Solvent - Acetone (99.5% Grade)	ASTM D 329 (Supersedes O-A-51)
B00083	Solvent - VM&P Naphthas	ASTM D-3735 Type III
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
C00766	Primer - Nonchromated Primer For Composites	BMS10-103 Type I
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G50637	Wiper - MicroCare Fiber Wipes	

C. **Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Duct	21-51-24-04A-160	AKS ALL
		21-51-24-04B-165	AKS ALL
2	Transition duct	21-51-24-04A-115	AKS ALL
		21-51-24-04B-120	AKS ALL

D. **Location Zones**

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

E. **Access Panels**

Number	Name/Location
191HL	Ram Air Inlet Lip Panel - Forward
191HR	Ram Air Inlet Lip Panel - Forward
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	ECS Access Door
192CR	ECS Access Door

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(Continued)

Number	Name/Location
192DR	ECS High Pressure Access Door

F. Ram Air Inlet Duct Inspection

SUBTASK 21-51-24-210-001

(1) Inspect the tape [23] and [24] on the flange of the heat exchanger inlet duct [1] for these conditions:

(a) Missing or damaged sections

(b) Presence of oil or grease

(c) Dirt or debris.

SUBTASK 21-51-24-360-001

(2) Remove any damaged or unserviceable section of tape.

SUBTASK 21-51-24-160-001

(3) Clean the section of the duct flange where tape is to be installed as follows:

(a) Remove any fragments of tape from the flange surface where the new tape will be applied.

(b) Clean the flange surface with a cotton wiper, G00034 wet with solvent, B00083 until surface is clean.

(c) Dry the cleaned surfaces with a cotton wiper, G00034 until all traces of the solvent are removed.

SUBTASK 21-51-24-420-005

(4) Install a new section of Skyflex GUA1301-1 sealant tape, A50260 [23] or Skyflex GUA1302-1 sealant tape, A50261 [24] on the duct flange as follows:

(a) Cut the tape to the required length.

(b) Install the tape on the flange surface:

1) Do not stretch or wrinkle the tape as you place it on the flange.

2) Make sure that you install the tape on the upper flange so that it wraps over the top of the flange and onto the back surface of the flange.

(c) If required, cut holes in the tape at the bolt locations.

G. Ram Air Inlet Duct Installation

SUBTASK 21-51-24-080-001

(1) Remove the covers from the duct openings.

SUBTASK 21-51-24-420-001

(2) Do these steps to install the transition duct [2]:

(a) Put the transition duct [2] in its position.

(b) Install the bolts [8] and the washers [9].

(c) Install the clamp [7] on the transition duct [2].

(d) Install the flexible hose [3] and clamp [6] on the transition duct [2].

1) Make sure the clamp [6] is not installed on the duct bead.

2) Keep a 0.125 inch (3.2 mm) minimum distance between the clamp and the edge of the flexible hose.

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SUBTASK 21-51-24-420-002

(3) Do these steps to install the heat exchanger inlet duct [1]:

(a) Loosely put the other clamp [6] on the flexible hose [3].

(b) Put the heat exchanger inlet duct [1] in its position on the lower wing beam.

1) Make sure that the top flange is in the retainer on the lower wing beam.

2) Make sure that the flexible hose [3] is on the forward end of the heat exchanger inlet duct [1].

(c) Install the bolts [4] and the washers [5] which attach the heat exchanger duct [1] to the lower wing beam.

(d) Clean the mating surfaces of the bolts [20], the washers [21], and the bonding jumpers [22] as follows:

1) Use solvent, B00148 or solvent, B00062 to clean the mating surfaces.

2) Remove all traces of the solvent with MicroCare fiber wipes, G50637.

(e) Install the bolt [20], the washers [21], and the bonding jumper [22] that hold the ram air inlet duct to the airplane structure.

1) Make sure the bolts are the same length as the ones that were removed.

2) Install one washer between the bonding jumper and the bolt head.

3) Make sure the washer is installed with the countersink next to the bolt head.

4) Install one washer between the inlet duct and the bonding jumper.

(f) Make sure the resistance between the ram air inlet duct and the airplane structure is less than 300,000 ohms.

1) Make a resistance measurement between the BMS10-21 anti-static coating of the ram air inlet duct and the bolt [20].

2) The measurement point on the duct surface must be more than 0.25 inch (6.4 mm) away from the bolt [20].

3) If necessary, you can remove a small area of the surface finish to gain access to the anti-static coating of the ram air inlet duct.

4) Make another resistance measurement between the bolt [20] and the airplane structure near the bonding jumper.

5) If necessary, you can remove a small area of the surface finish to gain access to the bare metal of the airplane structure.

6) If the resistance measurement is not satisfactory, then disassemble the bonding connection, clean the mating surfaces, and repeat the bonding connection installation.

7) Put a thin coating of BMS10-103 on the surface of the ram air inlet duct after the measurement is completed.

8) If the surface finish of the airplane structure was removed for the measurement, then repair the surface finish.

(g) Install the other clamp [6] on the flexible hose [3].

1) Make sure the clamp [6] is not installed on the duct bead.

2) Keep a 0.125 inch (3.2 mm) minimum distance between the clamp and the edge of the flexible hose.

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SUBTASK 21-51-24-430-001

(4) Connect the cooling duct to the NGS heat exchanger [19] at the area above the aft, top portion of the left heat exchanger inlet duct [1] as follows:

(a) Move the end of the flexible hose [17] over the end of the cooling duct from the heat exchanger inlet duct [1].

(b) Tighten the hose clamps [18] to 15.5 ±2.5 in-lb (1.8 ±0.3 N·m).

SUBTASK 21-51-24-410-001

(5) Install the ram air inlet modulation panels. To install the panels, do this task: Ram Air Inlet Modulation Panels Installation, TASK 21-51-23-400-801.

H. Ram Air Exit Duct Installation

SUBTASK 21-51-24-010-006

(1) Remove the cover from the duct opening.

SUBTASK 21-51-24-420-006

(2) Do these steps to install the elbow [10].

(a) Put the elbow [10] and flexible duct [40] in position.

(b) Install the bolts [12] and washers [13] at the 7 locations without the jumper.

(c) Put the bonding jumper [30] in position and install the bolt [28], washer [29], and washer [31] as follows:

1) Install the bonding jumper [30] between the washer [29] and washer [31] with the countersunk side of the washer [29] under the head of the bolt [28].

(d) Measure the bonding resistance between the bonding jumper terminal and the anti-static coating on the elbow [10].

(e) Make sure the bonding resistance is not greater than 300 kilo ohms.

(f) After the resistance check, apply primer, C00766 on exposed anti-static primer area around the ground stud.

SUBTASK 21-51-24-420-008

(3) Do these steps to install the ram air exhaust duct [26]:

(a) Put the ram air exhaust duct into its installed position.

(b) Install the bolt [16] and bolt [27] which attach the duct to the airplane structure:

1) Make sure that the longer bolts [27] are installed in the locations around the actuator.

(c) Install the aft end of the flexible duct [40] onto the ram air exhaust duct [26].

(d) Install the clamp [32] onto the ram air exhaust duct [26] as follows:

1) Make sure that the clamp is not installed on the duct bead.

2) Tighten the aft clamp [32] to 13 in-lb (1.47 Nm) - 17 in-lb. (1.92 Nm)

SUBTASK 21-51-24-420-011

(4) Install bonding jumper [36] and bonding jumper [37] as follows:

(a) Put the bonding jumper [36] and bonding jumper [37] in their position on the rear spar.

(b) Install the washer [38] and nut [39].

(c) Keep the ground stud from turning and tighten the nut [39] to 28 - 35 inch-pounds.

(d) Do a check of the electrical resistance between the bonding jumper terminal and the structure in which the ground stud is installed:

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1) Put one ohmmeter probe on the top bonding jumper terminal and the other probe on the structure close to the ground stud.

2) Make sure the electrical resistance does not exceed 0.001 ohm.

SUBTASK 21-51-24-410-008

(5) Install the ram air exhaust actuator: Ram Air Exhaust Actuator - Installation, TASK 21-51-27-400-801.

I. Ram Air Ducts Installation Test

SUBTASK 21-51-24-860-008

(1) Remove the DO-NOT-OPERATE tags from these switches on the P5-10 air conditioning panel:

(a) The L PACK and R PACK switches

(b) The BLEED 1 and BLEED 2 switches

(c) The BLEED APU switch.

SUBTASK 21-51-24-860-004

(2) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-24-860-005

(3) Operate the applicable air conditioning pack. To operate the pack, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-51-24-790-001

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 applicable ram air duct connections.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-24-860-006

(1) Shut down the applicable air conditioning pack. To shutdown the pack, do this task: Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.

SUBTASK 21-51-24-410-002

(2) Install this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-24-410-003

(3) Install this access panel:

Number	Name/Location
191HL	Ram Air Inlet Lip Panel - Forward

SUBTASK 21-51-24-410-004

(4) Install this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-24-410-005

(5) Install this access panel:

Number	Name/Location
191HR	Ram Air Inlet Lip Panel - Forward

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SUBTASK 21-51-24-410-006

(6) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-24-410-007

(7) Close these access panels, in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-24-860-007

(8) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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RAM AIR DUCTS - REPAIRS

1. General

A. This procedure gives instructions for the repair of the ram air inlet and ram air exhaust ducts.

TASK 21-51-24-340-801

2. Resin Damage - Fiberglass Ducts

A. General

(1) This procedure gives instructions for the repair of a fiberglass ram air duct with an application of resin.

(2) A resin damage repair is applicable when there are no holes or punctures in the ram air duct but one of these defects are present:

(a) Exposed fibers

(b) Soft areas from impact damage

(c) Delamination

(d) Loss of resin or voids

B. References

Reference	Title
21-51-24-000-801	Ram Air Ducts Removal (P/B 401)
21-51-24-400-801	Ram Air Ducts Installation (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Tools/Equipment

Reference	Description
STD-122	Brush
STD-854	Syringe - Hypodermic

D. Consumable Materials

Reference	Description	Specification
B00094	Solvent - Toluene	A-A-59107
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
C00766	Primer - Nonchromated Primer For Composites	BMS10-103 Type I
C00767	Coating - Anti-Static Coating	BMS10-21 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G02428	Abrasive - Aluminum Oxide Paper, 150 grit	A-A-1048
G02451	Resin - Composite Structural Repair, 2 Part (150F Cure)	BMS8-301 Class 2
G50104	Film, FEP Or TFE Solid Parting Film, .001 inch Thick Minimum	
G50381	Abrasive - Aluminum Oxide Paper, 180 Grit	
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

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E. Prepare for the Repair

SUBTASK 21-51-24-860-009

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-51-24-840-001

(2) Remove the damaged duct from the airplane. To remove the duct, do this task: Ram Air Ducts Removal, TASK 21-51-24-000-801

SUBTASK 21-51-24-840-002

(3) Do these steps to prepare the damaged area of the duct:

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use the solvent, B00148 and a cotton wiper, G00034 to clean the duct repair area.

(b) Sand the damaged area to remove any unwanted contamination from the duct.

(c) Use the solvent, B00148 and a cotton wiper, G00034 to clean the duct joint area.

SUBTASK 21-51-24-840-003

(4) Prepare the applicable resin:

(a) Ram air inlet duct repair - resin, G50400

(b) Ram air exhaust duct repair - resin, G02451

F. Repair the Air Conditioning Duct

SUBTASK 21-51-24-340-001

(1) Use resin, G50400 to repair the damaged area of the ram air inlet duct:

(a) Use a brush, STD-122 or hypodermic syringe, STD-854 to apply the resin to the damaged area of the duct.

(b) Apply a thin, smooth layer of the resin to the damaged area of the duct.

(c) Put a piece of solid parting film, G50104 on the duct and press lightly to remove any bubbles or any wrinkles and to remove unwanted resin.

(d) Remove the solid parting film, G50104 from the duct and remove any unwanted resin with a wiping cloth.

(e) Do one of these steps to cure the resin:

1) Permit the resin, G50400 to cure for a minimum of 30 minutes at 150°, ± 10° F.

2) Permit the resin, G50400 to cure for 24 hours at room temperature (70° F minimum).

SUBTASK 21-51-24-340-002

(2) Use resin, G02451 to repair the damaged area of the ram air exhaust duct.

(a) Use a brush, STD-122 or hypodermic syringe, STD-854 to apply the resin to the damaged area of the duct.

(b) Apply a thin, smooth layer of the resin to the damaged area of the duct.

(c) Put a piece of solid parting film, G50104 on the duct and press lightly to remove any bubbles or any wrinkles and to remove unwanted resin.

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(d) Remove the solid parting film, G50104 from the duct and remove any unwanted resin with a wiping cloth.

(e) Permit the resin, G02451 to cure for 3 hours, ± 10 minutes at 150°, ± 10° F.

SUBTASK 21-51-24-340-027

(3) If the repair was made to the outer surface of the ram air inlet duct access panel, do the steps that follow:

(a) Hand sand the surface with 180 grit abrasive paper, G50381 or finer abrasive paper to remove the glossy finish.

(b) Remove the dust with a cotton wiper, G00034.

(c) Prior to the application of the coating, C00767, clean the surface with solvent, B00094 and a cotton wiper, G00034.

(d) Apply the coating, C00767 by spray to a dry film thickness of 0.4 to 0.8 mils.

(e) Allow the coating, C00767 to cure a minimum of 2 hours at 60°F (16°C) or 30 minutes at 140°F (60°C).

(f) Hand sand the surface with 150 grit abrasive paper, G02428 or finer abrasive paper.

(g) Remove the dust with a cotton wiper, G00034.

(h) Apply the primer, C00766 by spray to a dry film thickness of 0.5 to 0.8 mils.

(i) Allow the primer, C00766 to cure a minimum of 6 hours at 60°F (16°C) or 40 minutes at 140°F (60°C).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-24-840-004

(1) Install the repaired duct on the airplane. To install the duct, do this task: Ram Air Ducts Installation, TASK 21-51-24-400-801

——— END OF TASK ———

TASK 21-51-24-340-802

3. External Patch - Fiberglass Ducts

(Figure 801)

A. General

(1) This procedure gives instructions for the repair of a crack or cut in a fiberglass ram air duct with an external patch.

(2) An external patch is applicable when the cut or the crack is less than 0.25 inch (6.35 millimeters) wide and is less than 3 inches (76.2 millimeters) long.

B. References

Reference	Title
21-51-24-000-801	Ram Air Ducts Removal (P/B 401)
21-51-24-400-801	Ram Air Ducts Installation (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Reference	Description	Specification
B00094	Solvent - Toluene	A-A-59107
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740

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(Continued)

Reference	Description	Specification
C00766	Primer - Nonchromated Primer For Composites	BMS10-103 Type I
C00767	Coating - Anti-Static Coating	BMS10-21 Type III
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
G02428	Abrasive - Aluminum Oxide Paper, 150 grit	A-A-1048
G02451	Resin - Composite Structural Repair, 2 Part (150F Cure)	BMS8-301 Class 2
G50104	Film, FEP Or TFE Solid Parting Film, .001 inch Thick Minimum	
G50381	Abrasive - Aluminum Oxide Paper, 180 Grit	
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

D. Prepare for the Repair

SUBTASK 21-51-24-840-005

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

SUBTASK 21-51-24-840-006

(2) Remove the damaged duct from the airplane. To remove the duct, do this task: Ram Air Ducts Removal, TASK 21-51-24-000-801

SUBTASK 21-51-24-840-007

(3) Do these steps to prepare the damaged area of the duct.

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Use the solvent, B00148 and a cotton wiper, G00034 to clean the duct repair 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 0.062 inch (1.57 millimeters) diameter.

(c) Sand the damaged area to remove any unwanted contamination from the duct.

(d) Use the solvent, B00148 and a cotton wiper, G00034 to clean the duct joint area.

SUBTASK 21-51-24-340-003

(4) Cut sufficient pieces of the fiberglass glass fabric, G00031 to equal the thickness of the duct. Cut the fiberglass glass fabric, G00031 pieces 0.5 inch (12.7 millimeters) larger on all sides than the damage. Round the corners of the pieces of the fiberglass fabric.

SUBTASK 21-51-24-340-004

(5) Prepare the applicable resin:

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(a) Ram air inlet duct repair - resin, G50400

(b) Ram air exhaust duct repair - resin, G02451

E. Repair the Air Conditioning Duct

SUBTASK 21-51-24-340-005

(1) Apply a thin, smooth layer of the applicable resin, G50400 or resin, G02451 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 21-51-24-340-006

(2) Place a piece of the fiberglass fabric on the resin so that it extends beyond the cut or crack a minimum of 0.5 inch (12.7 millimeters) on all sides.

SUBTASK 21-51-24-340-007

(3) Soak the fiberglass fabric with the applicable resin.

SUBTASK 21-51-24-340-008

(4) Put a piece of solid parting film, G50104 on the fiberglass fabric and press lightly to remove any bubbles or any wrinkles and to remove unwanted resin.

SUBTASK 21-51-24-340-009

(5) Remove the solid parting film, G50104 from the fiberglass fabric piece and remove any unwanted resin with a wiping cloth.

SUBTASK 21-51-24-340-010

(6) Place another piece of the fiberglass fabric on the first piece, soak it with resin, and smooth it. Continue using the same procedure until the thickness of the patch equals the thickness of the duct.

SUBTASK 21-51-24-340-011

(7) Allow the resin to cure for 24 hours at room temperature.

SUBTASK 21-51-24-340-025

(8) If the repair was made to the outer surface of the ram air inlet duct access panel, do the steps that follow:

(a) Hand sand the surface with 180 grit abrasive paper, G50381 or finer abrasive paper to remove the glossy finish.

(b) Remove the dust with a cotton wiper, G00034.

(c) Prior to the application of the coating, C00767, clean the surface with solvent, B00094 and a cotton wiper, G00034.

(d) Apply the coating, C00767 by spray to a dry film thickness of 0.4 to 0.8 mils.

(e) Allow the coating, C00767 to cure a minimum of 2 hours at 60°F (16°C) or 30 minutes at 140°F (60°C).

(f) Hand sand the surface with 150 grit abrasive paper, G02428 or finer abrasive paper.

(g) Remove the dust with a cotton wiper, G00034.

(h) Apply the primer, C00766 by spray to a dry film thickness of 0.3 to 0.8 mils.

(i) Allow the primer, C00766 to cure a minimum of 6 hours at 60°F (16°C) or 40 minutes at 140°F (60°C).

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F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-24-840-008

(1) Install the repaired duct on the airplane. To install the duct, do this task: Ram Air Ducts Installation, TASK 21-51-24-400-801

——— END OF TASK ———

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EXTERNAL PATCH - FIBERGLASS DUCT

STRUCTURAL REPAIR - FIBERGLASS - OVERHEAD VIEW

STRUCTURAL REPAIR - FIBERGLASS - CROSS-SECTION VIEW

D37858 S0000154733_V2

Ram Air Ducts Repair
Figure 801/21-51-24-990-802

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TASK 21-51-24-340-803

4. **Structural Repair - Fiberglass Ducts**

(Figure 801)

A. **General**

(1) This procedure gives instructions for making a structural repair to a fiberglass 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 inch (6.35 millimeters) wide and more than 3 inches (76.2 millimeters) 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
21-51-24-000-801	Ram Air Ducts Removal (P/B 401)
21-51-24-400-801	Ram Air Ducts Installation (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. **Tools/Equipment**

Reference	Description
STD-821	Squeegee - Plastic

D. **Consumable Materials**

Reference	Description	Specification
B00094	Solvent - Toluene	A-A-59107
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
C00766	Primer - Nonchromated Primer For Composites	BMS10-103 Type I
C00767	Coating - Anti-Static Coating	BMS10-21 Type III
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
G02428	Abrasive - Aluminum Oxide Paper, 150 grit	A-A-1048
G02451	Resin - Composite Structural Repair, 2 Part (150F Cure)	BMS8-301 Class 2
G50104	Film, FEP Or TFE Solid Parting Film, .001 inch Thick Minimum	
G50381	Abrasive - Aluminum Oxide Paper, 180 Grit	
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS8-201 Type IV (Supersedes BMS8-201 Type II)

E. **Prepare for the Repair**

SUBTASK 21-51-24-840-009

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

NOTE: This will make sure that there is no airflow in the ducts when you do the repair.

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SUBTASK 21-51-24-840-010

(2) Remove the damaged duct from the airplane. To remove the duct, do this task: Ram Air Ducts Removal, TASK 21-51-24-000-801

SUBTASK 21-51-24-840-012

(3) 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 0.5 inch (12.7 millimeters) 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 0.5 inch (12.7 millimeters) for each ply in the duct. For example, if there are 6 plies, sand 3 inches (76.2 millimeters) from the opening on all sides (1/2 x 6 = 3 inches)(12.7 x 6 = 76.2 millimeters).

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(d) Use the solvent, B00148 and a cotton wiper, G00034 to clean the edge of the opening and the sanded surface of the duct.

SUBTASK 21-51-24-340-012

(4) Cut sufficient pieces of the fiberglass glass fabric, G00031 to equal the thickness of the duct. Cut each piece of the fiberglass fabric 0.5 inch (12.7 millimeters) larger to fit the taper of the opening. Cut one piece of the fiberglass fabric a minimum of 2 inches (50.8 millimeters) larger on all sides than the opening in the duct.

SUBTASK 21-51-24-340-013

(5) Cut a piece of solid parting film, G50104 2 to 3 inches (50.8 to 76.2 millimeters) larger on all sides than the opening. Cut a piece of cardboard or aluminum 2 to 3 inches (50.8 to 76.2 millimeters) larger than the opening on all sides.

SUBTASK 21-51-24-340-014

(6) Attach the solid parting film, G50104 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 film.

SUBTASK 21-51-24-340-015

(7) Prepare the applicable resin:

(a) Ram air inlet duct repair - resin, G50400

(b) Ram air exhaust duct repair - resin, G02451

F. Repair the Air Conditioning Duct

SUBTASK 21-51-24-340-016

(1) Apply a thin, smooth layer of resin, G50400 or resin, G02451 to the solid parting film, G50104 in the opening in the duct.

SUBTASK 21-51-24-340-017

(2) Place a piece of the fiberglass fabric in the opening over the solid parting film, G50104 so that it covers the opening completely.

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SUBTASK 21-51-24-340-018

(3) Soak the fiberglass fabric with the applicable resin.

SUBTASK 21-51-24-340-019

(4) Put a piece of solid parting film, G50104 on the fiberglass fabric and press lightly with a plastic squeegee, STD-821 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 21-51-24-340-020

(5) Remove the solid parting film, G50104 from the patch and remove unwanted resin with a cotton wiper, G00034.

SUBTASK 21-51-24-340-021

(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 21-51-24-340-022

(7) Place the last piece of the fiberglass fabric on top of the patch so it extends beyond the opening a minimum of 2 inches (50.8 millimeters) on all sides. Smooth the fiberglass fabric to remove bubbles or winkles.

SUBTASK 21-51-24-340-023

WARNING: DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A PROTECTIVE SPLASH GOGGLE AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Wipe the duct around the patch with a cotton wiper, G00034 and solvent, B00148 to remove unwanted resin.

SUBTASK 21-51-24-340-024

(9) Allow the resin to cure for 24 hours at room temperature.

SUBTASK 21-51-24-840-013

(10) Remove the solid parting film, G50104, the cardboard or aluminum, and the adhesive tape you used to support the repair.

SUBTASK 21-51-24-340-026

(11) If the repair was made to the outer surface of the ram air inlet duct access panel, do the steps that follow:

(a) Hand sand the surface with 180 grit abrasive paper, G50381 or finer abrasive paper to remove the glossy finish.

(b) Remove the dust with a cotton wiper, G00034.

(c) Prior to the application of the coating, C00767, clean the surface with solvent, B00094 and a cotton wiper, G00034.

(d) Apply the coating, C00767 by spray to a dry film thickness of 0.4 to 0.8 mils.

(e) Allow the coating, C00767 to cure a minimum of 2 hours at 60°F (16°C) or 30 minutes at 140°F (60°C).

(f) Hand sand the surface with 150 grit abrasive paper, G02428 or finer abrasive paper.

(g) Remove the dust with a cotton wiper, G00034.

(h) Apply the primer, C00766 by spray to a dry film thickness of 0.3 to 0.8 mils.

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(i) Allow the primer, C00766 to cure a minimum of 6 hours at 60°F (16°C) or 40 minutes at 140°F (60°C).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-24-840-011

(1) Install the repaired duct on the airplane. To install the duct, do this task: Ram Air Ducts Installation, TASK 21-51-24-400-801

——— END OF TASK ———

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RAM AIR EXHAUST ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the ram air exhaust actuator.

(2) An installation of the ram air exhaust actuator.

(3) A removal of the smart ram air door actuator (SRADA) stowage link.

(4) An installation of the smart ram air door actuator (SRADA) stowage link.

TASK 21-51-27-000-801

2. Ram Air Exhaust Actuator - Removal

Figure 401

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
131	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Left
132	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192JL	Air Conditioning Panel - Aft
192JR	Air Conditioning Panel - Aft

D. General

SUBTASK 21-51-27-800-001

(1) This procedure removes the aft SRADA from the ram air exhaust duct assembly.

E. Prepare for the Removal

SUBTASK 21-51-27-860-004

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE YOU DO MAINTENANCE. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806

SUBTASK 21-51-27-860-001

(2) Set these switches on the P5-10 air conditioning panel as follows:

(a) Set the L PACK and R PACK switches to OFF and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and BLEED 2 switches and attach DO-NOT-OPERATE tags.

(c) Set the APU BLEED switch to OFF and attach a DO-NOT-OPERATE tag.

SUBTASK 21-51-27-010-002

(3) To get access to the left ram air exhaust actuator, open these access panels:

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(a) Open these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-51-27-010-001

(4) To get access to the right ram air exhaust actuator, open these access panels in this sequence:

(a) Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192JR	Air Conditioning Panel - Aft

SUBTASK 21-51-27-020-008

(5) To prepare for the removal of the ram air exhaust actuator for the left pack, do this task:

(a) Open this circuit breaker and install a DO-NOT-CLOSE tag:

1) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-27-020-007

(6) To prepare for the removal of the ram air exhaust actuator for the right pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

F. Ram Air Exhaust Actuator Removal

SUBTASK 21-51-27-020-006

(1) Disconnect electrical connectors D14390 and D14392 for the removal of the left ram air exhaust actuator, M2796.

SUBTASK 21-51-27-020-005

(2) Disconnect electrical connectors D14398 and D14400 for the removal of the right ram air exhaust actuator, M2798.

SUBTASK 21-51-27-020-004

(3) Disconnect bonding jumper [3] from the bonding tab on the ram air exhaust actuator [2] as follows:

(a) Remove the nut [13], washers [14] and screw [15].

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(b) Remove the bonding jumper [3].

SUBTASK 21-51-27-020-003

(4) Disconnect the rod end [17] of the actuator from the actuator drive arm [16] as follows:

(a) Remove the nut [12], washer [10], washer [11] and bolt [9] that retain the rod end [17] to the actuator drive arm [16].

SUBTASK 21-51-27-020-002

(5) Disconnect the aft end of the actuator from the ram air exhaust duct assembly as follows:

(a) Remove the nut [7], washer [5], washer [6], and bolt [4].

SUBTASK 21-51-27-020-001

(6) Remove the ram air exhaust actuator [2].

END OF TASK

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Ram Air Exhaust Actuator Installation
Figure 401/21-51-27-990-801 (Sheet 1 of 2)

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RAM AIR EXHAUST ACTUATOR (ACCESS PANEL IS REMOVED)

B

BONDING JUMPER

C

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Ram Air Exhaust Actuator Installation
Figure 401/21-51-27-990-801 (Sheet 2 of 2)

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TASK 21-51-27-400-801

3. Ram Air Exhaust Actuator - Installation

Figure 401

A. General

(1) This task provides instructions for the installation, adjustment and a post-installation test of the aft SRADA.

B. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other 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 #: C15292 (MODEL T477W) Supplier: 01014 Part #: M1 Supplier: 3AD17 Opt Part #: M1B Supplier: 3AD17

D. Consumable Materials

Reference	Description	Specification
A01076	Adhesive - Synthetic Rubber	BAC5010 Type 93 (BMS5-95 Class B)
B00666	Solvent - Methyl Propyl Ketone	BMS11-9
G50221	Abrasive - Wet/dry Silicon Carbide Sandpaper, 180 grit	
G50637	Wiper - MicroCare Fiber Wipes	

E. Location Zones

Zone	Area
131	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Left
132	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Right

F. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192JL	Air Conditioning Panel - Aft
192JR	Air Conditioning Panel - Aft

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G. Ram Air Exhaust Actuator Installation

SUBTASK 21-51-27-420-001

(1) Put the ram air exhaust actuator [2] in its position on the ram air exhaust duct [1].

SUBTASK 21-51-27-420-004

(2) Attach the aft end of the ram air exhaust actuator [2] to the ram air exhaust duct assembly as follows:

(a) Put the countersunk side of the washer [5] under the head of the bolt [4].

(b) Put the bolt [4] through the ram air exhaust duct assembly and the boss on the actuator.

(c) Install the washer [6] and nut [7].

SUBTASK 21-51-27-420-002

(3) Do not attach the forward end of the ram air exhaust actuator [2] to the actuator drive arm [16] at this time.

SUBTASK 21-51-27-160-001

(4) Prepare the bonding tab and jumper for installation as follows:

(a) Use 180 grit wet/dry silicon carbide sandpaper, G50221 to remove all traces of the adhesive on the washers, screw, nut, bonding jumper and bonding tab used for the previous installation of the bonding jumper.

(b) Use solvent, B00666 to clean all surfaces until the wipes are no longer discolored.

(c) Use MicroCare fiber wipes, G50637 to remove all traces of the solvent.

SUBTASK 21-51-27-420-003

(5) Attach the bonding jumper [3] to the bonding tab on the ram air exhaust actuator [2] as follows:

(a) Put a washer [14] on the screw [15] and put the screw [15] through the blue end of the bonding jumper [3].

(b) Put a washer [14] on the screw [15] next to the bonding jumper [3] and insert the screw [15] through the bonding tab on the actuator.

(c) Install a washer [14] and nut [13] on the screw [15].

(d) Tighten the nut [13] to 40 ±5 in-lb (5 ±1 N·m).

SUBTASK 21-51-27-760-001

(6) Use a intrinsically safe approved bonding meter, COM-1550 such as an Avtron Model T477W bonding meter to measure the electrical resistance between the bonding tab and the jumper:

(a) Make sure that the bonding resistance is not greater than 0.001 ohm.

SUBTASK 21-51-27-390-001

(7) Apply adhesive, A01076 to completely encapsulate the fasteners.

H. Adjustment of the Ram Air Exhaust Actuators

SUBTASK 21-51-27-820-001

(1) Make sure that the rod end [17] of the ram air exhaust actuator [2] is not attached to the actuator drive arm [16].

SUBTASK 21-51-27-860-009

(2) Extend the trailing edge flaps to position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 21-51-27-860-010

(3) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

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SUBTASK 21-51-27-860-011

(4) Retract the left and right trailing edge flaps to the flaps fully up position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 21-51-27-820-002

(5) Set the louvers to the flight fully closed position as follows:

(a) Move the actuator drive arm [16] to rotate the exhaust louvers until a non-metallic shim [0.680 (± 0.010) inch thick x 7 inches long x 2 inches wide] can be inserted between either the forward and mid louvers or the mid louvers and the aft louvers.

(b) Manually rotate the louvers towards the closed position until the shim is trapped between the louvers.

1) Note that this position of the exhaust louvers is the flight fully closed position with the louvers set at approximately 12 degrees.

(c) Make sure that the non-metallic shim does not become loose or fall out during the connection of the actuator rod end [17] to the actuator drive arm [16].

SUBTASK 21-51-27-420-006

(6) Connect the rod end [17] of the ram air exhaust actuator [2] to the actuator drive arm [16] as follows:

(a) If the hole in the rod end [17] does not align with the holes in the actuator drive arm [16], do these steps:

1) Remove the lockwire from the jam nut on the rod end [17].

2) Adjust the length of the rod end [17] by plus or minus 0.125 inch so that the holes in the rod end [17] and actuator drive arm [16] align.

3) Hold the rod end [17] and tighten the jam nut until it is seated against the rod end.

4) Tighten the jam nut to 110 ±10 in-lb (12 ±2 N·m).

5) Install lockwire to keep the jam nut in position.

(b) Put the countersunk side of the washer [10] under the head of the bolt [9].

(c) Put the bolt [9] through the actuator drive arm [16] and the rod end [17]of the actuator drive shaft.

(d) Install the washer [11] and nut [12].

SUBTASK 21-51-27-080-001

(7) Remove the non-metallic shim from between the louvers.

I. Check of the Adjustment of the Ram Air Exhaust Actuator

SUBTASK 21-51-27-420-007

(1) Connect electrical connectors D14390 and D14392 to the left ram air exhaust actuator M2796.

SUBTASK 21-51-27-420-008

(2) Connect electrical connectors D14398 and D14400 to the right ram air exhaust actuator M2798.

SUBTASK 21-51-27-860-002

(3) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L

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(Continued)

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-27-860-003

(4) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

SUBTASK 21-51-27-860-014

(5) Extend the left and right trailing edge flaps to position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 21-51-27-710-006

(6) Make sure that the inlet doors move towards the open position smoothly without hanging or binding.

SUBTASK 21-51-27-860-015

(7) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-51-27-710-010

(8) Make sure that the deflector door extends.

SUBTASK 21-51-27-710-007

(9) Make sure the ram air exit louvers move towards the most open position without any hanging or binding.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-27-410-001

(1) If you replaced the left ram air exhaust actuator, close these access panels:

Close these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-51-27-410-002

(2) If you replaced the right ram air exhaust actuator, close these access panels:

Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192JR	Air Conditioning Panel - Aft

END OF TASK

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TASK 21-51-27-000-802

4. SRADA Stowage Link - Removal

(Figure 402)

A. General

(1) This task removes the SRADA stowage link between the actuator rod end and the actuator drive arm, reactivates the exit louvers, then reconnects the SRADA actuator rod end to the actuator drive arm.

B. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
36-00-00-860-806	Remove Pressure from 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-14767	Link - Stowage SRADA Part #: C21009-1 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
131	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Left
132	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192JL	Air Conditioning Panel - Aft
192JR	Air Conditioning Panel - Aft

F. Prepare for the Removal

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE YOU DO MAINTENANCE. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

SUBTASK 21-51-27-860-016

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-27-860-017

(2) Set these switches on the P5-10 air conditioning panel as follows:

(a) Set the L PACK and R PACK switches to OFF and attach DO NOT OPERATE tag, STD-858.

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(b) Set the BLEED 1 and BLEED 2 switches to OFF and attachDO NOT OPERATE tag, STD-858

(c) Set the APU BLEED switch to OFF and attachDO NOT OPERATE tag, STD-858

SUBTASK 21-51-27-010-003

(3) To get access to the left ram air exhaust actuator:

(a) Open these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-51-27-010-004

(4) To get access to the right ram air exhaust actuator:

(a) Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192JR	Air Conditioning Panel - Aft

SUBTASK 21-51-27-020-009

(5) To prepare for the removal of the SRADA stowage link for the left pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-27-020-010

(6) To prepare for the removal of the SRADA stowage link for the right pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

G. SRADA Stowage Link Removal

SUBTASK 21-51-27-020-011

(1) Disconnect the rod end [17] of the actuator from the Link - Stowage SRADA, SPL-14767 as follows:

(a) Remove the locknut, washers, and bolt that retain the rod end [17] to the Link - Stowage SRADA, SPL-14767.

SUBTASK 21-51-27-020-012

(2) Disconnect the Link - Stowage SRADA, SPL-14767 from the actuator drive arm [16] as follows:

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(a) Remove the nut [12], washer [11], washer [10] and bolt [9] that retain the Link - Stowage SRADA, SPL-14767 to the actuator drive arm [16].

SUBTASK 21-51-27-020-013

(3) Remove the Link - Stowage SRADA, SPL-14767.

H. Exit Louvers Reactivation

(Figure 402)

SUBTASK 21-51-27-020-014

(1) Remove the nut, washers and bolt that are attaching the most forward louver drive arm to the most forward hole in the link assembly.

SUBTASK 21-51-27-420-009

(2) Move the link assembly until the hole in the most forward louver drive arm aligns with the second most forward hole in the link assembly.

SUBTASK 21-51-27-420-010

(3) In the same order that they were just removed, install the bolt, washers and nut through the hole in the most forward louver drive arm and the second most forward hole in the link assembly.

I. Ram Air Exhaust Actuator Rod End Reconnect and Adjustment

SUBTASK 21-51-27-860-018

(1) Make sure that the rod end [17] of the ram air exhaust actuator [2] is not attached to the actuator drive arm [16].

SUBTASK 21-51-27-860-019

(2) Extend the trailing edge flaps to position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 21-51-27-860-020

(3) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-51-27-860-021

(4) Retract the left and right trailing edge flaps to the flaps fully up position. To retract the flaps, do this task:Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 21-51-27-820-003

(5) Set the louvers to the flight fully closed position as follows:

(a) Move the actuator drive arm [16] to rotate the exhaust louvers until a non-metallic shim [0.680 (± 0.010) inch thick x 7 inches long x 2 inches wide] can be inserted between either the forward and mid louvers or the mid louvers and the aft louvers.

(b) Manually rotate the louvers towards the closed position until the shim is trapped between the louvers.

1) Note that this position of the exhaust louvers is the flight fully closed position with the louvers set at approximately 12 degrees.

(c) Make sure that the non-metallic shim does not become loose or fall out during the connection of the actuator rod end [17] to the actuator drive arm [16].

SUBTASK 21-51-27-420-011

(6) Connect the rod end [17] of the ram air exhaust actuator [2] to the actuator drive arm [16] as follows:

(a) If the hole in the rod end [17] does not align with the holes in the actuator drive arm [16], do these steps:

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1) Remove the lockwire from the jam nut on the rod end [17].
2) Adjust the length of the rod end [17] by plus or minus 0.125 inch so that the holes in the rod end [17] and actuator drive arm [16] align.
3) Hold the rod end [17] and tighten the jam nut until it is seated against the rod end.
4) Tighten the jam nut to 110 ±10 in-lb (12 ±2 N·m).
5) Install lockwire to keep the jam nut in position.

(b) Put the countersunk side of the washer [10] under the head of the bolt [9].

(c) Put the bolt [9] through the actuator drive arm [16] and the rod end [17]of the actuator drive shaft.

(d) Install the washer [11] and nut [12].

SUBTASK 21-51-27-080-003

(7) Remove the non-metallic shim from between the louvers.

J. Check of the Adjustment of the Ram Air Exhaust Actuator

SUBTASK 21-51-27-420-012

(1) If you reconnected the left ram air exhaust actuator rod end to the actuator drive arm, connect electrical connectors D14390 and D14392 to the left ram air exhaust actuator M2796.

SUBTASK 21-51-27-420-013

(2) If you reconnected the right ram air exhaust actuator rod end to the actuator drive arm, connect electrical connectors D14398 and D14400 to the right ram air exhaust actuator M2798.

SUBTASK 21-51-27-420-014

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-27-420-015

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

SUBTASK 21-51-27-860-022

(5) Extend the left and right trailing edge flaps to position 1. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803

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SUBTASK 21-51-27-710-013

(6) Make sure that the inlet doors move towards the open position smoothly without hanging or binding.

SUBTASK 21-51-27-860-023

(7) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802

SUBTASK 21-51-27-710-011

(8) Make sure that the deflector door extends.

SUBTASK 21-51-27-710-012

(9) Make sure the ram air exit louvers move towards the most open position without any hanging or binding.

END OF TASK

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AFT SRADA Stowage Link Installation
Figure 402/21-51-27-990-802 (Sheet 1 of 3)

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AFT SRADA Stowage Link Installation
Figure 402/21-51-27-990-802 (Sheet 2 of 3)

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AFT SRADA Stowage Link Installation
Figure 402/21-51-27-990-802 (Sheet 3 of 3)

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TASK 21-51-27-400-802

5. SRADA Stowage Link - Installation

(Figure 402)

A. General

(1) This procedure disconnects the SRADA actuator rod end, secures the exit louvers open, and installs the SRADA stowage link between the actuator rod end and the actuator drive arm.

B. References

Reference	Title
36-00-00-860-806	Remove Pressure from 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-14767	Link - Stowage SRADA Part #: C21009-1 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
131	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Left
132	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192JL	Air Conditioning Panel - Aft
192JR	Air Conditioning Panel - Aft

F. Prepare for the Installation

WARNING: REMOVE THE PRESSURE FROM THE PNEUMATIC SYSTEM BEFORE YOU DO MAINTENANCE. PRESSURE IN THE PNEUMATIC SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

SUBTASK 21-51-27-860-024

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-27-860-025

(2) Set these switches on the P5-10 air conditioning panel as follows:

(a) Set the L PACK and R PACK switches to OFF and attach DO NOT OPERATE tag, STD-858.

(b) Set the BLEED 1 and BLEED 2 switches to OFF and attachDO NOT OPERATE tag, STD-858

(c) Set the APU BLEED switch to OFF and attachDO NOT OPERATE tag, STD-858

SUBTASK 21-51-27-010-005

(3) To get access to the left ram air exhaust actuator:

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(a) Open these access panels:

Number	Name/Location
192CL	ECS Access Door
192JL	Air Conditioning Panel - Aft

SUBTASK 21-51-27-010-006

(4) To get access to the right ram air exhaust actuator:

(a) Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192JR	Air Conditioning Panel - Aft

SUBTASK 21-51-27-020-015

(5) To prepare for the installation of the SRADA stowage link for the left pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-27-020-016

(6) To prepare for the installation of the SRADA stowage link for the right pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

G. Ram Air Exhaust Actuator Rod End Disconnect

SUBTASK 21-51-27-020-017

(1) If you are installing the SRADA stowage link on the left side, disconnect, cap and stow electrical connectors D14390 and D14392 to the left ram air exhaust actuator M2796.

SUBTASK 21-51-27-020-018

(2) If you are installing the SRADA stowage link on the right side, disconnect, cap and stow electrical connectors D14398 and D14400 to the right ram air exhaust actuator M2798.

SUBTASK 21-51-27-020-019

(3) Disconnect the rod end [17] of the ram air exhaust actuator [2] from the actuator drive arm [16] as follows:

(a) Remove the nut [12], washer [11], washer [10] and bolt [9] that retain the rod end [17] to the actuator drive arm [16].

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H. Secure Exit Louvers Open

SUBTASK 21-51-27-020-020

(1) Remove the nut, washers and bolt that attach the most forward louver drive arm to the link assembly.

SUBTASK 21-51-27-420-016

(2) Move the link assembly to open the exit louvers until the most forward hole in the link assembly lines up with the hole in the most forward louver drive arm.

SUBTASK 21-51-27-420-017

(3) In the same order that they were just removed, install the nut, washers, and bolt through the most forward hole in the link assembly and the hole in the most forward louver drive arm.

I. SRADA Stowage Link Installation

SUBTASK 21-51-27-420-018

(1) Connect one end of the Link - Stowage SRADA, SPL-14767 to the actuator drive arm [16] as follows:

(a) Put the countersunk side of the washer [10] under the head of the bolt [9].

(b) Put the bolt [9] through the actuator drive arm [16] and the Link - Stowage SRADA, SPL-14767.

(c) Install the washer [11] and nut [12].

SUBTASK 21-51-27-420-019

(2) Connect the other end of the Link - Stowage SRADA, SPL-14767 to the rod end [17] of the ram air exhaust actuator [2] as follows:

(a) Put the countersunk side of the washer under the head of the bolt.

(b) Put the bolt through the rod end [17] and the Link - Stowage SRADA, SPL-14767.

(c) Install the plain washer and locknut.

——— END OF TASK ———

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COMPRESSOR DISCHARGE OVERHEAT SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the compressor discharge overheat switch

(2) An installation of the compressor discharge overheat switch.

TASK 21-51-40-000-801

2. Compressor Discharge Overheat Switch Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-40-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-40-860-003

(2) To replace the overheat switch for the left cooling pack, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-40-860-004

(3) To replace the overheat switch for the right cooling pack, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

SUBTASK 21-51-40-010-001

(4) To get access to the overheat switch on the left cooling pack, do this task:

Open this access panel:

Number	Name/Location
192CL	ECS Access Door

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SUBTASK 21-51-40-010-002

(5) To get access to the overheat switch on the right cooling pack, do this task:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

E. Overheat Switch Removal

SUBTASK 21-51-40-020-001

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 connector [2] from the overheat switch [1].

SUBTASK 21-51-40-020-002

(2) Remove and discard the lockwire from the overheat switch [1].

SUBTASK 21-51-40-020-003

CAUTION: USE TWO WRENCHES TO REMOVE THE OVERHEAT SWITCH FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE OVERHEAT SWITCH, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the overheat switch [1].

NOTE: Use one wrench to hold the boss. Use the other wrench to turn the overheat switch [1].

SUBTASK 21-51-40-020-004

(4) Remove and discard the O-ring [3] from the overheat switch [1].

——— END OF TASK ———

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LEFT ECS BAY
(RIGHT ECS BAY IS EQUIVALENT)

A

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Compressor Discharge Overheat Switch Installation
Figure 401/21-51-40-990-801 (Sheet 1 of 2)

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COMPRESSOR DISCHARGE OVERHEAT SWITCH

B

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Compressor Discharge Overheat Switch Installation
Figure 401/21-51-40-990-801 (Sheet 2 of 2)

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TASK 21-51-40-400-801

3. Compressor Discharge Overheat Switch Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008
D50104	Grease - Molykote 44 High Temperature Bearing Grease (Medium) (Formerly Dow Corning DC-44)	
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	Switch	21-51-40-01-020	AKS ALL
3	O-ring	21-51-40-01-025	AKS ALL

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Overheat Switch Installation

SUBTASK 21-51-40-640-002

(1) Apply a light coat of Molykote 44 grease, medium, D50104 to a new O-ring [3].

SUBTASK 21-51-40-420-001

(2) Install the lubricated O-ring [3] on the overheat switch [1].

SUBTASK 21-51-40-160-001

(3) Make sure the mating surfaces of the boss and the overheat switch nut are clean.

SUBTASK 21-51-40-640-001

(4) Apply a thin layer of the Never-Seez NSBT compound, D00006 to the threads of the overheat switch [1].

SUBTASK 21-51-40-420-005

(5) Put the overheat switch [1] in the boss on the duct.

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SUBTASK 21-51-40-420-002

CAUTION: USE TWO WRENCHES TO INSTALL THE OVERHEAT SWITCH IN THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE OVERHEAT SWITCH, IT CAN CAUSE DAMAGE TO THE DUCT.

(6) Use two wrenches to install the overheat switch [1]:

(a) Use one wrench to hold the boss and the other wrench to turn the overheat switch [1] into the boss.

(b) Tighten the overheat switch to a torque of 133 - 147 inch-pounds (15.0 -16.6 Nm).

SUBTASK 21-51-40-420-003

(7) Install a new MS20995C32 lockwire, G01048 on the overheat switch [1].

SUBTASK 21-51-40-420-004

(8) Connect the electrical connector [2] to the overheat switch [1].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-40-860-006

(1) If the overheat switch for the left cooling pack was replaced, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-40-860-007

(2) If the overheat switch for the right cooling pack was replaced, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

SUBTASK 21-51-40-410-001

(3) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-40-410-002

(4) Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-40-860-008

(5) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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TURBINE INLET OVERHEAT SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the turbine inlet overheat switch

(2) An installation of the turbine inlet overheat switch.

(3) There is a turbine inlet overheat switch installed on each of the two cooling packs.

TASK 21-51-41-000-801

2. Turbine Inlet Overheat Switch Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (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
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for the Removal

SUBTASK 21-51-41-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-41-860-005

(2) To replace the turbine inlet overheat switch for the left cooling pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-41-860-006

(3) To replace the turbine inlet overheat switch for the right cooling pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

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SUBTASK 21-51-41-010-001

(4) To get access to the overheat switch on the left cooling pack, do this task:

Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-41-010-002

(5) To get access to the overheat switch for the right cooling pack, do this task:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

F. Overheat Switch Removal

SUBTASK 21-51-41-020-001

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 connector from the overheat switch [1].

SUBTASK 21-51-41-020-002

(2) Remove and discard the MS20995C32 lockwire, G01048 from the overheat switch [1].

SUBTASK 21-51-41-020-003

(3) Remove the overheat switch [1] from the duct.

SUBTASK 21-51-41-020-004

(4) Remove and discard the O-ring [2] from the overheat switch [1].

——— END OF TASK ———

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Turbine Inlet Overheat Switch Installation
Figure 401/21-51-41-990-801 (Sheet 1 of 2)

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TURBINE INLET OVERHEAT SWITCH

B

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Turbine Inlet Overheat Switch Installation
Figure 401/21-51-41-990-801 (Sheet 2 of 2)

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TASK 21-51-41-400-801

3. Turbine Inlet Overheat Switch Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008
D00649	Lubricant - O-Ring - Krytox GPL206	
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	Switch	21-51-41-09-080	AKS ALL
		21-51-41-09-085	AKS ALL

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Overheat Switch Installation

SUBTASK 21-51-41-160-001

(1) Make sure the mating surfaces of the boss and the overheat switch nut are clean.

SUBTASK 21-51-41-640-002

(2) Lightly lubricate a clean O-ring [2] with Krytox GPL206 lubricant, D00649.

SUBTASK 21-51-41-420-004

(3) Install a new O-ring [2] on the overheat switch [1].

SUBTASK 21-51-41-640-001

(4) Apply a thin layer of the Never-Seez NSBT compound, D00006 to the threads of the overheat switch [1].

SUBTASK 21-51-41-420-001

(5) Install the overheat switch [1] on the duct.

SUBTASK 21-51-41-420-005

(6) Tighten the overheat switch [1] to 215 - 235 inch-pounds.

SUBTASK 21-51-41-420-002

(7) Install the new MS20995C32 lockwire, G01048 on the overheat switch [1].

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SUBTASK 21-51-41-420-003

(8) Connect the electrical connector to the overheat switch [1].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-41-860-014

(1) When the turbine inlet overheat switch for the left cooling pack was replaced, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-41-860-015

(2) When the turbine inlet overheat switch for the right cooling pack was replaced, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

SUBTASK 21-51-41-410-001

(3) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-41-410-002

(4) Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-51-41-860-004

(5) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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PACK DISCHARGE OVERHEAT SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the pack discharge overheat switch.

(2) An installation of the pack discharge overheat switch.

(3) There is a pack discharge overheat switch for each of the two packs. The pack discharge overheat switches are found in the mix bay.

TASK 21-51-42-000-803-002

2. Pack Discharge Overheat Switch Removal

(Figure 401)

A. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)

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
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right

D. Prepare for the Removal

SUBTASK 21-51-42-860-008-002

(1) Do this step for the left pack discharge overheat switch:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-42-860-009-002

(2) Do this step for the right pack discharge overheat switch:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

SUBTASK 21-51-42-860-010-002

(3) Make sure the L PACK and R PACK switches on the P5-10 Air Conditioning Panel are in the OFF position.

SUBTASK 21-51-42-010-009-002

(4) Open the forward cargo door.

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SUBTASK 21-51-42-010-010-002

(5) Remove the aft center bulkhead liner in the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

E. Pack Discharge Overheat Switch Removal

SUBTASK 21-51-42-020-012-002

(1) Disconnect the electrical connector [1] from the overheat switch [2].

SUBTASK 21-51-42-020-013-002

(2) Remove the MS20995C32 lockwire, G01048 from the overheat switch [2].

SUBTASK 21-51-42-020-014-002

CAUTION: USE TWO WRENCHES TO REMOVE THE OVERHEAT SWITCH FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE OVERHEAT SWITCH, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the pack discharge overheat switch [2].

NOTE: Use one wrench to hold the boss. Use the other wrench to turn the overheat switch.

END OF TASK

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Pack Discharge Overheat Switch Installation
Figure 401/21-51-42-990-804-002 (Sheet 1 of 2)

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Pack Discharge Overheat Switch Installation
Figure 401/21-51-42-990-804-002 (Sheet 2 of 2)

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TASK 21-51-42-400-803-002

3. Pack Discharge Overheat Switch Installation

(Figure 401)

A. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)

B. 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

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Switch	21-51-42-01-025	AKS ALL

D. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

E. Pack Discharge Overheat Switch Installation

SUBTASK 21-51-42-160-002-002

(1) Make sure the mating surfaces of the boss and the overheat switch nut are clean.

SUBTASK 21-51-42-640-002-002

(2) Apply a thin layer of the Never-Seez NSBT compound, D00006 to the threads of the overheat switch [2].

SUBTASK 21-51-42-420-012-002

CAUTION: USE TWO WRENCHES TO INSTALL THE OVERHEAT SWITCH IN THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE OVERHEAT SWITCH, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to install the pack discharge overheat switch [2].

NOTE: Use one wrench to hold the boss. Use the other wrench to turn the overheat switch.

SUBTASK 21-51-42-420-013-002

(4) Install new MS20995C32 lockwire, G01048 to the overheat switch [2] and the boss.

SUBTASK 21-51-42-420-014-002

(5) Connect the electrical connector [1] to the overheat switch [2].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-42-860-011-002

(1) If replaced the left pack discharge overheat switch, do this step:

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(a) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-42-860-012-002

(2) If replaced the right pack discharge overheat switch, do this step:

(a) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

SUBTASK 21-51-42-010-011-002

(3) Install the aft center bulkhead liner in the forward cargo compartment. To install the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

SUBTASK 21-51-42-010-012-002

(4) Close the forward cargo door.

END OF TASK

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Pack Flow Sensor - Removal/Installation

1. General

A. This procedure provides removal and installation procedures for the left and right pack flow sensors, M2953 and M2954, respectively.

TASK 21-51-43-000-801

2. Pack Flow Sensor Removal

Figure 401

A. General

(1) This task includes the steps to remove the left and right pack flow sensors, M2953 and M2954, respectively.

(2) The pack flow sensor is located in the primary heat exchanger outlet duct that goes to the air cycle machine.

B. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for the Removal

SUBTASK 21-51-43-860-002

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-43-040-002

(2) For replacement of the left pack flow sensor [1], do this task:

Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-51-43-040-001

(3) For replacement of the right pack flow sensor, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-51-43-010-002

(4) To get access to the left pack flow sensor, do this step:

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Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-43-010-001

(5) To get access to the right pack flow sensor, do this step:

(a) Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-43-020-003

(6) Find the pack flow sensor [1] in the primary heat exchanger outlet duct along the keel beam that goes to the compressor inlet of the air cycle machine.

F. Pack Flow Sensor Removal

SUBTASK 21-51-43-000-001

(1) Disconnect electrical connector [2] D15822 (D15824) from the flow sensor, M2953 (M2954).

SUBTASK 21-51-43-020-001

(2) Remove screws [3], washers [4] and O-ring [5].

(a) Discard the O-ring [5].

SUBTASK 21-51-43-020-002

(3) As applicable, remove the left flow sensor M2953 or the right flow sensor M2954.

SUBTASK 21-51-43-480-001

(4) Install a cover over the opening in the boss on the duct to keep out unwanted material.

——— END OF TASK ———

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Pack Flow Sensor Installation
Figure 401/21-51-43-990-801

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TASK 21-51-43-400-801

3. Pack Flow Sensor Installation

Figure 401

A. General

(1) This task includes the steps to install the left pack flow sensor (M2953) and the right pack flow sensor (M2954).

B. References

Reference	Title
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)

C. Consumable Materials

Reference	Description	Specification
B00065	Alcohol - Denatured, Ethyl (Ethanol)	AMS 3002 (Supersedes O-A-396)
B50073	Alcohol - Isopropyl	ASTM D 770
D00109	Oil - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base	MIL-PRF-7808 (Supersedes MIL-L-7808)
G50262	Wiper - Cleaning	BMS15-5

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Prepare for the Installation

SUBTASK 21-51-43-080-001

(1) Remove the cover from the flow sensor opening in the duct.

G. Pack Flow Sensor Installation

SUBTASK 21-51-43-100-001

(1) Clean the faying surfaces of the flow sensor and the duct boss as follows:

(a) Clean the surfaces of the flow sensor and the duct boss using wiper, G50262 that are soaked with alcohol, B00065 or alcohol, B50073.

(b) Remove all traces of the solvents with a clean wiper, G50262.

SUBTASK 21-51-43-420-004

(2) Install a new O-ring [5] on the pack flow sensor.

(a) Lubricate the O-ring with oil, D00109.

SUBTASK 21-51-43-420-003

(3) Position the pack flow sensor [1] onto the boss on the duct.

NOTE: The pressure sensor and the flow sensor have the same thread. Make sure that you install the correct part.

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SUBTASK 21-51-43-420-002

(4) Install the three screws [3] and washers [4] to attach the pack flow sensor [1] to the boss:

(a) Tighten the screws [3] to 29 in-lb (3 Nm) - 31 in-lb (4 Nm).

SUBTASK 21-51-43-760-001

(5) Do an electrical resistance check between the boss and the sensor:

(a) Make sure the resistance is not greater than 1.0 milliohm.

SUBTASK 21-51-43-420-001

(6) Connect the electrical connector [2] D15822 (D15824) to the left (right) pack flow sensor.

H. Pack Flow Sensor Installation Test

SUBTASK 21-51-43-740-001

(1) Do the BITE test on the pack flow temperature controller:

(a) Do this task: Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-43-410-002

(1) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-43-410-001

(2) Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

——— END OF TASK ———

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Pack Pressure Sensor - Removal/Installation

1. General

A. This procedures provides instructions for the removal and installation of left pack pressure sensor M2955 and right pack pressure sensor M2956.

TASK 21-51-45-000-801

2. Pack Inlet Pressure Sensor Removal

Figure 401

A. General

(1) This task includes the steps to remove the left and right pack inlet pressure sensors, M2955 and M2956.

(2) The pack inlet pressure sensors (PIPS) are installed on the center wing section of the wing front spar just inboard of the conditioned air check valve.

B. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for the Removal

SUBTASK 21-51-45-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806..

SUBTASK 21-51-45-860-002

(2) Put the L PACK and R PACK switches on the P5-10 air conditioning panel in the OFF positions.

SUBTASK 21-51-45-860-003

(3) For replacement of the left pack inlet pressure sensor [5], do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC

SUBTASK 21-51-45-860-004

(4) For replacement of the right pack inlet pressure sensor, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC

SUBTASK 21-51-45-010-001

(5) To get access to the right pack inlet pressure sensor, do this task:

(a) Open these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-45-010-002

(6) To get access to the left pack inlet pressure sensor, do this step:

(a) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

F. Pack Inlet Pressure Sensor Removal

SUBTASK 21-51-45-020-001

(1) Disconnect electrical connector [4] D15826 (D15828) from the pressure sensor M2955 (M2956).

SUBTASK 21-51-45-020-002

(2) Disconnect the pressure sense line [6] from the pressure sensor [5] as follows:

(a) Use a second wrench to hold the pressure switch when you disconnect the sense line.

SUBTASK 21-51-45-020-003

(3) Remove the screws [1] and washers [2] that secure the clamps [3] that attach the pressure sensor to the bracket on the wing center section of the front spar.

SUBTASK 21-51-45-020-004

(4) Remove the pressure sensor [5].

SUBTASK 21-51-45-480-001

(5) Put a protective cap on the sense line to keep out unwanted material.

END OF TASK

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Pack Inlet Pressure Sensor Installation
Figure 401/21-51-45-990-801 (Sheet 1 of 2)

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Pack Inlet Pressure Sensor Installation
Figure 401/21-51-45-990-801 (Sheet 2 of 2)

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TASK 21-51-45-400-801

3. Pack Inlet Pressure Sensor Installation

Figure 401

A. General

(1) This task includes the steps to install the left pack inlet pressure sensor M2955 and the right pack inlet pressure sensor M2956.

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)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)

C. Consumable Materials

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G50135	Leak Detector - Liquid, Non-Corrosive Soap Compound	MIL-PRF-25567
G50136	Compound - Corrosion Inhibiting, Non-drying	BMS3-38

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Prepare for the Installation

SUBTASK 21-51-45-080-001

(1) Remove the cap from the sense line [6].

G. Pack Inlet Pressure Sensor Installation

SUBTASK 21-51-45-420-001

(1) Put the two clamps [3] on the pressure sensor [5].

SUBTASK 21-51-45-420-002

(2) Position the pressure sensor [5] with the clamps [3] on the bracket so that the sense line [6] can be easily connected to the pressure sensor.

NOTE: The pressure sensor and the flow sensor have the same thread. Make sure that you install the correct part.

SUBTASK 21-51-45-420-003

(3) Install the screws [1] and washers [2] to secure the clamps [3] to the bracket.

SUBTASK 21-51-45-420-004

(4) Connect the sense line to the pressure sensor as follows:

(a) Align the sense line with the pressure switch.

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(b) Apply corrosion inhibiting compound, G50136 to the threads on the pressure sensor.

(c) Connect the sense line to the pressure switch:

1) Use a second wrench on the pressure switch when you tighten the sense line.

SUBTASK 21-51-45-420-005

(5) Connect the electrical connector [4] D15826 (D15828) to the pressure sensor M2955 (M2956).

H. Pack Inlet Pressure Sensor Installation Test

SUBTASK 21-51-45-860-007

(1) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC

SUBTASK 21-51-45-860-005

(2) Supply conditioned air to the airplane as follows:

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

SUBTASK 21-51-45-790-001

(3) Use leak detector, G50135 to do a leak check at the sense line connection.

(a) Repair any leaks that you find.

SUBTASK 21-51-45-100-001

(4) Use a clean cotton wiper, G00034, to remove traces of the leak detector.

SUBTASK 21-51-45-740-001

(5) Do the BITE test on the pack flow temperature controller:

(a) Do this task: Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-45-860-006

(1) Remove conditioned air from the airplane as follows:

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

SUBTASK 21-51-45-410-001

(2) If you installed the left pack pressure sensor, do this step:

(a) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-45-410-002

(3) If you installed the right pack pressure sensor, do this step:

(a) Close these access panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

——— END OF TASK ———

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RAM AIR CONTROL TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the ram air control temperature sensor.

(2) An installation of the ram air control temperature sensor.

(3) There is a ram air control temperature sensor installed on each of the two cooling packs.

TASK 21-51-50-000-801

2. Ram Air Control Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-50-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-50-010-001

(2) For the temperature sensor on the left cooling pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L

(b) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-50-010-002

(3) For the temperature sensor on the right cooling pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R

(b) Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

(c) Open this access panel:

Number	Name/Location
192CR	ECS Access Door

E. Temperature Sensor Removal

SUBTASK 21-51-50-020-001

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 connector [2] from the temperature sensor [1].

SUBTASK 21-51-50-020-002

(2) Remove and discard the lockwire from the temperature sensor [1].

SUBTASK 21-51-50-020-003

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 [1].

SUBTASK 21-51-50-020-004

(4) Remove and discard the o-ring [3] from the temperature sensor [1].

——— **END OF TASK** ———

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Ram Air Control Temperature Sensor Installation
Figure 401/21-51-50-990-801 (Sheet 1 of 2)

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RAM AIR CONTROL TEMPERATURE SENSOR

B

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Ram Air Control Temperature Sensor Installation
Figure 401/21-51-50-990-801 (Sheet 2 of 2)

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TASK 21-51-50-400-801

3. Ram Air Control Temperature Sensor Installation

(Figure 401)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008
D00504	Grease - Petrolatum	VV-P-236

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-51-52-02-010	AKS ALL
3	O-ring	21-51-52-02-007	AKS ALL

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

F. Temperature Sensor Installation

SUBTASK 21-51-50-700-002

(1) Make sure the supplier o-ring is replaced with an approved part.

(a) If necessary, remove and discard supplier provided o-ring.

NOTE: The o-ring that is supplied with the temperature sensor is not an approved part.

SUBTASK 21-51-50-600-001

(2) Apply a light coat of grease, D00504 to a new o-ring [3].

SUBTASK 21-51-50-420-001

(3) Install the lubricated o-ring [3] on the temperature sensor [1].

SUBTASK 21-51-50-160-001

(4) Make sure the mating surfaces of the boss and the temperature sensor nut are clean.

SUBTASK 21-51-50-640-001

(5) Apply a thin layer of the Never-Seez NSBT compound, D00006 to the threads of the temperature sensor [1].

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SUBTASK 21-51-50-420-002

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.

(6) Use two wrenches to install the temperature sensor [1].

(a) Use one wrench to hold the boss and the other wrench to turn the temperature sensor [1].

(b) Tighten the temperature sensor [1] to 220 - 230 inch-pounds (25 - 26 Nm).

SUBTASK 21-51-50-420-003

(7) Install a new lockwire on the temperature sensor [1] (Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801).

SUBTASK 21-51-50-420-004

(8) Connect the electrical connector [2] to the temperature sensor [1].

SUBTASK 21-51-50-860-002

(9) For the left cooling pack, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS ALL			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-51-50-860-003

(10) For the right cooling pack, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS ALL			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-51-50-740-001

(11) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-50-840-001

(1) If you replaced the temperature sensor for the left cooling pack, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-50-840-002

(2) If you replaced the temperature sensor for the right cooling pack, close these access panels in this sequence:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-50-860-004

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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MIX MANIFOLD TEMPERATURE SENSOR - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) A removal of the mix manifold temperature sensor.

(2) A cleaning of the mix manifold temperature sensor.

(3) An installation of the mix manifold temperature sensor.

B. The mix manifold temperature sensors should be cleaned if necessary before a check to determine if the resistance of the sensors has drifted out of specification.

C. There is a mix manifold temperature sensor for each of the two cooling packs. The mix manifold temperature sensors are installed behind the liner at the aft end of the forward cargo compartment.

TASK 21-51-51-000-803

2. Mix Manifold Temperature Sensor Removal

Figure 201

A. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)

B. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 21-51-51-860-012

(1) To remove the mix manifold temperature sensor for the left cooling pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-51-51-860-013

(2) To remove the mix manifold temperature sensor for the right cooling pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-51-51-860-014

(3) Put these switches on the P5-10 Air Conditioning Panel to the OFF position:

(a) L PACK

(b) R PACK

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(c) L RECIRC FAN

(d) R RECIRC FAN

SUBTASK 21-51-51-010-006

(4) Open the forward cargo door.

SUBTASK 21-51-51-010-007

(5) Remove the aft center bulkhead liner in the forward cargo compartment. To remove the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

D. Mix Manifold Temperature Sensor Removal

SUBTASK 21-51-51-020-005

(1) Disconnect the electrical connector [2] from the mix manifold temperature sensor [1].

SUBTASK 21-51-51-020-006

(2) Remove the screws [3] that hold the mix manifold temperature sensor [1] to the upper mix manifold.

SUBTASK 21-51-51-020-007

(3) Remove the mix manifold temperature [1] from the upper mix manifold.

——— END OF TASK ———

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Mix Manifold Temperature Sensor Installation
Figure 201/21-51-51-990-803 (Sheet 1 of 2)

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Mix Manifold Temperature Sensor Installation
Figure 201/21-51-51-990-803 (Sheet 2 of 2)

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TASK 21-51-51-110-801

3. Mix Manifold Temperature Sensor Cleaning

A. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
G00215	Brush - Soft Bristle Fiber	
G50637	Wiper - MicroCare Fiber Wipes	

B. Preparation for the Mix Manifold Temperature Sensor Cleaning

SUBTASK 21-51-51-020-004

(1) Remove the mix manifold temperature sensor. To remove the temperature sensor, do this task:Mix Manifold Temperature Sensor Removal, TASK 21-51-51-000-803.

SUBTASK 21-51-51-960-001

(2) Replace the sensor if any obvious damage listed below is noted:

(a) Bent, broken or missing pins

(b) Damaged, stripped or missing threads

(c) Broken or dirty insulation

(d) Broken or cracked thermistor beads.

C. Mix Manifold Temperature Sensor Cleaning

SUBTASK 21-51-51-160-001

(1) Remove any foreign material from between the connector pins and around the thermistor beads as follows:

(a) Use a soft-bristle brush, G00215 moistened with isopropyl alcohol, B00130.

(b) Use MicroCare fiber wipes, G50637 to remove all traces of the isopropyl alcohol.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-51-420-006

(1) Install the mix manifold temperature sensor. To install the temperature sensor, do this task: Mix Manifold Temperature Sensor Installation, TASK 21-51-51-400-802.

——— END OF TASK ———

TASK 21-51-51-400-802

4. Mix Manifold Temperature Sensor Installation

Figure 201

A. References

Reference	Title
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-61-04-04-020	AKS ALL

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C. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

D. Mix Manifold Temperature Sensor Installation

SUBTASK 21-51-51-080-002

(1) Remove the protective cap from the mix manifold temperature sensor [1].

SUBTASK 21-51-51-420-007

(2) Put the mix manifold temperature sensor [1] in its position in the upper mix manifold.

SUBTASK 21-51-51-420-008

(3) Install the screws [3] that attach the mix manifold temperature sensor [1] to the upper mix manifold.

SUBTASK 21-51-51-420-009

(4) Connect the electrical connector [2] to the mix manifold temperature sensor [1].

SUBTASK 21-51-51-860-015

(5) If the mix manifold temperature sensor [1] for the left cooling pack was replaced, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-51-51-860-016

(6) If the mix manifold temperature sensor [1] for the right cooling pack was replaced, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-51-51-740-002

(7) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-51-410-002

(1) Install the aft center bulkhead liner in the forward cargo compartment. To install the liner, do this task: Forward Cargo Compartment Aft Bulkhead Liner - Removal, TASK 25-52-17-000-801.

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SUBTASK 21-51-51-410-003

(2) Close the forward cargo door.

END OF TASK

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MIX MANIFOLD TEMPERATURE SENSOR - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

(1) A test of the mix manifold temperature sensors

B. There are two mix manifold temperature sensors installed.

TASK 21-51-51-000-802

2. Mix Manifold Temperature Sensor Test

(Figure 501)

A. References

Reference	Title
21-51-51-000-803	Mix Manifold Temperature Sensor Removal (P/B 201)
21-51-51-400-802	Mix Manifold Temperature Sensor Installation (P/B 201)
21-61-17-020-801	Pack Flow Temperature Controller Removal (P/B 401)
21-61-17-400-801	Pack Flow Temperature Controller Installation (P/B 401)
21-61-20-000-801	Pack/Zone Temperature Controller Removal (P/B 401)
21-61-20-400-801	Pack/Zone Temperature Controller Installation (P/B 401)
25-52-18-000-801	Aft Cargo Compartment Forward Bulkhead Liner - Removal (P/B 401)
25-52-18-400-801	Aft Cargo Compartment Forward Bulkhead Liner - Installation (P/B 401)
WDM 21-51-12	Wiring Diagram Manual
WDM 21-51-22	Wiring Diagram 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-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 260-8XPI Supplier: 88277 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 21 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536
COM-3955	Thermometer - Digital (Type K) Part #: 51 SERIES II Supplier: 89536

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C. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right

D. Prepare For The Resistance Test

SUBTASK 21-51-51-860-006

(1) Do this task: Aft Cargo Compartment Forward Bulkhead Liner - Removal, TASK 25-52-18-000-801.

SUBTASK 21-51-51-860-007

(2) To do a test of the left mix manifold sensor, remove the left pack/zone temperature controller (TASK 21-61-20-000-801 or TASK 21-61-17-020-801).

SUBTASK 21-51-51-860-008

(3) To do a test of the right mix manifold sensor, remove the right pack/zone temperature controller (TASK 21-61-20-000-801 or TASK 21-61-17-020-801).

SUBTASK 21-51-51-710-001

(4) Make sure the pack has been off for 20 minutes or until it has reached ambient temperature.

E. Resistance Check Procedure

SUBTASK 21-51-51-700-001

(1) Use a digital thermometer, COM-3955 or equivalent, to measure the temperature adjacent to the applicable mix manifold temperature sensor.

(a) Write down the temperature.

SUBTASK 21-51-51-760-001

(2) Use the digital/analog multimeter, COM-1793 (preferred) to measure resistance between the following pin connections.

NOTE: An equivalent meter can be used as long as the digital multimeter minimizes self-heating of the sensor element. The instrument must limit the current through the sensor to less than 100 microamperes when set to the 10K ohms scale. If you use resistance measuring instruments without this current-limiting feature you will get an error in resistance value due to self-heating of the sensor element.

SUBTASK 21-51-51-700-002

(3) For the right mix manifold temperature sensor, measure the resistance from pin A7 to pin B7 on connector D3860A for the right pack/zone temperature controller (WDM 21-51-22).

SUBTASK 21-51-51-700-003

(4) For the left mix manifold temperature sensor, measure the resistance from pin A7 to pin B7 on connector D3858A for the left pack/zone temperature controller (WDM 21-51-12).

SUBTASK 21-51-51-700-004

(5) Write down the resistance in Ohms that you measure.

(a) For the mix manifold temperature sensors, find the temperature on (Figure 501) that is nearest to the temperature that you wrote down.

(b) Compare the permitted range of resistance for that temperature to the resistance you wrote down.

(c) If the resistance is out of range, replace the sensor. To replace the sensor,

These are the tasks:

Mix Manifold Temperature Sensor Removal, TASK 21-51-51-000-803,

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Mix Manifold Temperature Sensor Installation, TASK 21-51-51-400-802.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-51-420-004

(1) Install the applicable pack/zone temperature controller (TASK 21-61-20-400-801 or TASK 21-61-17-400-801).

SUBTASK 21-51-51-410-001

(2) Do this task: Aft Cargo Compartment Forward Bulkhead Liner - Installation, TASK 25-52-18-400-801.

END OF TASK

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TEMPERATURE °F (°C)	RESISTANCE (OHMS)	TEMPERATURE °F (°C)	RESISTANCE (OHMS)
-40 (-40)	43,030-45,210	95 (35)	1,340-1,400
-35 (-37.2)	36,690-38,550	100 (37.7)	1,210-1,270
-30 (-34.4)	31,360-32,960	105 (40.5)	1,100-1,150
-25 (-31.6)	26,930-28,230	110 (43.3)	997-1,140
-20 (-28.8)	23,140-24,260	115 (46.1)	905-944
-15 (-26.1)	19,940-20,900	120 (48.8)	822-859
-10 (-23.3)	17,220-18,050	125 (51.6)	748-782
-5 (-20.5)	14,890-15,580	130 (54.4)	682-713
0 (-17.7)	12,950-13,550	135 (57.2)	623-652
5 (-15)	11,310-11,780	140 (60)	568-598
10 (-12.2)	9,870-10,290	145 (62.7)	520-547
15 (-9.4)	8,640-9,000	150 (65.5)	477-502
20 (-6.6)	7,520-7,900	155 (68.3)	438-461
25 (-3.8)	6,660-6,940	160 (71.1)	413-434
30 (-1.1)	5,870-6,120	165 (73.8)	371-390
35 (1.6)	5,180-5,400	170 (76.6)	342-360
40 (4.4)	4,580-4,770	175 (79.4)	315-332
45 (7.2)	4,060-4,230	180 (82.2)	291-307
50 (10)	3,600-3,750	185 (85)	269-284
55 (12.7)	3,200-3,340	190 (87.7)	249-263
60 (15.5)	2,850-2,980	195 (90.5)	231-245
65 (18.3)	2,550-2,660	200 (93.3)	214-226
70 (21.1)	2,293-2,390	205 (96.1)	198-211
75 (23.8)	2,040-2,130	210 (98.8)	184-196
80 (26.6)	1,830-1,920	215 (101.6)	172-183
85 (29.4)	1,650-1,720	220 (104.4)	160-170
90 (32.2)	1,480-1,550		

RESISTANCE TABLE

M24772 S0006563276_V1

Mix Manifold Temperature Sensor - Temperature and Resistance Data
Figure 501/21-51-51-990-802 (Sheet 1 of 2)

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MIX MANIFOLD TEMPERATURE SENSOR
RESISTANCE VS TEMPERATURE GRAPH

M24325 S0006563277_V1

Mix Manifold Temperature Sensor - Temperature and Resistance Data
Figure 501/21-51-51-990-802 (Sheet 2 of 2)

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PACK TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the pack temperature sensor

(2) An installation of the pack temperature sensor.

(3) There is a pack temperature sensor installed on the left and the right cooling pack.

TASK 21-51-52-000-801

2. Pack Temperature Sensor Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (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
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door

E. Prepare for the Removal

SUBTASK 21-51-52-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-52-010-001

(2) To remove the temperature sensor on the left cooling pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

(b) Open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-52-010-002

(3) To remove the temperature sensor on the right cooling pack, do this task:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

(b) Open this access panel:

Number	Name/Location
192CR	ECS Access Door

F. Pack Temperature Sensor Removal

SUBTASK 21-51-52-020-001

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 connector from the pack temperature sensor [1].

SUBTASK 21-51-52-020-002

(2) Remove and discard the MS20995C32 lockwire, G01048 from the pack temperature sensor [1].

SUBTASK 21-51-52-020-003

CAUTION: USE TWO WRENCHES TO REMOVE THE PACK TEMPERATURE SENSOR FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE PACK 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 [1].

SUBTASK 21-51-52-020-004

(4) Remove and discard the o-ring [2] from the temperature sensor [1].

——— END OF TASK ———

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G69966 S0006563281_V3

Pack Temperature Sensor Installation
Figure 401/21-51-52-990-801

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TASK 21-51-52-400-801

3. Pack Temperature Sensor Installation

(Figure 401)

A. References

Reference	Title
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. 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

C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door

E. Pack Temperature Sensor Installation

SUBTASK 21-51-52-420-001

(1) Install a new o-ring [2] on the temperature sensor [1].

SUBTASK 21-51-52-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut are clean.

SUBTASK 21-51-52-640-001

(3) Apply a thin layer of the Never-Seez NSBT compound, D00006 to the threads of the temperature sensor [1].

SUBTASK 21-51-52-420-002

CAUTION: USE TWO WRENCHES TO INSTALL THE PACK TEMPERATURE SENSOR IN THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE PACK TEMPERATURE SENSOR, IT CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to install the pack temperature sensor [1].

NOTE: Use one wrench to hold the boss. Use the other wrench to turn the temperature sensor [1].

SUBTASK 21-51-52-420-003

(5) Install a new MS20995C32 lockwire, G01048 on the temperature sensor [1].

SUBTASK 21-51-52-420-004

(6) Connect the electrical connector to the temperature sensor [1].

SUBTASK 21-51-52-010-003

(7) If the temperature sensor on the left cooling pack was replaced, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-51-52-010-004

(8) If the temperature sensor on the right cooling pack was replaced, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-51-52-740-001

(9) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-52-010-005

(1) If the temperature sensor on the left cooling pack was replaced, do this step:

(a) Close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-52-010-006

(2) If the temperature sensor on the right cooling pack was replaced, do this step:

(a) Close this access panel:

Number	Name/Location
192CR	ECS Access Door

SUBTASK 21-51-52-860-002

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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PACK TEMPERATURE SENSOR - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

(1) A test of the pack temperature sensors.

(2) The test consists of a resistance measurements to make sure that the sensor meets specifications.

B. There are two pack temperature sensors, T471 and T474.

TASK 21-51-52-720-801

2. Pack Temperature Sensor Test

A. References

Reference	Title
21-51-52-000-801	Pack Temperature Sensor Removal (P/B 401)
21-51-52-400-801	Pack Temperature Sensor Installation (P/B 401)
21-61-17-020-801	Pack Flow Temperature Controller Removal (P/B 401)
21-61-17-400-801	Pack Flow Temperature Controller Installation (P/B 401)
21-61-20-000-801	Pack/Zone Temperature Controller Removal (P/B 401)
21-61-20-400-801	Pack/Zone Temperature Controller Installation (P/B 401)
36-00-00-860-806	Remove Pressure from 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-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 260-8XPI Supplier: 88277 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 21 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536
COM-3955	Thermometer - Digital (Type K) Part #: 51 SERIES II Supplier: 89536

C. Preparation for the Resistance Test

SUBTASK 21-51-52-864-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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SUBTASK 21-51-52-020-005

(2) To do a test of the left pack temperature sensor, remove the left pack/zone temperature controller as follows:

(a) Do this task: Pack/Zone Temperature Controller Removal, TASK 21-61-20-000-801 or Pack Flow Temperature Controller Removal, TASK 21-61-17-020-801.

SUBTASK 21-51-52-020-006

(3) To do a test of the right pack temperature sensor, remove the right pack/zone temperature controller as follows:

(a) Do this task: Pack/Zone Temperature Controller Removal, TASK 21-61-20-000-801 or Pack Flow Temperature Controller Removal, TASK 21-61-17-020-801.

SUBTASK 21-51-52-800-001

(4) Allow the pack bay to cool until the pack bay interior has reached the outside ambient temperature.

D. Sensor Resistance Check Procedure

SUBTASK 21-51-52-700-001

(1) Use a digital thermometer, COM-3955 or equivalent, to measure the temperature adjacent to the applicable pack temperature sensor in the pack bay.

(a) Record the temperature for later use.

SUBTASK 21-51-52-700-002

(2) Use the digital/analog multimeter, COM-1793 (preferred) to measure resistance between connector pins.

NOTE: An equivalent meter can be used as long as the digital multimeter minimizes self-heating of the sensor element. The instrument must limit the current through the sensor to less than 100 microamperes when set to the 10K ohms scale. If you use resistance measuring instruments without this current-limiting feature you will get an error in resistance value due to self-heating of the sensor element.

SUBTASK 21-51-52-700-003

(3) For the left pack temperature sensor T471, make these resistance measurements:

(a) Measure the resistance from pin A6 to B6 on connector D3858A for the left pack/zone temperature controller (WDM 21-51-12).

(b) Measure the resistance from pin D11 to D12 on connector D3860A for the right pack/zone temperature controller (WDM 21-51-13).

SUBTASK 21-51-52-700-004

(4) For the right pack temperature sensor T474, make these resistance measurements:

(a) Measure the resistance from pin D11 to D12 on connector D3858A for the left pack/zone temperature controller (WDM 21-51-23).

(b) Measure the resistance from pin A6 to B6 on connector D3860A for the right pack/zone temperature controller (WDM 21-51-22).

SUBTASK 21-51-52-700-005

(5) Make a record of the resistances for each sensor that you measured.

SUBTASK 21-51-52-700-006

(6) Find the temperature on Figure 501 that is nearest to the temperature that you recorded.

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SUBTASK 21-51-52-700-007

(7) Compare the serviceable range of resistance for that temperature to the resistance you recorded.

(a) The serviceable range of resistance is between the two parallel lines on the graph.

SUBTASK 21-51-52-960-001

(8) If the resistance is out of the serviceable range, replace the sensor. To replace the sensor, do these tasks: Pack Temperature Sensor Removal, TASK 21-51-52-000-801

Pack Temperature Sensor Installation, TASK 21-51-52-400-801.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-52-420-005

(1) Install the applicable pack/zone temperature controller Pack/Zone Temperature Controller Installation, TASK 21-61-20-400-801 or Pack Flow Temperature Controller Installation, TASK 21-61-17-400-801.

END OF TASK

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PACK TEMPERATURE SENSOR RESISTANCE VS TEMPERATURE GRAPH

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Pack Temperature Sensor Test
Figure 501/21-51-52-990-802

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PACK TEMPERATURE BULB - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the pack temperature bulb

(2) An installation of the pack temperature bulb.

(3) There is a pack temperature bulb installed on the left and the right cooling pack.

TASK 21-51-60-000-801

2. Pack Temperature Bulb Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (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
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Prepare for the Removal

SUBTASK 21-51-60-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-60-860-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	8	C00076	AIR CONDITIONING TEMP IND

SUBTASK 21-51-60-010-001

(3) To get access to the temperature bulb on the left cooling pack, open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-60-010-002

(4) To get access to the temperature bulb on the right cooling pack open these panels in this sequence:

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Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

F. Pack Temperature Bulb Removal

SUBTASK 21-51-60-020-001

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 connector from the pack temperature bulb [1].

SUBTASK 21-51-60-020-002

(2) Remove and discard the MS20995C32 lockwire, G01048 from the overheat bulb [1].

SUBTASK 21-51-60-020-003

CAUTION: USE TWO WRENCHES TO REMOVE THE PACK TEMPERATURE BULB FROM THE BOSS. IF YOU USE ONLY ONE WRENCH TO REMOVE THE PACK TEMPERATURE BULB, IT CAN CAUSE DAMAGE TO THE DUCT.

(3) Use two wrenches to remove the temperature bulb [1].

NOTE: Use one wrench to hold the boss. Use the other wrench to turn the temperature bulb [1].

SUBTASK 21-51-60-020-004

(4) Remove and discard the o-ring [2] from the temperature bulb [1].

END OF TASK

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Pack Temperature Bulb Installation
Figure 401/21-51-60-990-801

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TASK 21-51-60-400-801

3. **Pack Temperature Bulb Installation**
(Figure 401)

A. **References**

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. **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

C. **Location Zones**

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

D. **Access Panels**

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. **Pack Temperature Bulb Installation**

SUBTASK 21-51-60-420-001

(1) Install a new o-ring [2] on the temperature bulb [1].

SUBTASK 21-51-60-160-001

(2) Make sure the mating surfaces of the boss and the temperature bulb nut are clean.

SUBTASK 21-51-60-640-001

(3) Apply a thin layer of the Never-Seez NSBT compound, D00006 to the threads of the temperature bulb [1].

SUBTASK 21-51-60-420-002

CAUTION: USE TWO WRENCHES TO INSTALL THE PACK TEMPERATURE BULB IN THE BOSS. IF YOU USE ONLY ONE WRENCH TO INSTALL THE PACK TEMPERATURE BULB, IT CAN CAUSE DAMAGE TO THE DUCT.

(4) Use two wrenches to install the pack temperature bulb [1].

NOTE: Use one wrench to hold the boss. Use the other wrench to turn the temperature bulb [1].

SUBTASK 21-51-60-420-003

(5) Install new MS20995C32 lockwire, G01048 on the temperature bulb [1].

SUBTASK 21-51-60-420-004

(6) Connect the electrical connector to the temperature bulb [1].

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F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-60-860-003

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	8	C00076	AIR CONDITIONING TEMP IND

SUBTASK 21-51-60-010-003

(2) If you replaced the temperature bulb for the left cooling pack, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-60-010-004

(3) If you replaced the temperature bulb for the right cooling pack, close these panels in the specified sequence:

Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-51-60-860-004

(4) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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AIR CONDITIONING MODULE - REMOVAL/INSTALLATION

1. General

A. The air conditioning module is located on the upper right corner of the P5 forward overhead panel in the flight deck.

B. This procedure has these tasks:

(1) A removal of the air conditioning module.

(2) An installation of the air conditioning module.

TASK 21-51-65-000-801

2. Air Conditioning Module Removal

(Figure 401)

A. Location Zones

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

B. Procedure

SUBTASK 21-51-65-860-009

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-65-860-013

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	3	C01613	AIR COND PACK CONT VALVES L ALT
D	4	C01614	AIR COND PACK CONT VALVES R ALT

SUBTASK 21-51-65-010-001

(3) Get access to the electrical connectors on the back of the P5-10 air conditioning module [1] on the P5 forward overhead panel:

(a) Loosen the 1/4-turn fasteners that hold the P5 forward overhead panel in position and let the panel rotate downward.

SUBTASK 21-51-65-020-001

(4) Remove the P5-10 air conditioning module [1] from the P5 forward overhead panel as follows:

(a) Disconnect the electrical connectors at the back of the module.

WARNING: HOLD THE AIR CONDITIONING MODULE WHEN YOU LOOSEN THE 1/4-TURN FASTENERS. IF THE MODULE FALLS, INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(b) Hold the air conditioning module [1] in place and loosen the 1/4-turn fasteners that hold the air conditioning module [1] to the P5 forward overhead panel.

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(c) Remove the air conditioning module [1].

——— END OF TASK ———

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FLIGHT COMPARTMENT

[1] AIR CONDITIONING MODULE

A

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Air Conditioning Module Installation
Figure 401/21-51-65-990-801

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TASK 21-51-65-400-801

3. Air Conditioning Module Installation

(Figure 401)

A. References

Reference	Title
21-25-00-710-802-002	Recirculation System - Operational Test (P/B 501)
21-51-00-700-803	Pack/Zone Temperature Controller BITE Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Tools/Equipment

Reference	Description
STD-3907	Mirror - Dental

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Module	21-51-65-03-050	AKS ALL
		21-61-52-02-020	AKS ALL

D. Location Zones

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

E. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door

F. Air Conditioning Module Installation

SUBTASK 21-51-65-010-002

(1) If it has not already been done, lower the P5 forward overhead panel.

SUBTASK 21-51-65-420-001

(2) Install the P5-10 air conditioning module [1] into the P5 forward overhead panel as follows:

(a) Put the air conditioning module [1] into the P5 forward overhead panel and hold it in position.

(b) Turn the 1/4-turn fasteners on the air conditioning module [1] to hold the module to the P5 forward overhead panel.

(c) Connect the two electrical connectors to the module.

SUBTASK 21-51-65-010-003

(3) Lift the P5 forward overhead panel to the closed position and turn the 1/4-turn fasteners.

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SUBTASK 21-51-65-860-011

(4) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-51-65-860-014

(5) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	3	C01613	AIR COND PACK CONT VALVES L ALT
D	4	C01614	AIR COND PACK CONT VALVES R ALT

SUBTASK 21-51-65-740-001

(6) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-51-00-700-803.

G. Air Conditioning Module Installation Test

SUBTASK 21-51-65-860-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-51-65-860-004

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	1	C01273	PRESSURIZATION CONTROL LCD LTG
F	6	C01269	PRESSURIZATION CONTROL MANUAL

SUBTASK 21-51-65-860-005

(3) Make sure that all circuit breakers for the air conditioning and the pneumatic systems are closed.

SUBTASK 21-51-65-860-006

(4) Make sure that all the circuit breakers for these systems are closed:

(a) Master caution

(b) Air/ground systems (nose gear and main gear)

(c) Indicator lights.

SUBTASK 21-51-65-210-001

(5) Make sure that the RAM DOOR FULL OPEN lights on the P5-10 panel are on.

SUBTASK 21-51-65-860-007

(6) Make sure the L and R PACK switches on the P5-10 panel are set to OFF.

SUBTASK 21-51-65-710-001

(7) Set the LIGHTS switch on the P2-1 center instrument panel momentarily to the TEST position and make sure these lights come on and then go off:

(a) AUTO FAIL

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(b) OFF SCHED DESCENT

(c) ALTN

(d) MANUAL

(e) PACK

(f) L and R BLEED TRIP OFF

(g) DUAL BLEED

SUBTASK 21-51-65-710-002

(8) Do a test of the overheat indication system:

(a) Press the OVHT TEST button on the P5-10 panel.

(b) Make sure the WING-BODY OVERHEAT lights come on.

SUBTASK 21-51-65-710-003

(9) Do this task to do a test of the recirculation system, Recirculation System - Operational Test, TASK 21-25-00-710-802-002.

SUBTASK 21-51-65-710-005

(10) Do a test of the pneumatic system pressurization:

(a) Open the left access panel:

Number	Name/Location
192CL	ECS Access Door

(b) Open the right access panel:

Number	Name/Location
192CL	ECS Access Door

(c) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

(d) Make sure the ISOLATION VALVE switch is in the CLOSED position.

(e) Position the APU BLEED switch to ON.

(f) Make sure there is pressure indication for the left pneumatic system.

(g) Position the L PACK switch to AUTO.

(h) Make sure the indication on the pressure gauge increases.

(i) Make sure the left pack flow control valve opens.

1) Use a dental mirror, STD-3907 if necessary to view the valve position.

(j) Position the L PACK switch to OFF.

(k) Position the ISOLATION VALVE switch to OPEN.

(l) Make sure there is pressure indication for the right pneumatic system.

(m) Position the R PACK switch to AUTO.

(n) Make sure the indication on the pressure gauge increases.

(o) Make sure the right pack flow control valve opens.

1) Use a dental mirror, STD-3907 if necessary to view the valve position.

(p) Set the R PACK switch to OFF.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-65-860-008

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-65-410-002

(2) Close the left access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-51-65-410-003

(3) Close the right access panel:

Number	Name/Location
192CR	ECS Access Door

SUBTASK 21-51-65-410-001

(4) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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ZONE TEMPERATURE CONTROL AND INDICATION - ADJUSTMENT/TEST

1. **General**

A. This procedure has these tasks:

AKS 001-021

(1) Pack/Zone Temperature Controller BITE Test.

AKS 022-999

(2) Pack Flow Temperature Controller BITE Test.

AKS ALL

(3) Cabin Temperature Control and Indication Test.

(4) Duct Overheat Switch - Operational Test.

AKS 001-021

TASK 21-61-00-700-806-002

2. **Pack/Zone Temperature Controller BITE Test**

(Figure 501)

A. General

(1) This task does a BITE test of the pack/zone temperature controller.

(2) The BITE test does the following checks:

(a) Pack/zone temperature controller self test.

(b) Zone temperature selector test.

(c) Cabin temperature sensor test.

(d) Duct temperature limit sensor test.

(e) Zone trim air modulating valve test.

(f) Ram air control temperature sensor test.

(g) Ram air inlet actuator test.

(h) SRADA (Smart Ram Air Door Actuator) inlet actuator test

(i) SRADA (Smart Ram Air Door Actuator) exit actuator test

(j) Pack temperature sensor test.

(k) Temperature control valve test.

(l) Standby temperature control valve test.

(m) Mix manifold temperature sensor test.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

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AKS 001-021 (Continued)

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Procedure

SUBTASK 21-61-00-860-019-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-61-00-860-029-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS 001-021			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS 001-021			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	2	C01169	A/C ZONE TEMP DUCT OVHT AFT PASS
C	3	C01166	A/C ZONE TEMP DUCT OVHT FWD PASS
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-61-00-860-064-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	3	C01613	AIR COND PACK CONT VALVES L ALT
D	4	C01614	AIR COND PACK CONT VALVES R ALT

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AKS 001-021 (Continued)

SUBTASK 21-61-00-860-030-002

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	15	C01355	LANDING GEAR AIR/GND SYS 2
C	16	C01356	LANDING GEAR AIR/GND SYS 1
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	11	C00313	INDICATOR MASTER DIM SECT 1
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
F	11	C00317	INDICATOR MASTER DIM SECT 5

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
D	8	C00076	AIR CONDITIONING TEMP IND
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

SUBTASK 21-61-00-860-020-002

(5) Put these switches on the P5-10 Air Conditioning Panel to the positions that follow:

(a) Put the BLEED 1, BLEED 2, and BLEED APU switches to the OFF position.

(b) Make sure that the L/R duct pressure indications on the DUCT PRESS indication gauge on the P5-10 panel are zero.

(c) Put the L PACK and R PACK switches to the AUTO position.

(d) Put the L RECIRC FAN and R RECIRC FAN switches to the AUTO position.

(e) Put the ISOLATION VALVE switch to the OPEN position.

SUBTASK 21-61-00-860-021-002

(6) Put these switches on the P5-17 Cabin Temperature Panel to the positions that follow:

(a) Put the TRIM AIR switch to the ON position.

(b) Put the CONT CAB, FWD CAB, and AFT CAB temperature selectors to the AUTO (12:00) position.

SUBTASK 21-61-00-010-005-002

(7) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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AKS 001-021 (Continued)

SUBTASK 21-61-00-860-022-002

(8) Get access to the zone temperature controllers located on the bottom shelf (E3-3) of the E3 rack in the Electronics Equipment compartment.

SUBTASK 21-61-00-740-002-002

(9) Do the steps that follow on the left and the right pack/zone temperature controllers:

(a) Push and hold the PRESS/TEST switch on the controller.

1) Make sure that all the lights on the controller come on.

2) If lights do not come on, replace the controller.

(b) Release the PRESS/TEST switch on the controller.

1) Make sure that all the lights on the controller go off.

(c) Push the BIT switch on the controller. The light above the BIT switch will come on when the switch is pushed fully.

NOTE: The BIT switch will show if failures occurred during the last flight.

1) Wait for the green GO light to come on.

2) If a red light comes on for a component, the component does not operate. Write down the component that does not operate.

(d) Push the PREV FLT switch on the controller. The light above the PREV FLT switch will come on when the switch is pushed fully.

NOTE: The PREV FLT switch will show all the failures occurred during the last nine flights.

1) Wait for the green GO light to come on.

2) If a red light comes on for a component, the component did not operate on a previous flight. Write down the component that did not operate.

WARNING: MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE RAM AIR INLET DOOR. WHEN YOU PUSH THE VERIFY SWITCH, THE RAM AIR COMPONENTS WILL MOVE AND CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(e) Push the VERIFY switch on the controller. The light above the VERIFY switch will come on when the switch is pushed fully.

NOTE: The VERIFY switch will initiate a real time test of the pack and zone temperature control components.

1) Wait for the green GO light to come on.

2) If a red light comes on for a component, the component does not operate. Write down the component that does not operate.

(f) Do the repair task for the components that do not operate. After you correct the problem, do the BITE test again.

1) Do this step to erase the existing faults and the fault history:

a) Push the RESET switch while the VERIFY and GO lights are on.

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AKS 001-021 (Continued)

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-00-010-006-002

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-00-860-028-002

(2) On the P5-10 Air Conditioning Panel, put the L and R PACK switches to the OFF position.

SUBTASK 21-61-00-860-024-002

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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FLIGHT COMPARTMENT

AIR CONDITIONING
MODULE
A

G63043 S0006563342_V2

Zone Temperature Control and Indication Test
Figure 501/21-61-00-990-802-002 (Sheet 1 of 3)

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Zone Temperature Control and Indication Test
Figure 501/21-61-00-990-802-002 (Sheet 2 of 3)

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PACK / ZONE CABIN TEMPERATURE CONTROLLER, M1442, M1443

C

2393802 S0000551494_V1

Zone Temperature Control and Indication Test
Figure 501/21-61-00-990-802-002 (Sheet 3 of 3)

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TASK 21-61-00-740-801-002

3. Pack Flow Temperature Controller BITE Test

Reference Not Currently Available

A. General

(1) This task does a BITE test on the pack flow temperature controller.

(2) The BITE test does a check on the following components:

(a) Pack flow temperature controller (PFTC)

(b) Flight deck temperature sensor

(c) Zone temperature sensor

(d) Standby zone sensor

(e) Flight deck duct sensor

(f) Pack temperature sensor

(g) Standby pack temperature sensor

(h) Mix manifold temperature sensor

(i) Flight deck sensor

(j) Zone selector

(k) Standby selector

(l) Pack inlet pressure

(m) Pack flow sensor

(n) Flow control valve

(o) Temperature control valve

(p) Flight deck trim vavle

(q) Zone trim valve

(r) Standby temperature control valve

(s) Flight deck sensor

(t) SRADA control

(u) SRADA inlet

(v) SRADA exit

(w) SRADA ram sensor

(3) There are two identical pack flow temperature controllers (PFTC) located on the E3-3 rack.

(4) If the PFTC shows FAULT on the front panel display (Front Panel Display), there is a fault currently being detected by the controller. There may also be faults recorded in the FAULT HISTORY mode of the PFTC.

(5) This BITE procedure must be done on both PFTCs.

(6) The steps that follow provide a summary of the function of the buttons on the front of the PFTC:

(a) ON/OFF button

1) The ON/OFF button will activate or de-activate the BITE functions on the PFTC.

(b) MENU button

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AKS 022-999 (Continued)

1) The MENU button will display the BITE menus in the PFTC. If you push the MENU button, you will go up to the previously displayed MENU.
2) You can select DOWN or NO at a MENU item to go to the next MENU item.
3) You can only select DOWN to go to the next item if it is not a MENU item.

(c) YES button
1) If you select YES at a MENU item, you will go to details of the item
2) Used to respond YES to questions on the PFTC

(d) NO button
1) You can select NO at a MENU item to go to the next item.
2) If you keep selecting NO, you will get to END OF LIST
3) Used to respond NO to questions on the PFTC

(e) YES button
1) Used to scroll up through the menu or the results of a BITE test

(f) DOWN button
1) If you keep selecting DOWN, you will get to END OF LIST
2) Used to scroll down through the menu or the results of a BITE test

(7) The BITE has five modes of operation as listed below:
(a) Manual press On/OFF
(b) EXISTING FAULTS
(c) FAULT HISTORY
(d) GROUND TEST
(e) OTHER FUNCTIONS

(8) The steps that follow provide a summary of the main menu selections:
(a) Manual press On/Off
1) Manually pressing the ON/OFF button will power the front panel displays

(b) EXISTING FAULTS
1) The EXISTING FAULTS main menu selection provides a list of all faults that are currently detected by the PFTC.
a) Maintenance action is required to resolve those maintenance messages that show in the EXISTING FAULTS.

(c) FAULT HISTORY
1) The FAULT HISTORY state is activated by selecting the down arrow button or NO button when the front panel display is showing EXISTING FAULTS or scrolling up/down from the front panel display MENU button.
2) Fault memory is read and Flight Leg Fault Records are displayed in reverse chronological order; that is, the last fault on the last flight leg is displayed first and the first fault on the first flight leg is displayed last.

(d) GROUND TESTS

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1) The front panel display state “Ground Test” is activated by selecting the DOWN button or the NO button when the FPD is showing FAULT HISTORY or by scrolling up or down from the MENU.
2) The GROUND TEST state has 6 modes of operation as listed below:
   a) BITE Instruction
   b) Start GROUND TEST
   c) Start Display Test
   d) Ground Test in Progress
   e) Ground Test Complete
   f) Ground Test Results
3) During the GROUND TEST state, the BITE operator will drive the display by his inputs in response to indicated text
4) The front panel display (FPD) OTHER FUNCTIONS state has the two modes of operation listed below:
   a) System Config
   b) I/O Monitor

(e) OTHER FUNCTIONS
1) The OTHER FUNCTIONS state is activated by selection at the main menu.

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Functional Test

SUBTASK 21-61-00-760-001-002

(1) Supply electrical power to the aircraft:
   (a) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-61-00-860-100-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C01157	A/C TEMP CONT VALVE CLOSE LEFT
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS
A	4	C01950	AIR CONDITIONING RAM AIR MOD LEFT
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN

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AKS 022-999 (Continued)

(Continued)

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT L
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	1	C01160	A/C TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK
B	4	C01951	AIR CONDITIONING RAM AIR MOD RIGHT
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC
C	2	C01169	A/C ZONE TEMP DUCT OVHT AFT PASS
C	3	C01166	A/C ZONE TEMP DUCT OVHT FWD PASS
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT
D	3	C01613	AIR COND PACK CONT VALVES L ALT
D	4	C01614	AIR COND PACK CONT VALVES R ALT
D	8	C00076	AIR CONDITIONING TEMP IND
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

SUBTASK 21-61-00-860-101-002

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	15	C01355	LANDING GEAR AIR/GND SYS 2
C	16	C01356	LANDING GEAR AIR/GND SYS 1
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	11	C00313	INDICATOR MASTER DIM SECT 1
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6

SUBTASK 21-61-00-860-102-002

(4) Make sure the CAB/UTIL switch on the P5-13 ELEC METER, BATTERY AND GALLEY POWER module is in the ON position.

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AKS 022-999 (Continued)

SUBTASK 21-61-00-010-019-002

(5) Get access to the pack flow temperature controllers in the E/E equipment bay:

(a) Open this access panel:

1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

F. BITE Procedure for EXISTING FAULTS

SUBTASK 21-61-00-740-003-002

(1) If the front panel display is blank, then do these steps:

(a) Push the ON/OFF button on the front panel.

(b) If EXISTING FAULTS does not show, do these steps:

1) Push UP to go to TOP OF LIST.

2) Push MENU to go up in the menu list.

SUBTASK 21-61-00-740-004-002

(2) Push the YES button on the front panel.

SUBTASK 21-61-00-740-005-002

(3) The front panel display will show the first fault (maintenance message) is the existing faults list.

NOTE: The text of the fault will be the same as one of the maintenance messages listed in the BITE Message Index at the end of this task. These existing faults are referred to as maintenance messages.

SUBTASK 21-61-00-740-007-002

(4) Find and record the existing faults as follows:

(a) Make a record of the existing fault (maintenance message).

(b) Push the YES button on the DCPC front panel to see the fault details (fault numbers) for the maintenance message.

NOTE: The fault details for a maintenance message will be the same as one or more of the fault numbers that are listed in the DCPCS Fault Number List. The number of fault details (fault numbers) varies with each maintenance message.

(c) Make a record of the fault detail (fault number) for the maintenance message.

(d) Push the down arrow button on the DCPC front panel to look for the next fault detail (fault number).

(e) Make a record of this fault detail (fault number) also.

(f) Do the above two steps again until the PFTC front panel display shows BOTTOM OF LIST for two seconds, then shows the maintenance message again.

(g) Push the down arrow button on the PFTC front panel to see the next maintenance message in the EXISTING FAULTS list.

NOTE: If there are no more faults, the display will show BOTTOM OF LIST for two seconds, then the previous maintenance message will show.

(h) Do steps (4)(a) thru (4)(g) above until the PFTC front panel display shows BOTTOM OF LIST for two seconds so that all maintenance messages and associated fault numbers have been recorded.

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AKS 022-999 (Continued)

SUBTASK 21-61-00-740-006-002

(5) Push the MENU button on the PFTC front panel.

SUBTASK 21-61-00-740-008-002

(6) Refer to the BITE Message Index at the end of this task to find the fault isolation task for the applicable maintenance message.

SUBTASK 21-61-00-740-009-002

(7) Push the down arrow button on the PFTC front panel until FAULT HISTORY shows and do the BITE procedure for FAULT HISTORY below.

G. BITE Procedure for FAULT HISTORY

SUBTASK 21-61-00-740-010-002

(1) Make sure that the PFTC front panel display shows FAULT HISTORY.

SUBTASK 21-61-00-740-011-002

(2) Push the YES button on the PFTC front panel

SUBTASK 21-61-00-740-012-002

(3) The DCPC front panel display shows FLIGHT LEG XX.

NOTE: XX is the last flight leg that faults were recorded in history.

SUBTASK 21-61-00-740-013-002

(4) If there are no FLIGHT LEGS displayed on the DCPC front panel, go to step D.(11).

NOTE: This indicates that there are no faults recorded in FAULT HISTORY.

SUBTASK 21-61-00-740-014-002

(5) Push the YES button on the PFTC front panel.

SUBTASK 21-61-00-740-015-002

(6) The DCPC front panel display shows the first fault (maintenance message) in the flight leg fault list.

NOTE: The text of the fault will be the same as one of the maintenance messages listed in the BITE Message Index at the end of this task. These faults are referred to as maintenance messages.

SUBTASK 21-61-00-740-016-002

(7) Find and record the faults in the flight leg fault list as follows:

(a) Make a record of the fault (maintenance message).

(b) Push the YES button on the DCPC front panel to see the fault details (fault numbers) for the maintenance message.

(c) Make a record of the fault detail (fault number) for the maintenance message.

(d) Push the down arrow button on the DCPC front panel to look for the next fault detail (fault number) for the maintenance message.

(e) Make a record of this fault detail (fault number) also.

(f) Do the above steps (7)(d) and (7)(e) until the PFTC front panel display shows BOTTOM OF LIST for two seconds, then returns to the maintenance message in the fight leg fault list.

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AKS 022-999 (Continued)

(g) Push the down arrow button on the DCPC front panel to look for the next fault (maintenance message) for the flight leg.

(h) Do the steps (7)(a) thru (7)(g) above until all fault entries in the flight leg fault list have been examined and recorded for the flight leg.

SUBTASK 21-61-00-740-020-002

(8) Push the MENU button on the PFTC front panel until the display shows FLIGHT LEG XX.

SUBTASK 21-61-00-740-021-002

(9) Push the DOWN button on the PFTC front panel to look for the next flight leg that recorded faults in fault history.

SUBTASK 21-61-00-740-017-002

(10) Do above steps D.(6) and D.(7) until all flight legs with faults in fault history have been examined and recorded.

SUBTASK 21-61-00-740-018-002

(11) Refer to the BITE Message Index at the end of this task to find the fault isolation task for the applicable maintenance message to find which FIM task(s) to use to fault isolate the maintenance message(s) that was recorded.

SUBTASK 21-61-00-740-019-002

(12) If the PFTC front panel display is not at a main menu selection, push the MENU button until you are in the main menu.

H. GROUND TEST BITE Procedure

SUBTASK 21-61-00-740-022-002

(1) Make sure the front panel display on the left PFTC M2951 shows GROUND TEST.

SUBTASK 21-61-00-740-023-002

(2) Do the GROUND TEST as follows:

(a) Push the YES button on the PFTC front panel.

(b) Make sure the panel display shows BITE INSTRUCTION.

(c) Push the down arrow button.

(d) Make sure the panel display shows 1: SET FOLLOWING AT FLIGHT DECK.

(e) Push the down arrow button.

(f) Make sure the panel display shows ALL BLEED SWITCH OFF.

1) Set the BLEED 1, BLEED 2 and APU BLEED switches on the P5-10 air conditioning panel to OFF.

(g) Push the down arrow button.

(h) Make sure the panel display shows ALL ZONE TMP SEL AUTO.

1) Set the CONT CAB, FWD CAB and AFT CAB temperature selectors on the P5-17 temperature control panel to AUTO.

(i) Push the down arrow button.

(j) Make sure the panel display shows LH RH PACK SWITCH AUTO.

1) Set the L PACK and R PACK switches on the P5-10 air conditioning panel to AUTO.

(k) Push the down arrow button.

(l) Make sure the panel display shows TRIM AIR SWITCH ON.

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AKS 022-999 (Continued)

1) Set the TRIM AIR switch on the P5-17 temperature control panel to ON.

(m) Push the down arrow button.

(n) Make sure the panel display shows 2: WHEN PROMTED SEL YES TO TEST.

(o) Push the down arrow button.

(p) Make sure the panel display shows 3: FOR RESULTS FOLLOW PROMPT.

(q) Push the down arrow button.

(r) Make sure the panel display shows 4: AFTER TST SET PACK SWITCHES OFF.

(s) Push the down arrow button.

(t) Make sure the panel display shows FLOW DRIFT CK?

(u) Push the yes button.

(v) Make sure the panel display shows START GROUND TEST?

(w) Push the yes button.

(x) Make sure the panel display shows GND TEST IN PROG FOR UP TO 270SEC.

(y) After time has elapsed, make sure the panel display shows GND TST COMPLETE PASS.

(z) After 5 seconds, the panel display shows GROUND TEST RESULTS?.

(aa) Make sure the panel display shows NO FAULTS.

(ab) Push the ON/OFF button on the front panel.

SUBTASK 21-61-00-740-024-002

(3) Push the ON/OFF button on the front panel of the right PFTC M2952.

(a) Put the PFTC in the GROUND TEST? mode

(b) Do step E.(2) just above for the right PFTC M2952.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-00-410-019-002

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— **END OF TASK** ———

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Pack Flow Temperature Controller BITE Test
Figure 502/21-61-00-990-807-002 (Sheet 1 of 3)

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PACK FLOW TEMPERATURE CONTROLLER

B

2406564 S0000556786_V1

Pack Flow Temperature Controller BITE Test
Figure 502/21-61-00-990-807-002 (Sheet 2 of 3)

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INSTRUCTION PANEL

C

2406579 S0000557050_V1

Pack Flow Temperature Controller BITE Test
Figure 502/21-61-00-990-807-002 (Sheet 3 of 3)

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TASK 21-61-00-700-807-002

4. Cabin Temperature Control and Indication - Operational Test

(Figure 501)

A. General

(1) This task does an operational test of the cabin temperature control and indication components.

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)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1122	Thermometer - Alcohol/Mercury (or equivalent meter meets task requirements)

D. Location Zones

Zone	Area
212	Flight Compartment - Right

E. Procedure

SUBTASK 21-61-00-860-025-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-61-00-710-013-002

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

SUBTASK 21-61-00-860-026-002

(3) Do these steps at the P5-17 Cabin Temperature Panel:

(a) Put the CONT CAB temperature selector to the full COLD position.

(b) Put the FWD CAB and AFT CAB temperature selectors to the AUTO (12:00) position.

(c) Let the pack operate for 1 to 3 minutes to let the output temperature become stable.

SUBTASK 21-61-00-710-014-002

(4) Do these steps to check temperature indication for the forward passenger cabin:

(a) Use a thermometer, STD-1122 to measure the ambient temperature in the forward passenger cabin near the cabin temperature module.

(b) Put the AIR TEMP selector on the P5-17 Cabin Temperature Panel to the FWD PASS CABIN position.

(c) Make sure the temperature shown on the indicator is approximately the same as the ambient temperature in the forward passenger cabin.

(d) Move the FWD CAB temperature selector to the fully WARM position.

(e) Make sure the temperature indicator shows an increase in temperature.

(f) Move the FWD CAB temperature selector to the AUTO (12:00) position.

(g) Let the pack operate for 1 to 3 minutes to let the output temperature become stable.

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SUBTASK 21-61-00-710-015-002

(5) Do these steps to check temperature indication for the aft passenger cabin:

(a) Use a thermometer, STD-1122 to measure the ambient temperature in the aft passenger cabin near the cabin temperature module.

(b) Put the AIR TEMP selector on the P5-17 Cabin Temperature Panel to the AFT PASS CABIN position.

(c) Make sure the temperature shown on the indicator is approximately the same as the ambient temperature in the aft passenger cabin.

(d) Move the AFT CAB temperature selector to the fully WARM position.

(e) Make sure the temperature indicator shows an increase in temperature.

(f) Move the AFT CAB temperature selector to the full COLD position.

(g) Let the pack operate for 1 to 3 minutes to let the output temperature become stable.

SUBTASK 21-61-00-710-016-002

(6) Do these steps to check temperature control for the control cabin:

(a) Put the CONT CABIN temperature selector to the AUTO (12:00) position.

(b) Let the pack operate for 1 to 3 minutes to let the output temperature become stable.

(c) Put the AIR TEMP selector on the P5-17 Cabin Temperature Panel to the SUPPLY DUCT CONT CAB position.

(d) Make a record of the temperature shown on the indicator.

(e) Move the CONT CAB temperature selector to the fully WARM position.

(f) Make sure the temperature indicator shows an increase in temperature.

(g) Move the CONT CAB and AFT CAB temperature selectors to the AUTO (12:00) position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-00-710-017-002

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

SUBTASK 21-61-00-860-027-002

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

TASK 21-61-00-700-811-002

5. Duct Overheat Switch - Operational Test

A. References

Reference	Title
21-61-05-000-801	Duct Overheat Switch Removal (P/B 401)
21-61-05-400-801	Duct Overheat Switch Installation (P/B 401)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Tools/Equipment

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

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Reference	Description
SPL-1552	Kit - Heater Probes, TEMPCAL Part #: BH24944-7 Supplier: 98869
SPL-3924	Tester - Thermo Switch, K-Type Thermocouple Switches Part #: H394 SERIES Supplier: 98869 Part #: H394R Supplier: 98869 Opt Part #: H294 Supplier: 98869

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Preparation for the Operational Test

SUBTASK 21-61-00-860-084-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-61-00-010-018-002

(2) To get access to the duct overheat switch for the control cabin, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-00-010-017-002

(3) To get access to the duct overheat switches for the passenger cabin, remove the applicable ceiling panel that is forward of the overwing escape hatches.

F. Operational Test of the Control Cabin Duct Overheat Switch (Method I)

SUBTASK 21-61-00-020-013-002

(1) Remove the duct overheat switch. To remove the switch, do this task: Duct Overheat Switch Removal, TASK 21-61-05-000-801.

(a) Re-connect the electrical connector to the duct overheat switch.

SUBTASK 21-61-00-480-003-002

(2) Prepare the K-Type thermocouple switch tester, SPL-3924 and the TEMPCAL heater probe kit, SPL-1552 to test the overheat switch.

NOTE: Use the correct heater probe to test the overheat switch part number 641121-1.

SUBTASK 21-61-00-710-058-002

CAUTION: DO NOT LET THE TEMPERATURE OF THE OVERHEAT SWITCH PROBE BECOME MORE THAN 200 DEGREES F (93 DEGREES C). THIS CAN CAUSE DAMAGE TO THE OVERHEAT SWITCH.

(3) Use the test equipment to increase the temperature of the overheat switch to 190°F (88°C).

SUBTASK 21-61-00-710-059-002

(4) Make sure that these lights come on when the temperature of the overheat switch probe gets to 190±10°F (88±5°C):

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(a) ZONE TEMP light on the P5-17 panel

(b) MASTER CAUTION and AIR COND lights on the pilots' glareshield.

SUBTASK 21-61-00-710-060-002

(5) Remove the heat from the overheat switch probe.

SUBTASK 21-61-00-710-061-002

(6) Let the overheat switch probe become cool.

NOTE: The reset temperature for the duct overheat switch is 150°F (66°C)

SUBTASK 21-61-00-710-062-002

(7) Push the TRIP RESET button on the P5-10 panel.

SUBTASK 21-61-00-710-063-002

(8) Push the MASTER CAUTION reset button on the P7 glareshield panel.

SUBTASK 21-61-00-710-064-002

(9) Make sure that the ZONE TEMP, MASTER CAUTION and AIR COND lights go off.

SUBTASK 21-61-00-420-003-002

(10) Install the duct overheat switch. To install the switch, do this task: Duct Overheat Switch Installation, TASK 21-61-05-400-801.

G. Operational Test of the Control Cabin Duct Overheat Switch (Method II)

SUBTASK 21-61-00-020-016

(1) Remove the duct overheat switch. To remove the switch, do this task: Duct Overheat Switch Removal, TASK 21-61-05-000-801.

SUBTASK 21-61-00-420-005

(2) Install a new or serviceable duct overheat switch. To install the switch, do this task: Duct Overheat Switch Installation, TASK 21-61-05-400-801

NOTE: The duct overheat switch that was removed should be tested according to the vendor CMM before it is put back into service.

SUBTASK 21-61-00-020-015

(3) Remove the electrical connector from the duct overheat switch.

SUBTASK 21-61-00-480-005

(4) Connect a jumper wire between pin 1 and pin 2 of the electrical connector.

SUBTASK 21-61-00-210-005

(5) Make sure that these lights come on:

(a) ZONE TEMP light on the P5-17 panel.

(b) MASTER CAUTION and AIR COND lights on the pilots' glareshield.

SUBTASK 21-61-00-080-001

(6) Disconnect the jumper wire.

SUBTASK 21-61-00-860-089

(7) Push the TRIP RESET button on the P5-10 panel.

SUBTASK 21-61-00-860-090

(8) Push the MASTER CAUTION reset button on the P7 glareshield panel.

SUBTASK 21-61-00-210-006

(9) Make sure that the ZONE TEMP, MASTER CAUTION, and AIR COND lights go off.

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SUBTASK 21-61-00-420-006

(10) Connect the electrical connector to the duct overheat switch.

H. Operational Test of the Passenger Cabin Duct Overheat Switch (Method I)

SUBTASK 21-61-00-020-014-002

(1) Remove the forward passenger cabin duct overheat switch. To remove the switch, do this task: Duct Overheat Switch Removal, TASK 21-61-05-000-801.

(a) Re-connect the electrical connector to the duct overheat switch.

SUBTASK 21-61-00-480-004-002

(2) Prepare the K-Type thermocouple switch tester, SPL-3924 and the TEMPCAL heater probe kit, SPL-1552 to test the overheat switch.

NOTE: Use the correct heater probe to test overheat switch part number 641121-1.

SUBTASK 21-61-00-710-065-002

CAUTION: DO NOT LET THE TEMPERATURE OF THE OVERHEAT SWITCH PROBE BECOME MORE THAN 200 DEGREES F (93 DEGREES C). THIS CAN CAUSE DAMAGE TO THE OVERHEAT SWITCH.

(3) Use the test equipment to increase the temperature of the overheat switch to 190°F (88°C).

SUBTASK 21-61-00-710-066-002

(4) Make sure that these lights come on when the temperature of the overheat switch probe gets to 190±10°F (88±5°C):

(a) ZONE TEMP light on the P5-17 panel

(b) MASTER CAUTION and AIR COND lights on the pilots' glareshield

SUBTASK 21-61-00-710-067-002

(5) Remove the heat from the overheat switch probe.

SUBTASK 21-61-00-710-068-002

(6) Let the overheat switch probe become cool.

NOTE: The reset temperature for the duct overheat switch is 150°F (66°C)

SUBTASK 21-61-00-710-069-002

(7) Push the TRIP RESET button on the P5-10 panel.

SUBTASK 21-61-00-710-070-002

(8) Push the MASTER CAUTION reset button on the P7 glareshield panel.

SUBTASK 21-61-00-710-071-002

(9) Make sure that the ZONE TEMP, MASTER CAUTION and AIR COND lights go off.

SUBTASK 21-61-00-420-004-002

(10) Install the duct overheat switch. To install the switch, do this task: Duct Overheat Switch Installation, TASK 21-61-05-400-801.

SUBTASK 21-61-00-710-072-002

(11) Repeat the test for the aft passenger cabin duct overheat switch.

I. Operational Test of the Passenger Cabin Duct Overheat Switch (Method II)

SUBTASK 21-61-00-020-017

(1) Remove the duct overheat switch. To remove the switch, do this task: Duct Overheat Switch Removal, TASK 21-61-05-000-801.

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SUBTASK 21-61-00-420-007

(2) Install a new or serviceable duct overheat switch. To install the switch, do this task: Duct Overheat Switch Installation, TASK 21-61-05-400-801

NOTE: The duct overheat switch that was removed should be tested according to the vendor CMM before it is put back into service.

SUBTASK 21-61-00-020-018

(3) Remove the electrical connector from the duct overheat switch.

SUBTASK 21-61-00-480-006

(4) Connect a jumper wire between pin 1 and pin 2 of the electrical connector.

SUBTASK 21-61-00-210-007

(5) Make sure that these lights come on:

(a) ZONE TEMP light on the P5-17 panel.

(b) MASTER CAUTION and AIR COND lights on the pilots' glareshield.

SUBTASK 21-61-00-080-002

(6) Disconnect the jumper wire.

SUBTASK 21-61-00-860-091

(7) Push the TRIP RESET button on the P5-10 panel.

SUBTASK 21-61-00-860-092

(8) Push the MASTER CAUTION reset button on the P7 glareshield panel.

SUBTASK 21-61-00-210-008

(9) Make sure that the ZONE TEMP, MASTER CAUTION, and AIR COND lights go off.

SUBTASK 21-61-00-420-008

(10) Connect the electrical connector to the duct overheat switch.

SUBTASK 21-61-00-710-073

(11) Repeat the test for the aft passenger cabin duct overheat switch.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-00-410-017-002

(1) Install the ceiling panels that you removed to do the test.

SUBTASK 21-61-00-410-018-002

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-00-860-083-002

(3) If it is no longer necessary, remove electrical power. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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DUCT TEMPERATURE LIMIT SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of these components:

(a) Primary control cabin duct temperature limit sensor

(b) Backup control cabin duct temperature limit sensor

(c) Forward passenger cabin duct temperature limit sensor

(d) Aft passenger cabin duct temperature limit sensor.

(2) An installation of these components:

(a) Primary control cabin duct temperature limit sensor

(b) Backup control cabin duct temperature limit sensor

(c) Forward passenger cabin duct temperature limit sensor

(d) Aft passenger cabin duct temperature limit sensor.

TASK 21-61-04-000-803-002

2. Duct Temperature Limit Sensor Removal

(Figure 401, Figure 402)

A. References

Reference	Title
25-21-45-000-803-001	Main Ceiling Panel - Removal (P/B 401)

B. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Removal

SUBTASK 21-61-04-860-030-002

(1) Put these switches on the P5-10 Air Conditioning Panel to the positions that follow:

(a) Put the L PACK and R PACK switches to the OFF position.

(b) Put the BLEED 1, BLEED 2, and BLEED APU switches to the OFF position.

SUBTASK 21-61-04-010-014-002

(2) To get access to the temperature sensors for the control cabin, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-04-010-015-002

(3) To get access to the temperature sensors for the passenger cabin, remove the applicable ceiling panel that is forward of the overwing escape hatches. To remove the panel, do this task: Main Ceiling Panel - Removal, TASK 25-21-45-000-803-001.

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E. Passenger Cabin Duct Temperature Limit Sensor Removal

SUBTASK 21-61-04-020-014-002

(1) Disconnect the electrical connector [2] from the duct temperature limit sensor [1].

SUBTASK 21-61-04-020-015-002

(2) Remove the screws [3] from the duct temperature limit sensor [1].

SUBTASK 21-61-04-020-016-002

(3) Remove the duct temperature limit sensor [1].

F. Control Cabin Duct Temperature Limit Sensor Removal

SUBTASK 21-61-04-020-017-002

(1) Disconnect the electrical connector [22] from the duct temperature limit sensor [21].

SUBTASK 21-61-04-020-018-002

(2) Remove the screws [23] from the duct temperature limit sensor [21].

SUBTASK 21-61-04-020-019-002

(3) Remove the duct temperature limit sensor [21].

SUBTASK 21-61-04-020-020-002

(4) Remove and discard the gasket [24].

——— END OF TASK ———

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Passenger Cabin Duct Temperature Limit Sensor Installation
Figure 401/21-61-04-990-805-002 (Sheet 1 of 2)

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PASSENGER CABIN DUCT TEMPERATURE LIMIT SENSOR
(FORWARD CABIN SENSOR IS SHOWN, AFT CABIN SENSOR IS OPPOSITE)

B

H16287 S0006563376_V3

Passenger Cabin Duct Temperature Limit Sensor Installation
Figure 401/21-61-04-990-805-002 (Sheet 2 of 2)

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ELECTRICAL AND ELECTRONICS COMPARTMENT
(VIEW THROUGH ACCESS DOOR, 117A)

A

H16288 S0006563377_V2

Control Cabin Duct Temperature Limit Sensor Installation
Figure 402/21-61-04-990-806-002 (Sheet 1 of 2)

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CONTROL CABIN DUCT TEMPERATURE LIMIT SENSORS

B

H16289 S0006563378_V2

Control Cabin Duct Temperature Limit Sensor Installation
Figure 402/21-61-04-990-806-002 (Sheet 2 of 2)

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TASK 21-61-04-400-803-002

3. Duct Temperature Limit Sensor Installation

(Figure 401, Figure 402)

A. References

Reference	Title
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-21-45-400-803-001	Main Ceiling Panel - Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-61-04-05-005	AKS 001-017
		21-61-04-22-010	AKS 001-017
21	Sensor	21-61-04-04-020	AKS ALL

C. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Passenger Cabin Duct Temperature Limit Sensor Installation

SUBTASK 21-61-04-420-014-002

(1) Put the duct temperature limit sensor [1] in its position on the duct.

SUBTASK 21-61-04-420-015-002

(2) Install the screws [3].

SUBTASK 21-61-04-420-016-002

(3) Connect the electrical connector [2] to the duct temperature limit sensor [1].

F. Control Cabin Duct Temperature Limit Sensor Installation

SUBTASK 21-61-04-420-017-002

(1) Put a new gasket [24] on the sensor [21].

SUBTASK 21-61-04-420-018-002

(2) Put the duct temperature limit sensor [21] in its position on the duct.

SUBTASK 21-61-04-420-019-002

(3) Install the screws [23].

SUBTASK 21-61-04-420-020-002

(4) Connect the electrical connector [22] to the duct temperature limit sensor [21].

G. Do an Installation Test of the Duct Temperature Limit Sensor.

SUBTASK 21-61-04-860-031-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

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SUBTASK 21-61-04-860-032-002

(2) Put these switches on the P5-10 Air Conditioning Panel to the positions that follow:

(a) Put the BLEED 1, the BLEED 2, and the BLEED APU switches to the OFF position.

(b) Put the L PACK and the R PACK switches to the AUTO position.

SUBTASK 21-61-04-860-033-002

(3) Put these switches on the P5-17 Cabin Temperature Panel to the positions that follow:

(a) Put the TRIM AIR switch to the ON position.

(b) Put the CONT CAB, the FWD CAB, and the AFT CAB selectors to the AUTO position.

SUBTASK 21-61-04-010-016-002

(4) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-04-860-034-002

(5) Get access to the pack/zone temperature controllers located on the E3-3 rack in the Electronics Equipment compartment.

SUBTASK 21-61-04-860-036-002

(6) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-04-010-017-002

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-04-010-018-002

(2) If you replaced a temperature sensor for the passenger cabin, install the applicable ceiling panel. To install the panel, do this task: Main Ceiling Panel - Installation, TASK 25-21-45-400-803-001.

SUBTASK 21-61-04-860-037-002

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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DUCT TEMPERATURE LIMIT SENSOR - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

(1) A test of the duct temperature limit sensors

B. There are four duct temperature limit sensors installed. There is one primary and one backup duct temperature limit sensor for the control cabin and one forward and one aft duct temperature limit sensor for the passenger cabin.

TASK 21-61-04-000-805-002

2. Duct Temperature Limit Sensor Test

(Figure 501, Figure 502, Figure 503, Figure 504)

A. References

Reference	Title
21-61-04-000-803-002	Duct Temperature Limit Sensor Removal (P/B 401)
21-61-04-400-803-002	Duct Temperature Limit Sensor Installation (P/B 401)
21-61-17-020-801	Pack Flow Temperature Controller Removal (P/B 401)
21-61-17-400-801	Pack Flow Temperature Controller Installation (P/B 401)
21-61-20-000-801	Pack/Zone Temperature Controller Removal (P/B 401)
21-61-20-400-801	Pack/Zone Temperature Controller Installation (P/B 401)
WDM 21-61-11	Wiring Diagram Manual
WDM 21-61-12	Wiring Diagram Manual
WDM 21-61-13	Wiring Diagram Manual
WDM 21-61-14	Wiring Diagram 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-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 260-8XPI Supplier: 88277 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 21 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536
COM-3955	Thermometer - Digital (Type K) Part #: 51 SERIES II Supplier: 89536

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C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare For The Resistance Test

SUBTASK 21-61-04-860-049-002

(1) To get access to the temperature limit sensor for the passenger cabin, remove the applicable ceiling panels. Figure 501.

SUBTASK 21-61-04-010-030-002

(2) To get access to the temperature limit sensor for the control cabin, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-04-860-050-002

(3) To do a test of the aft passenger duct temperature sensor or the control cabin backup sensor, remove the left pack/zone temperature controller (TASK 21-61-20-000-801 or TASK 21-61-17-020-801).

SUBTASK 21-61-04-860-051-002

(4) To do a test of the forward passenger duct temperature sensor or the control cabin sensor, remove the right pack/zone temperature controller (TASK 21-61-20-000-801 or TASK 21-61-17-020-801).

SUBTASK 21-61-04-710-006-002

(5) Make sure the pack has been off for 20 minutes or until it has reached ambient temperature.

F. Resistance Check Procedure

SUBTASK 21-61-04-700-007-002

(1) Use a digital thermometer, COM-3955 or equivalent, to measure the temperature adjacent to the applicable duct temperature sensor.

(a) Write down the temperature.

SUBTASK 21-61-04-760-002-002

(2) Use a digital/analog multimeter, COM-1793 to measure resistance between the following pin connections.

NOTE: The digital multimeter must be specifically selected to minimize self-heating of the sensor element. The instrument must limit the current through the sensor to less than 100 microamperes. If you use resistance measuring instruments without this current-limiting feature you will get an error in resistance value due to self-heating of the sensor element.

SUBTASK 21-61-04-700-008-002

(3) For the control cabin duct temperature sensor, measure the resistance from pin A5 to pin B5 on connector D3860A for the right pack/zone temperature controller (WDM 21-61-11) .

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SUBTASK 21-61-04-700-009-002

(4) For the forward passenger cabin duct temperature sensor, measure the resistance from pin C6 to pin C7 on connector D3860A for the right pack/zone temperature controller (WDM 21-61-13) .

SUBTASK 21-61-04-700-010-002

(5) For the control cabin backup duct temperature sensor, measure the resistance between pin A5 and pin B5 on connector D3858A for the left pack/zone temperature controller (WDM 21-61-12) .

SUBTASK 21-61-04-700-011-002

(6) For the aft passenger cabin duct temperature sensor, measure the resistance from pin C6 to pin C7 on connector D3858A for the left pack/zone temperature controller (WDM 21-61-14) .

SUBTASK 21-61-04-700-012-002

(7) Write down the resistance in Ohms that you measure.

(a) For the duct temperature sensors for the control cabin or the passenger cabin, find the temperature on Figure 504 that is nearest to the temperature that you wrote down.

(b) Compare the permitted range of resistance for that temperature to the resistance you wrote down.

(c) If the resistance is out of range, replace the sensor. To replace the sensor,

These are the tasks:

Duct Temperature Limit Sensor Removal, TASK 21-61-04-000-803-002,

Duct Temperature Limit Sensor Installation, TASK 21-61-04-400-803-002.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-04-420-029-002

(1) Install the applicable pack/zone temperature controller (TASK 21-61-20-400-801 or TASK 21-61-17-400-801).

SUBTASK 21-61-04-410-006-002

(2) Install the passenger cabin ceiling panels.

SUBTASK 21-61-04-410-007-002

(3) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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PASSENGER COMPARTMENT
(OVERHEAD VIEW, CEILING PANELS REMOVED)

A

W16564 S0006563403_V2

Passenger Cabin Duct Temperature Limit Sensor Location
Figure 501/21-61-04-990-810-002

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ELECTRICAL AND ELECTRONICS COMPARTMENT (VIEW THROUGH ACCESS DOOR, 117A)

A

W16877 S0006563404_V2

Control Cabin Duct Temperature Limit Sensor Location
Figure 502/21-61-04-990-811-002

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ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

A

W16922 S0006563405_V2

Pack/Zone Temperature Controller Location
Figure 503/21-61-04-990-812-002

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TEMPERATURE °F (°C)	RESISTANCE (OHMS)	TEMPERATURE °F (°C)	RESISTANCE (OHMS)
-40 (-40)	37,260-51,890	65 (18.3)	2,560-2,680
-35 (-37.2)	32,030-43,880	70 (21.1)	2,300-2,390
-30 (-34.4)	27,610-37,220	75 (23.8)	2,070-2,140
-25 (-31.6)	23,850-31,690	80 (26.6)	1,860-1,920
-20 (-28.8)	20,680-27,030	85 (29.4)	1,660-1,730
-15 (-26.1)	17,960-23,150	90 (32.2)	1,490-1,570
-10 (-23.3)	15,640-19,870	95 (35)	1,330-1,430
-5 (-20.5)	13,650-17,110	100 (37.7)	1,200-1,300
0 (-17.7)	11,960-14,750	105 (40.5)	1,070-1,180
5 (-15)	10,500-12,760	110 (43.3)	974-1,080
10 (-12.2)	9,230-11,070	115 (46.1)	879-977
15 (-9.4)	8,140-9,620	120 (48.8)	795-893
20 (-6.6)	7,190-8,380	125 (51.6)	720-816
25 (-3.8)	6,350-7,340	130 (54.4)	653-747
30 (-1.1)	5,800-6,175	135 (57.2)	593-685
35 (1.6)	5,125-5,425	140 (60)	540-628
40 (4.4)	4,460-4,950	145 (62.7)	492-578
45 (7.2)	3,980-4,360	150 (65.5)	448-532
50 (10)	3,560-3,850	155 (68.3)	435-465
55 (12.7)	3,190-3,400	160 (71.1)	400-428
60 (15.5)	2,860-3,020		

DUCT TEMPERATURE SENSOR P/N 672878-1 (10-62091-1)
RESISTANCE VS TEMPERATURE TABLE

W17132 S0006563406_V1

Duct Temperature Sensor - Temperature and Resistance Data
Figure 504/21-61-04-990-813-002 (Sheet 1 of 2)

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DUCT TEMPERATURE SENSOR
RESISTANCE VS TEMPERATURE GRAPH

W17142 S0006563407_V1

Duct Temperature Sensor - Temperature and Resistance Data
Figure 504/21-61-04-990-813-002 (Sheet 2 of 2)

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DUCT OVERHEAT SWITCH - REMOVAL/INSTALLATION

1. **General**

A. This procedure has these tasks:

(1) A removal of the duct overheat switches for these zones:

(a) Control Cabin

(b) Forward Passenger Cabin

(c) Aft Passenger Cabin.

(2) An installation of the duct overheat switches for these zones:

(a) Control Cabin

(b) Forward Passenger Cabin

(c) Aft Passenger Cabin.

TASK 21-61-05-000-801

2. **Duct Overheat Switch Removal**

(Figure 401 or Figure 402, Figure 403)

A. References

Reference	Title
25-21-45-000-803-001	Main Ceiling Panel - Removal (P/B 401)

B. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Removal

SUBTASK 21-61-05-860-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK

SUBTASK 21-61-05-010-001

(2) To get access to the duct overheat switch for the control cabin, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-05-010-005

(3) To get access to the duct overheat switches for the passenger cabin, remove the applicable ceiling panel that is forward of the overwing escape hatches.

NOTE: To remove the panel, do this task: Main Ceiling Panel - Removal, TASK 25-21-45-000-803-001.

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E. Passenger Cabin Duct Overheat Switch Removal

(Figure 401 or Figure 402)

SUBTASK 21-61-05-020-004

(1) Disconnect the electrical connector [2] from the duct overheat switch [1].

SUBTASK 21-61-05-020-005

(2) Remove the duct overheat switch [1].

SUBTASK 21-61-05-020-009

(3) Remove and discard the packing [3] from the duct overheat switch [1].

F. Control Cabin Duct Overheat Switch Removal

(Figure 403)

SUBTASK 21-61-05-020-010

(1) Disconnect the electrical connector [23] from the duct overheat switch [21].

SUBTASK 21-61-05-020-011

(2) Remove the duct overheat switch [21].

SUBTASK 21-61-05-020-012

(3) Remove and discard the packing [22] from the duct overheat switch [21].

END OF TASK

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Passenger Cabin Duct Overheat Switch Installation
Figure 401/21-61-05-990-803 (Sheet 1 of 2)

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PASSENGER CABIN DUCT OVERHEAT SWITCH
(FORWARD CABIN SWITCH IS SHOWN, AFT CABIN SWITCH IS OPPOSITE)

B

H16204 S0006563418_V3

Passenger Cabin Duct Overheat Switch Installation
Figure 401/21-61-05-990-803 (Sheet 2 of 2)

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PASSENGER COMPARTMENT
(OVERHEAD VIEW, CEILING PANELS REMOVED)

Passenger Cabin Duct Overheat Switch Installation
Figure 402/21-61-05-990-805 (Sheet 1 of 2)

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PASSENGER CABIN DUCT OVERHEAT SWITCH
(FORWARD CABIN SWITCH IS SHOWN, AFT CABIN SWITCH IS OPPOSITE)

B

G53032 S0006563424_V2

Passenger Cabin Duct Overheat Switch Installation
Figure 402/21-61-05-990-805 (Sheet 2 of 2)

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ELECTRICAL AND ELECTRONICS COMPARTMENT
(VIEW THROUGH ACCESS DOOR, 117A)

A

G57753 S0006563425_V2

Control Cabin Duct Overheat Switch Installation
Figure 403/21-61-05-990-806 (Sheet 1 of 2)

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CONTROL CABIN DUCT OVERHEAT SWITCH

B

G57759 S0006563426_V3

Control Cabin Duct Overheat Switch Installation
Figure 403/21-61-05-990-806 (Sheet 2 of 2)

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TASK 21-61-05-400-801

3. Duct Overheat Switch Installation

A. References

Reference	Title
21-61-00-700-811-002	Duct Overheat Switch - Operational Test (P/B 501)
25-21-45-400-803-001	Main Ceiling Panel - Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D50004	Compound - Antiseize	BMS3-28

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch	21-61-05-05-005	AKS 001-017
		21-61-05-22-005	AKS 001-017
3	Packing	21-61-05-05-010	AKS 001-017
		21-61-05-22-010	AKS 001-017
21	Switch	21-61-05-09-015	AKS ALL
22	Packing	21-61-05-09-020	AKS ALL

D. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Passenger Cabin Duct Overheat Switch Installation

(Figure 401 or Figure 402)

SUBTASK 21-61-05-420-001

(1) When it is not supplied, install a new packing [3] on the duct overheat switch [1].

SUBTASK 21-61-05-640-001

(2) Put compound, D50004 on the threads of the duct overheat switch [1].

SUBTASK 21-61-05-420-002

(3) Do these steps to install the duct overheat switch [1]:

(a) Put the duct overheat switch [1] in its position in the duct.

(b) Tighten the duct overheat switch [1] until the packing [3] makes contact with the duct.

(c) Tighten the duct overheat switch [1] an additional 3/4 turn.

SUBTASK 21-61-05-420-003

(4) Connect the electrical connector [2] to the duct overheat switch [1].

G. Control Cabin Duct Overheat Switch Installation

(Figure 403)

SUBTASK 21-61-05-420-007

(1) Install a new packing [22] on the duct overheat switch [21].

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SUBTASK 21-61-05-640-003

(2) Put compound, D50004 on the threads of the duct overheat switch [21].

SUBTASK 21-61-05-420-008

(3) Do these steps to install the duct overheat switch [21]:

(a) Put the duct overheat switch [21] in its position in the duct.

(b) Tighten the duct overheat switch [21] until the packing [22] makes contact with the duct.

(c) Tighten the duct overheat switch [21] an additional 3/4 turn.

SUBTASK 21-61-05-420-009

(4) Connect the electrical connector [23] to the duct overheat switch [21].

SUBTASK 21-61-05-860-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	4	C01164	A/C ZONE TEMP DUCT OVHT FLT DECK

SUBTASK 21-61-05-700-001

(6) Do the operation test for duct overheat switchDuct Overheat Switch - Operational Test, TASK 21-61-00-700-811-002.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-05-010-003

(1) If you replaced the duct overheat switch [1]

for the control compartment, close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-05-010-006

(2) If you replaced a duct overheat switch for the passenger cabin, install the applicable ceiling panel.

NOTE: To install the ceiling panel, do this task: Main Ceiling Panel - Installation, TASK 25-21-45-400-803-001.

——— END OF TASK ———

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CABIN TEMPERATURE SENSOR ASSEMBLY FILTER - MAINTENANCE PRACTICES

1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

(1) Cabin Temperature Sensor Assembly Filter Removal

(2) Cabin Temperature Sensor Assembly Filter Cleaning

(3) Cabin Temperature Sensor Assembly Filter Installation.

TASK 21-61-06-000-801

2. Cabin Temperature Sensor Assembly Filter Removal

(Figure 201, Figure 202)

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
211	Flight Compartment - Left
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
232	Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Right
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

B. Prepare for the Removal

SUBTASK 21-61-06-860-006

(1) Do this step for the removal of the filter for the flight compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK

SUBTASK 21-61-06-860-007

(2) Do this step for the removal of the filter for the forward passenger compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-06-860-008

(3) Do this step for the removal of the filter for the aft passenger compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS

SUBTASK 21-61-06-010-001

(4) Find the filter for the flight compartment cabin temperature sensor assembly on the aft ceiling in the flight compartment.

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SUBTASK 21-61-06-860-053

(5) Find the filter for the passenger compartment directly above the passenger seats on the right side of the aisle. The filter is on a panel between the PSUs. Use the illustration to find the correct location.

C. Flight Compartment Zone - Cabin Temperature Sensor Assembly Filter Removal

(Figure 201)

SUBTASK 21-61-06-020-001

(1) Remove the filter [1] for the cabin temperature sensor assembly in the flight compartment as follows:

(a) Remove the four screws [2] that attach the grille [3] to the aft ceiling in the flight compartment.

(b) Remove the grille [3] and the filter [1].

D. Passenger Compartment Zone - Cabin Temperature Sensor Assembly Filter Removal

(Figure 202)

SUBTASK 21-61-06-020-005

(1) To remove the filter [21] for the cabin temperature sensor assembly in the passenger compartment, do these steps:

CAUTION: DO NOT APPLY TOO MUCH FORCE TO REMOVE THE GRILLE. THE GRILLE WILL COME OUT EASILY IF YOU PUSH ON THE TAB LIGHTLY WITH A TOOL OF THE CORRECT DIMENSION. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE GRILLE OR THE PANEL.

(a) Put a metal rod with a blunt end, approximately 1/16-inch (1.58 mm) diameter, into one of the slots on the edge of the grille [22].

(b) Apply pressure to the rod end to release the tab that holds the grille [22] onto the temperature sensor panel.

(c) Remove the grille [22] and the filter [21].

END OF TASK

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G26907 S0006563431_V2

Flight Compartment - Cabin Temperature Sensor Assembly Filter Installation
Figure 201/21-61-06-990-806

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FORWARD PASSENGER COMPARTMENT

AFT PASSENGER COMPARTMENT

2071564 S0000431581_V2

Cabin Temperature Sensor Assembly Filter Installation
Figure 202/21-61-06-990-804 (Sheet 1 of 2)

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CABIN TEMPERATURE SENSOR ASSEMBLY FILTER (EXAMPLE)

A

2071562 S0000431582_V2

Cabin Temperature Sensor Assembly Filter Installation
Figure 202/21-61-06-990-804 (Sheet 2 of 2)

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TASK 21-61-06-100-801

3. **Cabin Temperature Sensor Assembly Filter Cleaning**

(Figure 201, Figure 202)

NOTE: This procedure is a scheduled maintenance task.

A. Consumable Materials

Reference	Description	Specification
B00039	Cleaner - Brulin Formula 815MX	
B00130	Alcohol - Isopropyl	TT-I-735
B00541	Cleaner - General Purpose Household Detergent	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G02472	Filter - 3/16 inch, Porosity Grade 45 Ppi, Color-Gray, Flame Retardent Foam	

B. Prepare for the Cleaning

SUBTASK 21-61-06-020-003

(1) Remove the filter for the temperature sensor assembly in the flight compartment. To remove the filter, do this task: Cabin Temperature Sensor Assembly Filter Removal, TASK 21-61-06-000-801.

SUBTASK 21-61-06-020-004

(2) Remove the filter for the temperature sensor assembly in the passenger compartment. To remove the filter, do this task: Cabin Temperature Sensor Assembly Filter Removal, TASK 21-61-06-000-801.

SUBTASK 21-61-06-210-001

(3) If the filter is damaged, discard the filter.

SUBTASK 21-61-06-350-001

(4) If applicable, cut a new filter from foam filter, G02472, the same size as the filter you removed.

NOTE: The old filter may be used as a template to prepare a new filter.

C. Cleaning Procedure

SUBTASK 21-61-06-110-001

(1) Prepare a cleaning solution of water and any readily available general purpose household detergent cleaner, B00541 or Brulin Formula 815MX cleaner, B00039 in accordance with the instructions on the detergent container.

SUBTASK 21-61-06-110-002

(2) Clean the air inlet grille and the filter with the cleaning solution of the cleaner and water.

NOTE: A new filter does not need to be cleaned.

SUBTASK 21-61-06-100-004

(3) If the cleaning solution did not remove all dirt deposits or contamination from the air inlet grille, clean the grille with a cotton wiper, G00034 that is moist with alcohol, B00130.

SUBTASK 21-61-06-100-001

(4) Flush the grille and the filter with clean water until all traces of the cleaning solution or alcohol, B00130 have been removed.

SUBTASK 21-61-06-100-002

(5) Dry the grille with cotton wiper, G00034.

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SUBTASK 21-61-06-100-003

(6) Dry the filter with compressed air or the cotton wiper, G00034.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-06-420-001

(1) Install the filter for the temperature sensor assembly in the flight compartment. To install the filter, do this task: Cabin Temperature Sensor Assembly Filter Installation, TASK 21-61-06-400-801.

SUBTASK 21-61-06-420-002

(2) Install the filter for the temperature sensor assembly in the passenger compartment. To install the filter, do this task: Cabin Temperature Sensor Assembly Filter Installation, TASK 21-61-06-400-801.

——— END OF TASK ———

TASK 21-61-06-400-801

4. Cabin Temperature Sensor Assembly Filter Installation

NOTE: This procedure is a scheduled maintenance task.

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Filter	21-61-51-02-230	AKS ALL
21	Filter	21-61-06-01D-005	AKS ALL

B. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
211	Flight Compartment - Left
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
232	Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Right
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

C. Flight Compartment Zone - Cabin Temperature Sensor Assembly Filter Installation

(Figure 201)

SUBTASK 21-61-06-420-003

(1) Install the filter [1] for the cabin temperature sensor assembly in the flight compartment as follows:

(a) Put a new or cleaned filter [1] in its position in the aft ceiling panel.

(b) Put the grille [3] in its position.

(c) Install the four screws [2] that attach the grille to the aft ceiling panel.

D. Passenger Compartment Zone - Cabin Temperature Sensor Assembly Filter Installation

(Figure 202)

SUBTASK 21-61-06-420-005

(1) To install the filter [21] for the temperature sensor assembly in the passenger compartment, do these steps:

(a) Put a new or cleaned filter [21] in the grill.

(b) Align index tabs on the grille [22] with the notches on the temperature sensor panel.

(c) Push the grille [22] into the temperature sensor panel to engage the two tabs.

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E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-06-860-012

(1) If you installed the filter [1] for the flight compartment zone, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK

SUBTASK 21-61-06-860-013

(2) If you installed the filter [21] for the forward passenger compartment zone, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-06-860-014

(3) If you installed the filter [21] for the aft passenger compartment zone, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS

END OF TASK

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CABIN TEMPERATURE SELECTOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Cabin temperature selector removal.

(2) Cabin temperature selector installation.

B. There are three cabin temperature selectors installed in the P5-17 Cabin Temperature Panel. The removal and installation procedure is the same for the three cabin temperature selectors.

C. The P5-17 Cabin Temperature Panel is found in the P5 Forward Overhead Panel.

TASK 21-61-07-000-803-002

2. Cabin Temperature Selector Removal

(Figure 401)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 21-61-07-840-005-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-61-07-860-010-002

(2) Put the L and R PACK switches on the P5-10 Air Conditioning Panel to the OFF position.

C. Cabin Temperature Selector Removal

SUBTASK 21-61-07-010-002-002

(1) Do these steps to get access to the electrical connectors on the back of the P5-17 cabin temperature module.

(a) Loosen the 1/4-turn fasteners that hold the aft end of the P5 forward overhead panel in place.

NOTE: The forward end of the P5 panel is hinged. The aft end of the P5 panel will rotate downward when the fasteners are loose.

(b) Release the safety latch and carefully lower the P5 forward overhead panel to the open position.

SUBTASK 21-61-07-020-007-002

(2) Do the steps that follow to remove the cabin temperature selector [2] from the P5-17 panel [3]:

(a) Disconnect the electrical connector [1] from the cabin temperature selector [2].

(b) Loosen the setscrews that hold the knob [6] to the cabin temperature selector [2].

(c) Remove the knob [6] from the cabin temperature selector [2].

(d) Remove the nut [5] and the washer [4] from the cabin temperature selector [2].

(e) Carefully pull the cabin temperature selector [2] out of the P5-17 panel [3].

END OF TASK

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CABIN TEMPERATURE PANEL

A

H07382 S0006563454_V2

Cabin Temperature Selector Installation
Figure 401/21-61-07-990-803-002 (Sheet 1 of 2)

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CABIN TEMPERATURE SELECTOR (EXAMPLE)

B

H07383 S0006563456_V2

Cabin Temperature Selector Installation
Figure 401/21-61-07-990-803-002 (Sheet 2 of 2)

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TASK 21-61-07-400-803-002

3. Cabin Temperature Selector 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)
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Selector	21-61-20-04-035	AKS ALL

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Cabin Temperature Selector Installation

SUBTASK 21-61-07-420-005-002

(1) To install the temperature selector in the P5-17 panel, do these steps:

(a) Carefully push the cabin temperature selector [2] into its position in the P5-17 panel [3].

NOTE: Make sure the pin on the front of the selector is in the slot on the P5-17 panel.

(b) Install the washer [4] and the nut [5] on the cabin temperature selector [2].

(c) Put the knob [6] on the cabin temperature selector [2].

(d) Tighten the setscrews that hold the knob [6] to the cabin temperature selector [2].

(e) Connect the electrical connector [1] to the cabin temperature selector [2].

SUBTASK 21-61-07-410-003-002

(2) Carefully lift the P5 forward overhead panel to the closed position.

SUBTASK 21-61-07-410-004-002

(3) Tighten the 1/4-turn fasteners that hold the aft end of the P5 forward overhead panel in place.

E. Cabin Temperature Selector Test

SUBTASK 21-61-07-840-006-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-61-07-860-011-002

(2) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-61-07-860-012-002

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

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SUBTASK 21-61-07-710-013-002

(4) Put the R PACK switch and the L PACK switch on the P5-10 Air Conditioning Panel in the AUTO position.

SUBTASK 21-61-07-710-014-002

(5) Put the TRIM AIR switch on the P5-10 Air Conditioning Panel to the ON position.

SUBTASK 21-61-07-710-015-002

(6) Put the cabin temperature selector in the AUTO position.

(a) Make sure that the airflow from the conditioned air outlets in the applicable cabin/zone becomes warm.

SUBTASK 21-61-07-710-016-002

(7) Put the cabin temperature selector in the fully Cool position.

(a) Make sure that the airflow from the conditioned air outlets in the applicable cabin/zone becomes cool.

SUBTASK 21-61-07-710-017-002

(8) Hold the cabin temperature selector in the fully Warm position.

(a) Make sure that the airflow from the conditioned air outlets in the applicable cabin/zone becomes warm.

SUBTASK 21-61-07-810-003-002

(9) If you find a problem with the cabin temperature selector, do the steps in the FIM to correct the problem.

SUBTASK 21-61-07-740-001

(10) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-07-710-018-002

(1) Put the cabin temperature selector in the NORMAL position.

SUBTASK 21-61-07-860-013-002

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

SUBTASK 21-61-07-860-014-002

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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TRIM AIR CHECK VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the trim air check valve.

(2) An installation of the trim air check valve.

(3) There is a trim air check valve for each air conditioning pack. The check valves are installed in the aft inboard area of the ECS bays.

TASK 21-61-09-000-801

2. Trim Air Check Valve Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
211	Flight Compartment - Left

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-61-09-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-61-09-010-001

(2) To get access to the left trim air check valve, open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-61-09-010-002

(3) To get access to the right trim air check valve, open these panels in this sequence:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

SUBTASK 21-61-09-860-002

(4) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

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(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

E. Trim Air Check Valve Removal

SUBTASK 21-61-09-020-001

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS ARE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Do these steps to remove the flanged exhaust duct [4]:

(a) Loosen the clamps [1].

(b) Move the end of the hose [2] off the flanged exhaust duct [4].

(c) Remove the bolts [3] that hold the flanged exhaust duct [4] to the structure.

(d) Remove the flanged exhaust duct [4].

(e) Remove the clamps [1] and the hose [2].

SUBTASK 21-61-09-020-002

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS ARE HOT AND CAN CAUSE INJURY TO PERSONS.

(2) To remove the trim air check valve, do these steps:

(a) Loosen the two clamps [6].

(b) Move the clamps [6] to the adjacent ducts.

(c) Remove the trim air check valve [5] from the ECS bay.

END OF TASK

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LEFT ECS BAY
(RIGHT ECS BAY IS EQUIVALENT)

A

G59727 S0006563488_V2

Trim Air Check Valve Installation
Figure 401/21-61-09-990-801 (Sheet 1 of 2)

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G59627 S0006563489_V2

Trim Air Check Valve Installation
Figure 401/21-61-09-990-801 (Sheet 2 of 2)

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TASK 21-61-09-400-801

3. Trim Air Check Valve Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Valve	21-61-09-02-130	AKS 001-023

C. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Trim Air Check Valve Installation

SUBTASK 21-61-09-420-001

(1) To install the trim air check valve:

(a) Put the trim air check valve [5] in its position.

NOTE: Make sure the flow arrow on the trim air check valve points in the forward direction.

(b) Move the clamps [6] to the duct connections.

(c) Tighten the nut on the two clamps [6] to 55 to 60 pound-inches (6.2 to 6.8 newton-meters).

SUBTASK 21-61-09-020-003

(2) Do these steps to install the flanged exhaust duct [4]:

(a) Put the hose [2] in its position on the elbow of the ram air exhaust.

(b) Install one of the clamps [1] on the hose [2].

NOTE: Make sure the clamp is not installed on the duct bead. Keep a 0.125 inch (3.2 mm) minimum distance between the clamp and the edge of the hose.

(c) Put the flanged exhaust duct [4] in its position.

(d) Move the end of the hose [2] on the duct [4].

(e) Install the bolts [3] that hold the flanged exhaust duct [4] to the airplane structure.

(f) Install the remaining clamp [1].

NOTE: Make sure the clamp is not installed on the duct bead. Keep a 0.125 inch (3.2 mm) minimum distance between the clamp and the edge of the hose.

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F. Trim Air Check Valve Leakage Check

SUBTASK 21-61-09-860-003

(1) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-61-09-860-004

(2) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the AUTO position and remove the DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the ON position and remove the DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the ON position and remove the DO-NOT-OPERATE tag.

SUBTASK 21-61-09-790-001

(3) Do a soap bubble test of the duct joints at the check valve and the ram air exhaust duct.

NOTE: No air leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches to the OFF position.

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) Loosen the clamps.

3) Make sure the ducts are aligned at the joints.

4) Tighten the clamps.

5) Put the L PACK and R PACK switches to the AUTO position.

6) Make sure the leak has been repaired.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-09-010-003

(1) If you replaced the left trim air check valve, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-61-09-010-004

(2) If you replaced the right trim air check valve, close these panels in this sequence:

Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-61-09-860-005

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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TRIM AIR CHECK VALVE - INSPECTION/CHECK

1. General

A. This procedure has one task. The task is how to inspect the trim air check valve.

TASK 21-61-09-000-802

2. Trim Air Check Valve Inspection

A. References

Reference	Title
21-61-09-000-801	Trim Air Check Valve Removal (P/B 401)
21-61-09-400-801	Trim Air Check Valve Installation (P/B 401)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
211	Flight Compartment - Left

C. Prepare for the Inspection

SUBTASK 21-61-09-010-005

(1) Remove the trim air check valve. To remove the trim air check valve, do this task: Trim Air Check Valve Removal, TASK 21-61-09-000-801.

D. Trim Air Check Valve Inspection

SUBTASK 21-61-09-200-001

(1) Inspect the check valve for these defects:

(a) The valve body has a crack or corrosion.

(b) The valve flappers do not move freely.

(c) The valve flappers do not touch the valve body equally.

(d) There are carbon particles at the valve flapper and body interface.

(e) The valve flappers are bent.

(f) When the check valve has one or more of the defects, replace the check valve.

SUBTASK 21-61-09-420-002

(2) Install the trim air check valve. To install the trim air check valve, do this task: Trim Air Check Valve Installation, TASK 21-61-09-400-801

——— END OF TASK ———

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CABIN TEMPERATURE SENSOR - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Cabin Temperature Sensor Removal

(2) Cabin Temperature Sensor Cleaning

(3) Cabin Temperature Sensor Installation.

(4) There is a cabin temperature sensor for the flight compartment zone, the forward passenger compartment zone and the aft passenger compartment zone.

TASK 21-61-10-000-802

2. Cabin Temperature Sensor Removal

(Figure 201 or Figure 202)

A. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

B. Preparation for the Removal

SUBTASK 21-61-10-020-003

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-61-10-020-004

(2) Find the cabin temperature sensor for the flight compartment zone on the aft ceiling in the flight compartment.

SUBTASK 21-61-10-020-005

(3) Find the sensors for the passenger compartment zone directly above the passenger seats on the right side of the aisle. The sensor assemblies are on a panel between the PSUs. Use the illustration to find the correct location.

C. Cabin Temperature Sensor Removal

SUBTASK 21-61-10-860-036

(1) Remove the cabin temperature sensor [1] in the flight compartment as follows (Figure 201 or Figure 202):

(a) Loosen the access panel on the aft ceiling lining in the flight compartment and let it hang on the straps.

NOTE: The access panel on the aft ceiling lining is held in position by hook and loop strips.

(b) Disconnect the electrical connector (D10958) from the sensor [1].

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(c) Remove the two screws [2] and washers [3] that attach the sensor [1] to the temperature sensor assembly.

(d) Remove the sensor [1].

SUBTASK 21-61-10-860-045

(2) To remove the cabin temperature sensor [35] for the passenger compartment zone, do these steps:

(a) Lower the panel for the cabin temperature sensor.

1) Put a small allen wrench or other applicable tool in the access holes to release the latches.

2) Partially lower the panel and disconnect the lanyard.

3) Move the panel to the fully lowered position.

(b) Disconnect the electrical connector [36].

(c) Remove the lockwire [42].

(d) Remove the screws [39] and the washers [40].

(e) Remove the sensor [35] and the gasket [41].

——— END OF TASK ———

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FLIGHT COMPARTMENT

N27054 S0006563496_V3

Flight Compartment - Cabin Temperature Sensor Installation
Figure 201/21-61-10-990-806 (Sheet 1 of 2)

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PLATE ASSEMBLY

B

1737622 S0000314270_V2

Flight Compartment - Cabin Temperature Sensor Installation
Figure 201/21-61-10-990-806 (Sheet 2 of 2)

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FORWARD PASSENGER COMPARTMENT

AFT PASSENGER COMPARTMENT

2073693 S0000433708_V2

Passenger Cabin Temperature Sensor Installation
Figure 202/21-61-10-990-809 (Sheet 1 of 3)

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CABIN TEMPERATURE SENSOR PANEL (EXAMPLE)

A

NOTE:

THE CABIN TEMPERATURE SENSOR PANEL IS SHOWN IN THE OPEN POSITION.

2073763 S0000433734_V2

Passenger Cabin Temperature Sensor Installation
Figure 202/21-61-10-990-809 (Sheet 2 of 3)

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SENSOR
(EXAMPLE)

B

2073964 S0000433743_V2

Passenger Cabin Temperature Sensor Installation
Figure 202/21-61-10-990-809 (Sheet 3 of 3)

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TASK 21-61-10-100-801

3. Cabin Temperature Sensor Cleaning

A. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

B. Preparation for Cabin Temperature Sensor Cleaning

SUBTASK 21-61-10-020-008

(1) Remove the temperature sensor for the flight compartment. To remove the temperature sensor, do this task: Cabin Temperature Sensor Removal, TASK 21-61-10-000-802.

SUBTASK 21-61-10-020-009

(2) Remove the temperature sensor for the passenger compartment. To remove the temperature sensor, do this task: Cabin Temperature Sensor Removal, TASK 21-61-10-000-802.

C. Cabin Temperature Sensor Cleaning

SUBTASK 21-61-10-100-002

(1) Do these steps to clean the temperature sensor:

(a) Prepare a cleaning solution of a commercially available mild liquid detergent diluted with water in accordance with the instructions on the detergent container.

(b) Clean the sensor with a cotton wiper, G00034 that is moist with the cleaning solution.

(c) If the cotton wiper, G00034 with the cleaning solution did not remove all dirt deposits or contamination from the sensor, clean the sensor with a cotton wiper, G00034 that is moist with alcohol, B00130.

(d) Flush the sensor with clean water until all traces of the detergent solution or alcohol are removed.

(e) Dry the sensor with dry, clean cotton wiper, G00034.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-10-420-008

(1) Install the flight compartment temperature sensor. To install the flight compartment temperature sensor, do this task: Cabin Temperature Sensor Installation, TASK 21-61-10-400-802.

SUBTASK 21-61-10-420-009

(2) Install the passenger compartment temperature sensor. To install the passenger compartment temperature sensor, do this task: Cabin Temperature Sensor Installation, TASK 21-61-10-400-802.

——— END OF TASK ———

TASK 21-61-10-400-802

4. Cabin Temperature Sensor Installation

(Figure 201 or Figure 202)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)

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(Continued)

Reference	Title
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-61-51-02-115	AKS ALL
35	Sensor	Not Specified	
41	Gasket	21-61-51-02-125	AKS ALL

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Cabin Temperature Sensor Installation

SUBTASK 21-61-10-420-010

(1) Install the cabin temperature sensor [1] for the flight compartment as follows (Figure 201 or Figure 202):

(a) Make sure that the gasket [5] and plate [4] are in position on the housing [6] of the temperature sensor assembly.

(b) Put the sensor [1] in its position in the temperature sensor assembly on the aft ceiling panel.

(c) Install the washers [3] and the screws [2].

(d) Connect the electrical connector (D10958) to the sensor [1].

(e) To install the access panel, lift it to its closed position and make sure the hook and loop strips are fully engaged.

SUBTASK 21-61-10-420-014

(2) To install the cabin temperature sensor [35] for the passenger compartment, do these steps:

(a) Put the gasket [41] and the sensor [35] in position on the temperature sensor assembly [30].

(b) Install the washers [40] and the screws [39].

(c) Install the lockwire [42]. To install the lockwire, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

(d) Install the electrical connector [36].

(e) Partially lift the panel for the cabin temperature sensor and install the lanyard.

(f) Lift the panel for the cabin temperature sensor to its closed position.

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SUBTASK 21-61-10-860-042

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

F. Cabin Temperature Sensor Test

SUBTASK 21-61-10-740-020

(1) To do a test of the sensor that was replaced, do the steps that follow:

(a) Do the BITE test on the right pack/zone temperature controller M1443 if you replaced the sensor for one of these zones:

1) The flight compartment zone.

2) The forward passenger compartment zone.

(b) Do the BITE test on the left pack/zone temperature controller M1442 if you replaced the sensor for the aft passenger compartment zone.

(c) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-10-740-021

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-10-860-044

(2) Remove electrical power if it is not necessary. To remove electrical, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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CABIN TEMPERATURE SENSOR - INSPECTION/CHECK

1. General

A. This procedure performs an electrical resistance check of the cabin temperature sensors.

TASK 21-61-10-200-802

2. Cabin Temperature Sensor Resistance Check

(Figure 601, Figure 602, Figure 603)

A. General

(1) This procedure does a temperature versus electrical resistance check of the cabin temperature sensors to check for sensor drift.

B. References

Reference	Title
21-61-10-000-802	Cabin Temperature Sensor Removal (P/B 201)
21-61-10-400-802	Cabin Temperature Sensor Installation (P/B 201)
21-61-17-020-801	Pack Flow Temperature Controller Removal (P/B 401)
21-61-17-400-801	Pack Flow Temperature Controller Installation (P/B 401)
21-61-20-000-801	Pack/Zone Temperature Controller Removal (P/B 401)
21-61-20-400-801	Pack/Zone Temperature Controller Installation (P/B 401)

C. Tools/Equipment

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

Reference	Description
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 260-8XPI Supplier: 88277 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 21 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536
COM-3955	Thermometer - Digital (Type K) Part #: 51 SERIES II Supplier: 89536

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

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E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Sensor Resistance Check

SUBTASK 21-61-10-210-002

(1) Find the inlet grilles of the plenums that contain the temperature sensors in the control cabin and the forward and aft passenger cabin (Figure 601).

SUBTASK 21-61-10-970-002

(2) Use a digital thermometer, COM-3955 or equivalent to measure the ambient temperature near the inlet grilles of the control cabin and forward and aft passenger cabin temperature sensors.

SUBTASK 21-61-10-970-003

(3) Do this step (Figure 602):

To get access to the left and right pack/zone temperature controllers (M1442 and M1443) on the E3 rack, open the

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-10-010-007

(4) For the left and right pack/zone temperature controllers (M1442 and M1443), do this task: Pack/Zone Temperature Controller Removal, TASK 21-61-20-000-801 or Pack Flow Temperature Controller Removal, TASK 21-61-17-020-801

SUBTASK 21-61-10-020-010

(5) Use a digital/analog multimeter, COM-1793 or equivalent to measure the electrical resistance of the cabin temperature sensor at the electrical connector for the left and right pack/zone temperature controllers (M1442 and M1443):

(a) Control cabin temperature sensor:

1) For the main element, measure the resistance across pin C4 and pin C5 of connector D3860A for the right pack/zone temperature controller (M1443) (WDM 21-61-11).

2) For the backup element, measure the resistance across pin C4 and pin C5 of connector D3858A for the left pack/zone temperature controller (M1442) (WDM 21-61-12).

(b) Forward passenger cabin temperature sensor:

1) For the main element, measure the resistance across pin A4 and pin B4 of connector D3860A for the right pack/zone temperature controller (M1443) (WDM 21-61-13).

2) For the backup element, measure the resistance across pin D13 and pin D14 of connector D3858A for the left pack/zone temperature controller (M1442) (WDM 21-61-13).

(c) Aft passenger cabin temperature sensor:

1) For the main element, measure the resistance across pin A4 and pin B4 of connector D3858A for the left pack/zone temperature controller (M1442) (WDM 21-61-14).

2) For the backup element, measure the resistance across pin D13 and pin D14 of connector D3860A for the right pack/zone temperature controller (M1443) (WDM 21-61-14).

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SUBTASK 21-61-10-210-003

(6) Compare the measured resistance to the resistance given in (Figure 603) for the ambient temperature measured at the inlet grille.

(a) If the measured resistance is out of range of the electrical resistance given in (Figure 603), replace the temperature sensor.

1) To replace the temperature sensor,

These are the tasks:

Cabin Temperature Sensor Removal, TASK 21-61-10-000-802,

Cabin Temperature Sensor Installation, TASK 21-61-10-400-802.

SUBTASK 21-61-10-210-004

(7) For the left and right pack/zone temperature controllers (M1442 and M1443), do this task: Pack/Zone Temperature Controller Installation, TASK 21-61-20-400-801 or Pack Flow Temperature Controller Installation, TASK 21-61-17-400-801.

SUBTASK 21-61-10-760-003

(8) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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FLIGHT COMPARTMENT

CABIN TEMPERATURE SENSOR GRILLE

N60482 S0006563536_V2

Cabin Temperature Sensor Inspection
Figure 601/21-61-10-990-810 (Sheet 1 of 3)

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FORWARD PASSENGER COMPARTMENT

CABIN TEMPERATURE SENSOR GRILLE

B

2079819 S0000435096_V2

Cabin Temperature Sensor Inspection
Figure 601/21-61-10-990-810 (Sheet 2 of 3)

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AFT PASSENGER COMPARTMENT

CABIN TEMPERATURE SENSOR GRILLE

B

2079824 S0000435099_V2

Cabin Temperature Sensor Inspection
Figure 601/21-61-10-990-810 (Sheet 3 of 3)

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ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

A

N60521 S0006563540_V2

Pack/Zone Temperature Controller Inspection
Figure 602/21-61-10-990-812

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MAIN ELEMENT

TEMPERATURE °F (°C)	RESISTANCE (OHMS)	TEMPERATURE °F (°C)	RESISTANCE (OHMS)
-40 (-40)	87350-89130	55 (12.7)	6470-6610
-35 (-37.2)	74480-76000	60 (15.5)	5770-5900
-30 (-34.4)	63670-64970	65 (18.3)	5150-5270
-25 (-31.6)	54600-55720	70 (21.1)	4610-4710
-20 (-28.8)	46920-47880	75 (23.8)	4130-4220
-15 (-26.1)	40430-41250	80 (26.6)	3710-3790
-10 (-23.3)	34910-35630	85 (29.4)	3330-3410
-5 (-20.5)	30160-30780	90 (32.2)	3000-3070
0 (-17.7)	26240-26780	95 (35)	2710-2780
5 (-15)	22850-23320	100 (37.7)	2450-2510
10 (-12.2)	19950-20370	105 (40.5)	2220-2270
15 (-9.4)	17460-17820	110 (43.3)	2010-2060
20 (-6.6)	15310-15630	115 (46.1)	1830-1870
25 (-3.8)	13460-13750	120 (48.8)	1660-1700
30 (-1.1)	11860-12110	125 (51.6)	1510-1550
35 (1.6)	10470-10690	130 (54.4)	1380-1410
40 (4.4)	9250-9450	135 (57.2)	1260-1290
45 (7.2)	8200-8380	140 (60)	1150-1180
50 (10)	7270-7430	145 (62.7)	1050-1080

CABIN TEMPERATURE SENSOR P/N 624018-1 (S210T130-21)
RESISTANCE VS TEMPERATURE TABLE

N80988 S0006563543_V1

Cabin Temperature Sensor - Temperature and Resistance Data
Figure 603/21-61-10-990-814 (Sheet 1 of 4)

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CABIN TEMPERATURE SENSOR P/N 624018-1 (S210T130-21)
RESISTANCE VS TEMPERATURE GRAPH

N80920 S0006563544_V1

Cabin Temperature Sensor - Temperature and Resistance Data
Figure 603/21-61-10-990-814 (Sheet 2 of 4)

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BACKUP ELEMENT

TEMPERATURE °F (°C)	RESISTANCE (OHMS)	TEMPERATURE °F (°C)	RESISTANCE (OHMS)
-40 (-40)	85850-90630	55 (12.7)	6360-6720
-35 (-37.2)	73200-77280	60 (15.5)	5670-5990
-30 (-34.4)	62580-66060	65 (18.3)	5060-5350
-25 (-31.6)	53670-56650	70 (21.1)	4530-4790
-20 (-28.8)	46120-48680	75 (23.8)	4060-4290
-15 (-26.1)	39730-41950	80 (26.6)	3640-3860
-10 (-23.3)	34310-36230	85 (29.4)	3280-3470
-5 (-20.5)	29640-31300	90 (32.2)	2950-3130
0 (-17.7)	25790-27230	95 (35)	2660-2820
5 (-15)	22460-23720	100 (37.7)	2410-2550
10 (-12.2)	19610-20710	105 (40.5)	2180-2310
15 (-9.4)	17160-18120	110 (43.3)	1980-2100
20 (-6.6)	15050-15890	115 (46.1)	1790-1900
25 (-3.8)	13230-13980	120 (48.8)	1630-1730
30 (-1.1)	11660-12310	125 (51.6)	1480-1580
35 (1.6)	10290-10870	130 (54.4)	1350-1440
40 (4.4)	9090-9610	135 (57.2)	1240-1310
45 (7.2)	8060-8520	140 (60)	1130-1200
50 (10)	7150-7560	145 (62.7)	1030-1100

CABIN TEMPERATURE SENSOR P/N 624018-1 (S210T130-21)
RESISTANCE VS TEMPERATURE TABLE

N81070 S0006563545_V1

Cabin Temperature Sensor - Temperature and Resistance Data
Figure 603/21-61-10-990-814 (Sheet 3 of 4)

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CABIN TEMPERATURE SENSOR P/N 624018-1 (S210T130-21)
RESISTANCE VS TEMPERATURE GRAPH

N80928 S0006563546_V1

Cabin Temperature Sensor - Temperature and Resistance Data
Figure 603/21-61-10-990-814 (Sheet 4 of 4)

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CABIN TEMPERATURE SENSOR FAN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Cabin Temperature Sensor Fan Removal

(2) Cabin Temperature Sensor Fan Installation.

B. There is a cabin temperature sensor fan for each of the three temperature control zones, the flight compartment, the forward, and the aft passenger compartment zones.

TASK 21-61-11-000-801

2. Cabin Temperature Sensor Fan Removal

(Figure 401, Figure 402)

A. References

Reference	Title
25-11-21-000-806	Flight Compartment Aft Ceiling Panel Removal (P/B 201)

B. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

C. Preparation for the Removal

SUBTASK 21-61-11-860-014

(1) Do this step for the removal of the fan for the flight compartment zone:

SUBTASK 21-61-11-860-007

(2) Do this step for the removal of the fan for the flight compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK

SUBTASK 21-61-11-860-008

(3) Do this step for the removal of the fan for the forward passenger compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-11-860-009

(4) Do this step for the removal of the fan for the aft passenger compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS

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SUBTASK 21-61-11-010-001

(5) Find the cabin temperature sensor fan for the flight compartment above the aft ceiling in the flight compartment.

SUBTASK 21-61-11-860-010

(6) Find the fans for the passenger compartment directly above the passenger seats on the forward and aft right side of the aisle. The fans are on a temperature sensor assembly on a panel between the PSUs. Use the illustration to find the correct location.

D. Flight Compartment - Cabin Temperature Sensor Fan Removal

(Figure 401)

SUBTASK 21-61-11-020-001

(1) Remove the cabin temperature sensor fan [3] in the flight compartment as follows:

(a) Lower the access panel on the forward end of the aft ceiling panel [7] in the flight compartment.

NOTE: The access panel is held in position with hook and loop strips. This panel will give you access to the electrical connectors on the temperature sensor assembly.

(b) Disconnect the electrical connector [1] and electrical connector [2] (D10958 and D10956) for the temperature sensor and the fan.

(c) Remove the aft ceiling panel [7] in the flight compartment. To remove the panel, do this task: Flight Compartment Aft Ceiling Panel Removal, TASK 25-11-21-000-806.

(d) Attach a tag to each fan wires [4] to show its correct location for later installation.

(e) Remove the screws [5] and washers [6] to disconnect the fan wires [4] from the terminal board [13] on the fan.

NOTE: Do not remove the ground wire from the metal flange [9].

(f) Remove the 4 clamps [10], washers [11], and screws [12] which attach the fan [3] to the temperature sensor assembly.

(g) Remove the fan [3] from the temperature sensor assembly.

E. Passenger Compartment - Cabin Temperature Sensor Fan Removal

(Figure 402)

SUBTASK 21-61-11-020-003

(1) Remove the cabin temperature sensor fan [44] in the passenger compartment as follows

(a) Lower the cabin temperature sensor panel.

(b) Disconnect the electrical connector [29].

(c) Remove the nuts [48], washers [49], and screws [50].

(d) Remove the 3 screws [38], washers [39], and clamps [41] that attach the fan [44] to the temperature sensor assembly.

(e) Remove the fan [44] from the assembly.

NOTE: Fan P/N 041510000 does not have a terminal board, Fan includes the connector and capacitor.

END OF TASK

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Flight Compartment - Cabin Temperature Sensor Fan Installation
Figure 401/21-61-11-990-801 (Sheet 1 of 2)

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CABIN TEMPERATURE SENSOR FAN

B

G29771 S0006563551_V3

Flight Compartment - Cabin Temperature Sensor Fan Installation
Figure 401/21-61-11-990-801 (Sheet 2 of 2)

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FORWARD PASSENGER COMPARTMENT

AFT PASSENGER COMPARTMENT

2073693 S0000433708_V2

Passenger Cabin Temperature Sensor Fan Installation
Figure 402/21-61-11-990-807 (Sheet 1 of 3)

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CABIN TEMPERATURE SENSOR PANEL
(EXAMPLE)

A

NOTE:

THE CABIN TEMPERATURE SENSOR PANEL IS SHOWN IN THE OPEN POSITION.

2082777 S0000435507_V2

Passenger Cabin Temperature Sensor Fan Installation
Figure 402/21-61-11-990-807 (Sheet 2 of 3)

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2082902 S0000435551_V2

Passenger Cabin Temperature Sensor Fan Installation
Figure 402/21-61-11-990-807 (Sheet 3 of 3)

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TASK 21-61-11-400-801

3. Cabin Temperature Sensor Fan Installation

(Figure 401, Figure 402)

A. References

Reference	Title
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-11-21-400-806	Flight Compartment Aft Ceiling Panel Installation (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Fan	21-61-51-02-090	AKS ALL
44	Fan	21-61-10-20-130	AKS ALL

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

D. Flight Compartment - Cabin Temperature Sensor Fan Installation

(Figure 401)

SUBTASK 21-61-11-420-001

(1) Install the cabin temperature sensor fan [3] in the flight compartment as follows:

(a) Put the fan [3] in its position with the other components of the temperature sensor assembly.

(b) Install the clamps [10], washers [11], and screws [12] to attach the fan [3] to the temperature sensor assembly.

(c) Install the fan wires [4] on the fan terminal board [13] with the screws [5] and the washers [6].

NOTE: Use the tags on the fan wires [4] to put the fan wires [4] in the correct locations.

(d) Install the aft ceiling panel [7] in the flight compartment. To install the panel, do this task: Flight Compartment Aft Ceiling Panel Installation, TASK 25-11-21-400-806.

(e) Connect the electrical connector [1] and electrical connector [2] (D10958 and D10956) to the temperature sensor and the fan.

(f) To install the access panel, lift it to its position and push firmly to make sure the hook and loop strips are fully engaged.

E. Passenger Compartment - Cabin Temperature Sensor Fan Installation

(Figure 402)

SUBTASK 21-61-11-420-003

(1) Install the cabin temperature sensor fan [44] in the passenger compartment as follows:

(a) Put the fan [44] in its position with the other components of the temperature sensor assembly.

(b) Install the 3 screws [38], washers [39], and clamps [41] to attach the fan [44] to the temperature sensor assembly.

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(c) Install the 2 nuts [48], washers [49], and screws [50].

(d) Install the electrical connector [29].

(e) Partially lift the panel for the cabin temperature sensor and install the lanyard.

(f) Lift the panel for the cabin temperature sensor to its closed position.

SUBTASK 21-61-11-860-021

(2) Do this step for the installation of the fan for the flight compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK

SUBTASK 21-61-11-860-012

(3) Do this step for the installation of the fan for the forward passenger compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-11-860-013

(4) Do this step for the installation of the fan for the aft passenger compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS

SUBTASK 21-61-11-710-001

(5) Do this test:

(a) Hold a 3 inch by 4 inch sheet of lightweight paper over the air inlet grille of the temperature sensor assembly.

1) Make sure that the fan holds the paper in its position.

2) Remove the paper.

SUBTASK 21-61-11-740-001

(6) Do a BITE test on the left and right pack/zone temperature controllers (M1442 and M1443):

NOTE: This will clear any fault introduced during maintenance when power is interrupted.

(a) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-11-860-006

(1) Remove electrical power from the airplane if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

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TRIM AIR DUCT PRESSURE SEAL - REMOVAL/INSTALLATION

1. General

A. This procedure has the following tasks:

(1) Trim Air Duct Pressure Seal Removal.

(2) Trim Air Duct Pressure Seal Installation.

B. The Trim Air Duct Pressure Seals and support rings are used to seal ECS (Environmental Control System) ducting penetration through the pressure bulkhead of the Airplane.

TASK 21-61-12-000-802

2. Trim Air Duct Pressure Seal Removal

(Figure 401)(Figure 402)

A. References

Reference	Title
21-61-21-000-801	Zone Trim Air Modulating Valve Removal (P/B 401)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
192	Lower Wing-To-Body Fairing - Under Wing Box

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
821	Forward Cargo Door

D. Prepare for Removal

SUBTASK 21-61-12-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806

SUBTASK 21-61-12-860-002

(2) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-61-12-860-003

(3) Do this step on the P5-17 Cabin Temperature Panel (located on the P5 forward overhead panel):

(a) Set the TRIM AIR switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-61-12-010-001

(4) To get access to the trim air duct pressure seals in the ECS pack bay, do these steps:

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(a) Open these access panels:

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door

E. Trim Air Duct Pressure Seal Removal

SUBTASK 21-61-12-020-008

(1) For the Flight deck zone trim air pressure seal (in left ECS bay), remove the Flight deck Zone Trim Air Modulating Valve [1] (TASK 21-61-21-000-801).

SUBTASK 21-61-12-020-013

(2) For the Aft zone trim air pressure seal (in right ECS bay), remove the Aft Zone Trim Air Modulating Valve [1] (TASK 21-61-21-000-801).

SUBTASK 21-61-12-020-012

(3) For the Forward zone trim air pressure seal (in right ECS bay), remove the couplings [4] and the forward zone trim air duct [2] that connect to the forward Zone Trim Air Modulating Valve [1].

SUBTASK 21-61-12-020-001

(4) To remove trim air duct pressure seal [5], do the following steps:

(a) Remove the twelve bolts [7] and washers [8], and the two seal ring halves [6], to disconnect the pressure seal [5] from the pressure bulkhead.

NOTE: The two bolts at 11 and 12 o'clock positions attach the duct overheat sensor to the pressure bulkhead and are longer than the other bolts.

(b) Remove the clamp [9] from the pressure seal [5].

(c) Remove the pressure seal [5] from the trim air duct [3].

SUBTASK 21-61-12-020-011

(5) If it is necessary to remove the trim air duct [3] that penetrates through the pressure bulkhead, do these steps (Figure 402):

(a) Open this access panel:

Number	Name/Location
821	Forward Cargo Door

(b) Remove the aft bulkhead liner in the forward cargo compartment (TASK 25-52-17-000-801).

(c) Support the trim air duct [3].

(d) Remove the aft coupling [11] that connects trim air duct [3] to trim air duct [12] adjacent to the pressure bulkhead in the mix manifold bay.

(e) Remove the trim air duct [3].

SUBTASK 21-61-12-420-015

(6) Install covers on all duct openings to keep out unwanted materials.

END OF TASK

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D38385 S0000154892_V2

Trim Air Duct Pressure Seal Installation
Figure 401/21-61-12-990-803 (Sheet 1 of 3)

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LEFT ECS BAY

B

D38392 S0000154893_V2

Trim Air Duct Pressure Seal Installation
Figure 401/21-61-12-990-803 (Sheet 2 of 3)

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D38402 S0000154894_V2

Trim Air Duct Pressure Seal Installation
Figure 401/21-61-12-990-803 (Sheet 3 of 3)

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Trim Air Duct Installation
Figure 402/21-61-12-990-804 (Sheet 1 of 2)

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MIX MANIFOLD BAY

B

D38738 S0000154897_V2

Trim Air Duct Installation
Figure 402/21-61-12-990-804 (Sheet 2 of 2)

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TASK 21-61-12-400-802

3. **Trim Air Duct Pressure Seal Installation**

(Figure 401, Figure 402)

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)
21-61-21-400-801	Zone Trim Air Modulating Valve Installation (P/B 401)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner - Removal (P/B 401)
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner - Installation (P/B 401)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. **Consumable Materials**

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	ASTM D-3735 Type III
D00010	Compound - Thread Antiseize, High Temperature	MIL-PRF-907
G00091	Compound - Oxygen System Leak Detection - Snoop Leak Detector	MIL-PRF-25567

C. **Location Zones**

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
192	Lower Wing-To-Body Fairing - Under Wing Box

D. **Access Panels**

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
821	Forward Cargo Door

E. **Trim Air Duct Pressure Seal Installation**

SUBTASK 21-61-12-630-002

(1) Remove the covers from the duct openings and make sure there is no unwanted materials inside the duct.

SUBTASK 21-61-12-420-006

(2) If you removed the trim air duct [3] that penetrates through the pressure bulkhead, do these steps to reinstall it (Figure 401):

(a) Open this access panel:

Number	Name/Location
821	Forward Cargo Door

(b) Remove the aft bulkhead liner in the forward cargo compartment (TASK 25-52-17-000-801).

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(c) Slide the trim air duct [3] through the pressure bulkhead hole.

(d) Support the trim air duct [3].

(e) Loosely install the aft coupling [11] in the mix manifold bay to connect trim air duct [3] to trim air duct [12].

SUBTASK 21-61-12-100-002

(3) Use a clean wiper and solvent, B00083 to clean the pressure seal support area [3A] on the trim air duct [3] that penetrates through the pressure bulkhead (Figure 401).

SUBTASK 21-61-12-420-008

(4) Slide the pressure seal [5] onto the trim air duct [3].

SUBTASK 21-61-12-420-009

(5) For installation of the pressure seal [5], do the following steps (Figure 401):

(a) Push the pressure seal [5] to the mating surface of the pressure bulkhead.

(b) Apply antiseize compound, D00010 to the threads of the bolts [7].

(c) Install the two seal ring halves [6] on the pressure seal [5] with the twelve bolts [7] and washers [8].

NOTE: The two bolts at 11 and 12 o'clock positions attach the duct overheat sensor to the pressure bulkhead and are longer than the other bolts. The duct overheat sensor support bracket must be installed on top of the seal ring half [6].

(d) Tighten the bolts [7] to 30–35 pound-inches (3.39–3.95 Newton-meters) in the sequence shown in Figure 401.

(e) Install the clamp [9] loosely to the pressure seal [5].

(f) Do these steps to tighten the clamp [9]:

1) Turn the torque wrench to tighten the clamp [9] and observe the torque needed to turn the nut on the clamp T-bolt before the clamp becomes tight.

NOTE: The observed torque should be 2 to 15 inch-pounds (0.23-1.7 newton-meters). This torque is referred to as run-on torque.

2) Add the observed run-on torque to 18 to 22 inch-pounds (2-2.5 newton-meters). For example, if the run-on torque needed to turn the T-bolt nut was 10 inch-pounds, then the torque needed to tighten the clamp is 28 to 32 inch-pounds (3.2-3.6 newton-meters). This is the calculated torque needed to tighten the clamp.

3) Tighten the clamp [9] to the torque calculated in the previous step.

SUBTASK 21-61-12-420-013

(6) For the Flight deck zone trim air pressure seal (in left ECS bay), install the Flight deck Zone Trim Air Modulating Valve [1] (TASK 21-61-21-400-801).

(a) Align the Flight deck zone trim air ducts [3] and [12] then tighten coupling [11] to 55–60 pound-inches (6.21–6.78 Newton-meters).

SUBTASK 21-61-12-420-016

(7) For the Aft zone trim air pressure seal (in right ECS bay), install the Aft Zone Trim Air Modulating Valve [1] (TASK 21-61-21-400-801).

(a) Align the Aft zone trim air ducts [3] and [12] then tighten coupling [11] to 55–60 pound-inches (6.21–6.78 Newton-meters).

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SUBTASK 21-61-12-420-014

(8) For the Forward zone trim air pressure seal (in right ECS bay), loosely install the couplings [4] and the forward zone trim air duct [2] that connect to the forward Zone Trim Air Modulating Valve [1] and forward zone trim air duct [3].

(a) Align the Forward zone trim air ducts [2], [3] and [12] then tighten couplings [4] and [11] to 55–60 pound-inches (6.21–6.78 Newton-meters).

F. Trim Air Duct Leak Test

SUBTASK 21-61-12-860-017

(1) Do this step on the P5-17 Cabin Temperature Panel:

(a) Remove the DO-NOT-OPERATE tag from the TRIM AIR switch.

SUBTASK 21-61-12-860-018

(2) Do these steps on the P5-10 air conditioning panel:

(a) Remove the DO-NOT-OPERATE tags from the L and R PACK switches.

(b) Remove the DO-NOT-OPERATE tags from the BLEED 1 and 2 switches.

(c) Remove the DO-NOT-OPERATE tag from the BLEED APU switch.

SUBTASK 21-61-12-860-019

(3) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-61-12-860-023

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

(a) Make sure the TRIM AIR switch is set to ON position.

SUBTASK 21-61-12-790-002

(5) Do a leak test:

(a) Apply a Snoop Leak Detector compound, G00091 to the trim air duct joint areas.

(b) Make sure there is no leakage at the trim air duct joint areas.

(c) If there is leakage, do these steps:

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

a) Make sure the TRIM AIR switch is set to OFF position.

2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

3) Loosen the couplings at the trim air duct joint areas.

4) Make sure the ducts are aligned at the joints.

5) Tighten the couplings to 55–60 pound-inches (6.21–6.78 Newton-meters).

6) Do the trim air leak test again.

G. Put the Airplane to its Usual Condition

SUBTASK 21-61-12-860-024

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

(a) Make sure the TRIM AIR switch is set to OFF position.

SUBTASK 21-61-12-860-020

(2) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806

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SUBTASK 21-61-12-410-004

(3) Install the aft bulkhead liner in the forward cargo compartment (TASK 25-52-17-400-801).

SUBTASK 21-61-12-410-005

(4) Close these access panels:

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
821	Forward Cargo Door

——— END OF TASK ———

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TEMPERATURE SENSOR ASSEMBLY DUCT/HOUSING - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Flight Compartment Temperature Sensor Assembly Housing Removal.

(2) Passenger Cabin Temperature Sensor Assembly Duct Removal.

(3) Flight Compartment Temperature Sensor Assembly Housing Installation.

(4) Passenger Cabin Temperature Sensor Assembly Duct Installation.

(5) Flight Compartment Temperature Sensor Assembly Housing Cleaning.

(6) Passenger Cabin Temperature Sensor Assembly Duct Cleaning.

B. There is a temperature sensor assembly housing in the flight compartment temperature control zone.

C. There are two temperature sensor assembly ducts in the passenger cabin temperature control zone.

(1) In the forward passenger cabin temperature control zone.

(2) In the aft passenger cabin temperature control zone.

TASK 21-61-14-000-802

2. Flight Compartment Temperature Sensor Assembly Housing Removal

Figure 201

A. References

Reference	Title
25-11-21-000-806	Flight Compartment Aft Ceiling Panel Removal (P/B 201)

B. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Prepare for the Removal

SUBTASK 21-61-14-860-013

(1) Do this step for the removal of the temperature sensor assembly housing:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK

D. Temperature Sensor Assembly Housing Removal

SUBTASK 21-61-14-010-004

(1) Access the temperature sensor assembly housing [1].

(a) Lower the access panel on the forward end of the aft ceiling panel [10].

NOTE: The access panel is held in its position with hook and loop strips. This panel will give you access to the electrical connectors on the temperature sensor assembly.

SUBTASK 21-61-14-020-006

(2) Disconnect the electrical connector [2] for the fan.

SUBTASK 21-61-14-020-007

(3) Disconnect the electrical connector [3] from the temperature sensor.

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SUBTASK 21-61-14-020-008

(4) Remove the aft ceiling panel [10] in the flight compartment. To remove the panel, do this task: Flight Compartment Aft Ceiling Panel Removal, TASK 25-11-21-000-806.

SUBTASK 21-61-14-020-009

(5) Remove the two screws [9] and the temperature sensor assembly [4] from the aft ceiling panel [10].

SUBTASK 21-61-14-020-010

(6) Remove the two screws [11], two washers [12], the mounting plate assembly [13], and the sensor [14] from the temperature assembly housing [1].

SUBTASK 21-61-14-020-011

(7) Remove the four screws [7], washers [6] and clamps [5] that attach the fan [8] to the temperature assembly housing [1].

SUBTASK 21-61-14-010-005

(8) Move the fan [8] away from the opening in the temperature assembly housing [1].

END OF TASK

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Flight Compartment Cabin Temperature Housing Installation
Figure 201/21-61-14-990-804 (Sheet 1 of 2)

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CABIN TEMPERATURE SENSOR FAN

B

2180360 S0000481346_V2

Flight Compartment Cabin Temperature Housing Installation
Figure 201/21-61-14-990-804 (Sheet 2 of 2)

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TASK 21-61-14-000-801

3. Passenger Cabin Temperature Sensor Assembly Duct Removal

(Figure 202)

A. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

B. Prepare for the Removal

SUBTASK 21-61-14-860-004

(1) Do this step for the removal of the passenger cabin temperature sensor assembly duct for the forward passenger cabin zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-14-860-005

(2) Do this step for the removal of the passenger cabin temperature sensor assembly duct for the aft passenger cabin zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS

SUBTASK 21-61-14-010-002

(3) Find the cabin temperature assembly ducts for the passenger cabin directly above the passenger seats on the forward and aft right side of the aisle. The ducts are on a panel between the PSUs. Use the illustration to find the correct location.

C. Passenger Cabin Temperature Sensor Assembly Duct Removal

SUBTASK 21-61-14-010-008

(1) Gain access to the temperature sensor assembly duct [61].

(a) Lower the panel for the cabin temperature sensor assembly.

1) Put a small allen wrench or other applicable tool in the access holes to release the latches.

2) Partially lower the panel and disconnect the lanyard.

3) Move the panel to the fully lowered position.

SUBTASK 21-61-14-020-012

(2) Disconnect the electrical connector [30] for the fan.

SUBTASK 21-61-14-020-013

(3) Disconnect the electrical connector [33] for the temperature sensor.

SUBTASK 21-61-14-020-014

(4) Disconnect the electrical connector [32] for the temperature bulb.

SUBTASK 21-61-14-020-021

(5) Remove the two nuts [64], washers [63], and screws [62].

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SUBTASK 21-61-14-020-022

(6) Remove the three screws [39], washers [40], clamps [42], flange [41], and the fan [43] from the temperature sensor assembly duct [61].

SUBTASK 21-61-14-020-023

(7) Remove the sensor [49] and the temperature bulb [45] from the assembly:

(a) Remove the lockwire [47].

(b) Remove the screws [46] and the washers [48]

(c) Remove the sensor [49] and the gasket [50].

(d) Remove the temperature bulb [45] and the lockwire washer [44]

END OF TASK

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FORWARD PASSENGER COMPARTMENT

AFT PASSENGER COMPARTMENT

2073693 S0000433708_V2

Passenger Compartment - Cabin Temperature Duct Installation
Figure 202/21-61-14-990-803 (Sheet 1 of 4)

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CABIN TEMPERATURE SENSOR PANEL (EXAMPLE)

A

NOTE:

THE CABIN TEMPERATURE SENSOR PANEL IS SHOWN IN THE OPEN POSITION.

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Passenger Compartment - Cabin Temperature Duct Installation
Figure 202/21-61-14-990-803 (Sheet 2 of 4)

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Passenger Compartment - Cabin Temperature Duct Installation
Figure 202/21-61-14-990-803 (Sheet 3 of 4)

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SENSOR
(EXAMPLE)

C

2180642 S0000481421_V2

Passenger Compartment - Cabin Temperature Duct Installation
Figure 202/21-61-14-990-803 (Sheet 4 of 4)

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TASK 21-61-14-400-802

4. Flight Compartment Temperature Sensor Assembly Housing Installation

Figure 201

A. References

Reference	Title
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-11-21-400-806	Flight Compartment Aft Ceiling Panel Installation (P/B 201)

B. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Flight Compartment Temperature Sensor Assembly Housing Installation

SUBTASK 21-61-14-420-005

(1) Put the fan [8] in its position on the temperature assembly housing [1].

(a) Install the four clamps [5], washers [6] and screws [7] to attach the fan [8] to the temperature sensor assembly housing [1].

SUBTASK 21-61-14-420-006

(2) Put the mounting plate assembly [13] and the sensor [14] in their position on the temperature assembly housing [1].

(a) Make sure that the foam gasket of the mounting plate assembly is not damaged.

(b) Install the two screws [11] and washers [12].

SUBTASK 21-61-14-420-007

(3) Install the temperature sensor assembly housing [1].

(a) Put the cabin temperature sensor assembly [4] in its position on the aft ceiling panel [10].

(b) Install the two screws [9] to attach the cabin temperature sensor assembly [4] to the aft ceiling panel [10].

SUBTASK 21-61-14-420-008

(4) Install the aft ceiling panel [10] in the flight compartment. To install the panel, do this task: Flight Compartment Aft Ceiling Panel Installation, TASK 25-11-21-400-806.

SUBTASK 21-61-14-420-009

(5) Connect the electrical connector [3] to the temperature sensor.

SUBTASK 21-61-14-420-010

(6) Connect the electrical connector [2] for the fan.

SUBTASK 21-61-14-420-011

(7) Install the access panel.

(a) Lift the panel to its position and push firmly to make sure that the hook and loop strips are fully engaged.

D. Flight Compartment Temperature Sensor Assembly Housing Installation Test

SUBTASK 21-61-14-860-015

(1) Do this step for the installation of the fan:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK

SUBTASK 21-61-14-710-003

(2) Do this test of the fan operation:

(a) Hold a 3 inch by 4 inch sheet of lightweight paper over the air inlet grille of the temperature sensor assembly.

1) Make sure that the fan holds the paper in its position.

2) Remove the paper.

SUBTASK 21-61-14-740-003

(3) To do a test of the sensor that was replaced, do the steps that follow:

(a) Do the BITE test on the right pack/zone temperature controller M1443:

1) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-14-860-016

(1) Remove electrical power from the airplane if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

TASK 21-61-14-400-801

5. Passenger Cabin Temperature Sensor Assembly Duct Installation

Figure 202

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

C. Passenger Cabin Temperature Assembly Duct Installation

SUBTASK 21-61-14-420-013

(1) Put the fan [43] in its position on the temperature assembly duct [61].

(a) Install the three clamps [42], washers [40] and screws [39] to attach the fan [43] to the duct.

(b) Install the two screws [62], washers [63], and nuts [64].

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SUBTASK 21-61-14-420-014

(2) Install the temperature bulb [45] and the lockwire washer [44] on the temperature assembly duct.

(a) Install the lockwire [47]. To install the lockwire, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

SUBTASK 21-61-14-420-015

(3) Put the gasket [50] and the sensor [49] in their position on the temperature assembly duct.

(a) Install the washers [48] and screws [46].

SUBTASK 21-61-14-420-016

(4) Put the temperature sensor assembly [37] in its position below the overhead stowage bin [24].

(a) Put the washers [38] in their position on the top of the temperature assembly duct.

(b) Install the two screws [31].

(c) Install the two washers [36] and the screws [35].

(d) Install the access plug [34].

SUBTASK 21-61-14-420-017

(5) Connect the electrical connector [30] for the fan.

SUBTASK 21-61-14-420-018

(6) Connect the electrical connector [33] for the temperature sensor.

SUBTASK 21-61-14-420-019

(7) Connect the electrical connector [32] for the temperature bulb.

SUBTASK 21-61-14-410-002

(8) Partially lift the panel for the cabin temperature sensor and install the lanyard.

SUBTASK 21-61-14-410-003

(9) Lift the panel for the cabin temperature sensor to its closed position.

D. Passenger Cabin Temperature Sensor Assembly Duct Installation Test

SUBTASK 21-61-14-860-017

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-14-710-004

(2) Do this test of the fan operation:

(a) Hold a 3 inch by 4 inch sheet of lightweight paper over the air inlet grille of the temperature sensor assembly.

1) Make sure that the fan holds the paper in its position.

2) Remove the paper.

SUBTASK 21-61-14-740-001

(3) To do a test of the sensor that was replaced, do the steps that follow:

(a) Do the BITE test on the right pack/zone temperature controller M1443 if you replaced the sensor for the forward passenger cabin zone

1) The forward passenger compartment zone.

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(b) Do the BITE test on the left pack/zone temperature controller M1442 if you replaced the sensor for the aft passenger cabin zone.

(c) To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

SUBTASK 21-61-14-710-002

(4) Do this test of the cabin temperature bulb that was replaced:

(a) Use a thermometer and make a record of the ambient temperature in the passenger compartment.

(b) Put the AIR TEMP selector on the P5-17 temperature control panel to PASS CABIN.

(c) Make sure that the temperature record with the thermometer and the PASS CABIN TEMP gage indication are approximately the same.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-14-860-010

(1) Remove electrical power from the airplane if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

END OF TASK

TASK 21-61-14-100-802

6. Flight Compartment Temperature Sensor Assembly Housing Cleaning

Figure 201

A. References

Reference	Title
21-61-10-100-801	Cabin Temperature Sensor Cleaning (P/B 201)

B. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
B00541	Cleaner - General Purpose Household Detergent	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G50256	Water, Regular	

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Prepare for the Flight Compartment Temperature Sensor Assembly Housing Cleaning

SUBTASK 21-61-14-020-024

(1) Remove the cabin temperature assembly housing for the flight compartment. To remove the housing, do this task: Passenger Cabin Temperature Sensor Assembly Duct Removal, TASK 21-61-14-000-801.

E. Procedure

SUBTASK 21-61-14-160-001

(1) Prepare a weak solution of general purpose household detergent cleaner, B00541 mixed with warm water, G50256.

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(a) Obey the instructions on the detergent container.

SUBTASK 21-61-14-160-002

(2) Clean the inner and external surfaces of the housing with a cotton wiper, G00034 that is moist with the cleaning solution.

SUBTASK 21-61-14-160-003

(3) If the cotton wiper, G00034 with the cleaning solution did not remove all dirt deposits or contamination, clean the housing with a cotton wiper, G00034 that is moist with alcohol, B00130.

SUBTASK 21-61-14-160-004

(4) Wipe the housing with a cotton wiper, G00034 that is moist with clean water until all of the detergent solution or alcohol are removed.

SUBTASK 21-61-14-160-005

(5) Dry the housing with a dry, clean cotton wiper, G00034.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-14-210-001

(1) Before the installation of the temperature sensor assembly housing, do the steps that follow:

(a) Examine the temperature sensor [14] for unwanted material.

(b) If unwanted material is found, clean the sensor: Cabin Temperature Sensor Cleaning, TASK 21-61-10-100-801.

SUBTASK 21-61-14-420-021

(2) Install the temperature sensor assembly housing, do this task: Passenger Cabin Temperature Sensor Assembly Duct Installation, TASK 21-61-14-400-801.

——— END OF TASK ———

TASK 21-61-14-100-801

7. Passenger Cabin Temperature Sensor Assembly Duct Cleaning

Figure 202

A. References

Reference	Title
21-61-10-100-801	Cabin Temperature Sensor Cleaning (P/B 201)

B. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
B00541	Cleaner - General Purpose Household Detergent	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G50256	Water, Regular	

C. Prepare for Cabin Temperature Assembly Duct Cleaning

SUBTASK 21-61-14-020-005

(1) Remove the temperature sensor assembly duct. To remove the duct, do this task: Passenger Cabin Temperature Sensor Assembly Duct Removal, TASK 21-61-14-000-801.

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D. Procedure

SUBTASK 21-61-14-160-006

(1) Prepare a weak solution of general purpose household detergent cleaner, B00541 mixed with warm water, G50256.

(a) Obey the instructions on the detergent container.

SUBTASK 21-61-14-160-007

(2) Clean the inner and external surfaces of the duct with a cotton wiper, G00034 that is moist with the cleaning solution.

SUBTASK 21-61-14-160-008

(3) If the cotton wiper, G00034 with the cleaning solution did not remove all dirt deposits or contamination, clean the duct with a cotton wiper, G00034 that is moist with alcohol, B00130.

SUBTASK 21-61-14-160-009

(4) Wipe the duct with a cotton wiper, G00034 that is moist with clean water until all of the detergent solution or alcohol are removed.

SUBTASK 21-61-14-160-010

(5) Dry the duct with a dry, clean cotton wiper, G00034.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-14-210-002

(1) Before the installation of the temperature assembly duct in the passenger compartment, do the steps that follow:

(a) Examine the temperature sensor [49] for unwanted material.

(b) If unwanted material is found, clean the sensor, do this task: Cabin Temperature Sensor Cleaning, TASK 21-61-10-100-801.

SUBTASK 21-61-14-420-004

(2) Install the cabin temperature assembly duct for the passenger compartment, do this task: Passenger Cabin Temperature Sensor Assembly Duct Installation, TASK 21-61-14-400-801.

——— END OF TASK ———

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TEMPERATURE CONTROL MODULE - REMOVAL/INSTALLATION

1. General

A. The temperature control module is located on the upper right corner of the P5 forward overhead panel in the flight deck.

B. This procedure has these tasks:

(1) A removal of the temperature control module.

(2) An installation of the temperature control module.

TASK 21-61-15-000-801

2. Temperature Control Module Removal

(Figure 401)

A. Location Zones

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

B. Procedure

SUBTASK 21-61-15-860-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

SUBTASK 21-61-15-010-001

(2) Get access to the electrical connectors on the back of the P5-17 temperature control module on the P5 forward overhead panel.

(a) Loosen the 1/4-turn fasteners that hold the P5 forward overhead panel in position and let the panel rotate downward.

SUBTASK 21-61-15-020-001

(3) Remove the P5-17 temperature control module from the P5 forward overhead panel as follows:

(a) Disconnect the electrical connectors at the back of the module.

WARNING: HOLD THE TEMPERATURE CONTROL MODULE WHEN YOU LOOSEN THE 1/4-TURN FASTENERS. IF THE MODULE FALLS, INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(b) Hold the temperature control module in place and loosen the 1/4-turn fasteners that hold the module to the P5 forward overhead panel.

(c) Remove the temperature control module [1].

END OF TASK

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FLIGHT COMPARTMENT

[1] TEMPERATURE CONTROL MODULE

A

K26329 S0006563576_V2

Temperature Control Module Installation
Figure 401/21-61-15-990-801

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TASK 21-61-15-400-801

3. Temperature Control Module Installation

(Figure 401)

A. References

Reference	Title
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-700-807-002	Cabin Temperature Control and Indication - Operational Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Module	21-61-15-02-020	AKS ALL
		21-61-15-02-030	AKS ALL
		21-61-20-04-020	AKS ALL
		21-61-20-04-025	AKS ALL
		21-62-51-02-020	AKS ALL
		21-62-51-02-025	AKS ALL

C. Location Zones

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

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Temperature Control Module Installation

SUBTASK 21-61-15-010-002

(1) If it has not already been done, lower the P5 forward overhead panel.

SUBTASK 21-61-15-420-001

(2) Install the P5-17 temperature control module [1] into the P5 forward overhead panel as follows:

(a) Put the temperature control module [1] into the P5 forward overhead panel and hold it in position.

(b) Turn the 1/4-turn fasteners on the temperature control module to hold the module to the P5 forward overhead panel.

(c) Connect the two electrical connectors to the module.

SUBTASK 21-61-15-010-003

(3) Lift the P5 forward overhead panel to the closed position and turn the 1/4-turn fasteners.

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SUBTASK 21-61-15-860-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

F. Temperature Control Module Test

SUBTASK 21-61-15-860-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-61-15-860-004

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	1	C01273	PRESSURIZATION CONTROL LCD LTG
F	6	C01269	PRESSURIZATION CONTROL MANUAL

SUBTASK 21-61-15-710-004

(3) Do this test of the temperature control module:

(a) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

(b) Do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

(c) Do this task: Cabin Temperature Control and Indication - Operational Test, TASK 21-61-00-700-807-002.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-15-410-004

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-15-410-003

(2) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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PACK FLOW TEMPERATURE CONTROLLER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the pack flow temperature controller

(2) An installation of the pack flow temperature controller.

TASK 21-61-17-020-801

2. Pack Flow Temperature Controller Removal

A. General

(1) This task includes the steps to remove the left pack flow temperature controller M2951 and the right pack flow temperature controller M2952..

B. References

Reference	Title
20-10-07-400-802	Printed Circuit Card Installation (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Removal

SUBTASK 21-61-17-860-002

(1) Do this step to remove the left pack flow temperature controller:

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-61-17-860-001

(2) Do this step to remove the right pack flow temperature controller:

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-61-17-010-001

(3) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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F. Pack Flow Temperature Controller Removal

SUBTASK 21-61-17-020-001

(1) To remove the pack flow temperature controller, do this task: Printed Circuit Card Installation, TASK 20-10-07-400-802.

——— END OF TASK ———

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Pack Flow Temperature Controller Installation
Figure 401/21-61-17-990-801

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TASK 21-61-17-400-801

3. Pack Flow Temperature Controller Installation

A. General

(1) This task includes the steps to install the left and right pack flow temperature controllers, M2951 and M2952, respectively.

B. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Pack Flow Temperature Controller Installation

SUBTASK 21-61-17-420-001

(1) To install the pack flow temperature controller, do this task: E/E Box Installation, TASK 20-10-07-400-801..

SUBTASK 21-61-17-860-003

(2) If you installed the left pack flow temperature controller, do this step:

Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-61-17-860-004

(3) If you installed the right pack flow temperature controller, do this step:

(a) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

F. Pack Flow Temperature Controller Installation Test

SUBTASK 21-61-17-740-001

(1) Do a BITE test on the pack flow temperature controller. Do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-17-410-001

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

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PACK/ZONE TEMPERATURE CONTROLLER - MAINTENANCE PRACTICES

1. **General**

A. This procedure has these tasks:

(1) Pack/Zone Temperature Controller - Deactivation

(2) Pack/Zone Temperature Controller - Activation

TASK 21-61-20-800-801

2. **Pack/Zone Temperature Controller - Deactivation**

(Figure 201)

A. General

(1) This task will deactivate the Pack/Zone Temperature Controllers.

- Pack/Zone Temperature Controller No. 1 M1442
- Pack/Zone Temperature Controller No. 2 M1443

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Procedure

SUBTASK 21-61-20-010-004

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-20-860-008

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

F. Tryout

NOTE: This tryout is to make sure the pack/zone temperature controllers are in a zero energy state.

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SUBTASK 21-61-20-860-009

(1) Do this task: (Supply Electrical Power, TASK 24-22-00-860-811).

SUBTASK 21-61-20-210-001

(2) Make sure that the lights on the pack/zone temperature controller No. 1 M1442 are off.

SUBTASK 21-61-20-210-002

(3) Make sure that the lights on the pack/zone temperature controller No. 2 M1443 are off.

SUBTASK 21-61-20-860-010

(4) Do this task: (Remove Electrical Power, TASK 24-22-00-860-812).

——— END OF TASK ———

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Pack/Zone Temperature Controller
Figure 201/21-61-20-990-802

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TASK 21-61-20-800-802

3. **Pack/Zone Temperature Controller - Activation**
(Figure 201)

A. **General**

(1) This task will activate the Pack/Zone Temperature Controllers.

- Pack/Zone Temperature Controller No. 1 M1442
- Pack/Zone Temperature Controller No. 2 M1443

B. **References**

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

C. **Location Zones**

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. **Access Panels**

Number	Name/Location
117A	Electronic Equipment Access Door

E. **Procedure**

SUBTASK 21-61-20-860-011

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-61-20-860-012

(2) Do this task: (Supply Electrical Power, TASK 24-22-00-860-811).

SUBTASK 21-61-20-210-003

(3) Make sure that the lights on the pack/zone temperature controller No. 1 M1442 are on.

SUBTASK 21-61-20-210-004

(4) Make sure that the lights on the pack/zone temperature controller No. 2 M1443 are on.

SUBTASK 21-61-20-410-001

(5) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-20-860-013

(6) Do this task: (Remove Electrical Power, TASK 24-22-00-860-812).

——— END OF TASK ———

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PACK/ZONE TEMPERATURE CONTROLLER - REMOVAL/INSTALLATION

1. **General**

A. This procedure has these tasks:

(1) A removal of the pack/zone temperature controller.

(2) An installation of the pack/zone temperature controller.

TASK 21-61-20-000-801

2. **Pack/Zone Temperature Controller Removal**

(Figure 401)

A. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 201)

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for Removal

SUBTASK 21-61-20-860-001

(1) Do this step to remove the pack/zone temperature controller No. 1:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS 001-021			
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-61-20-860-002

(2) Do this step to remove the pack/zone temperature controller No. 2:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS 001-021			
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

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SUBTASK 21-61-20-010-001

(3) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

E. Pack/Zone Temperature Controller Removal

SUBTASK 21-61-20-010-002

(1) To remove the pack/zone temperature controller [1], do this task:E/E Box Removal, TASK 20-10-07-000-801.

——— END OF TASK ———

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Pack/Zone Temperature Controller Installation
Figure 401/21-61-20-990-801

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TASK 21-61-20-400-801

3. Pack/Zone Temperature Controller Installation

(Figure 401)

A. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 201)
24-22-00-860-811	Supply Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Controller	21-61-20-05-005	AKS 001-021

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Pack/Zone Temperature Controller Installation

SUBTASK 21-61-20-420-001

(1) To install the pack/zone temperature controller [1], do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 21-61-20-860-003

(2) If you installed the pack/zone temperature controller No. 1, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
AKS 001-021			
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

SUBTASK 21-61-20-860-004

(3) If you installed the zone temperature controller No. 2, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
AKS 001			
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
AKS 001-021			
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

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F. Pack/Zone Temperature Controller Installation Test

SUBTASK 21-61-20-860-005

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-61-20-860-006

(2) Do these steps on the P5-10 Air Conditioning Panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the AUTO position.

(b) Set the BLEED 1 and 2 switches to the OFF position.

(c) Set the BLEED APU switch to the OFF position.

SUBTASK 21-61-20-860-007

(3) Do these steps on the P5-17 Cabin Temperature Panel (located on the P5 forward overhead panel):

(a) Set the CONT CAB, FWD CAB, and AFT CAB selectors to the AUTO position.

(b) Set the TRIM AIR switch to the ON position.

SUBTASK 21-61-20-700-001

(4) Do these steps on the pack/zone temperature controller:

(a) Push the PRESS/TEST switch.

(b) Make sure all the lamps come on.

(c) If all the lamps did not come on, replace the pack/zone temperature controller.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-20-010-003

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

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ZONE TRIM AIR MODULATING VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the zone trim air modulating valve.

(2) An installation of the zone trim air modulating valve.

(3) There are three zone trim air modulating valves. Two of the valves are installed in the right air conditioning bay. One valve is installed in the left air conditioning bay.

TASK 21-61-21-000-801

2. Zone Trim Air Modulating Valve Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
211	Flight Compartment - Left

C. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-61-21-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-61-21-860-002

(2) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-61-21-860-003

(3) Do this step on the P5-17 Cabin Temperature Panel (located on the P5 forward overhead panel):

(a) Set the TRIM AIR switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-61-21-860-004

(4) To remove the trim valve for the control cabin, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK

SUBTASK 21-61-21-860-005

(5) To remove the trim valve for the forward cabin, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-21-860-006

(6) To remove the trim valve for the aft cabin, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS

SUBTASK 21-61-21-010-001

(7) To get access to the left trim valve, open this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-61-21-010-005

(8) To get access to the right trim valves, open these access panels in the specified sequence:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

E. Zone Trim Air Modulating Valve Removal

SUBTASK 21-61-21-020-001

(1) Disconnect the electrical connector [6] from the trim valve [1].

SUBTASK 21-61-21-020-007

(2) Do these steps to remove the bonding jumper:

(a) Remove the screw [3], the washers [4] and the nut [5] that hold the bonding jumper to the trim air valve.

(b) Move the bonding jumper [2] away from the trim valve.

SUBTASK 21-61-21-020-003

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS ARE HOT AND CAN CAUSE INJURY TO PERSONS.

(3) To remove the trim valve, do these steps:

(a) Loosen the two clamps [7].

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(b) Move the clamps [7] to the adjacent ducts.

(c) Remove the trim valve [1] from the ECS bay.

——— END OF TASK ———

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Zone Trim Air Modulating Valve Installation
Figure 401/21-61-21-990-801 (Sheet 1 of 2)

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1951724 S0000371572_V3

Zone Trim Air Modulating Valve Installation
Figure 401/21-61-21-990-801 (Sheet 2 of 2)

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TASK 21-61-21-400-801

3. Zone Trim Air Modulating Valve Installation
(Figure 401)

A. References

Reference	Title
21-61-00-700-806-002	Pack/Zone Temperature Controller BITE Test (P/B 501)
21-61-00-740-801-002	Pack Flow Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

B. Tools/Equipment

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: C15292 (MODEL T477W) Supplier: 01014 Part #: M1 Supplier: 3AD17 Opt Part #: M1B Supplier: 3AD17

C. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

D. Access Panels

Number	Name/Location
192CL	ECS Access Door
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

E. Zone Trim Air Modulating Valve Installation

SUBTASK 21-61-21-420-001

(1) To install the trim valve:

(a) Put the trim valve [1] in its position between the ducts.

NOTE: Make sure the flow arrow on the trim valve points in the forward direction.

(b) Make sure there is a minimum of 0.15 inch between the valve and access door structure, tubes and clamps.

(c) Move the clamps [7] to the duct connections.

(d) Tighten the two clamps [7] 55 to 60 pound-inches (6.2 to 6.8 newton-meters).

SUBTASK 21-61-21-420-003

(2) Do these steps to install the bonding jumper:

(a) Put the bonding jumper in its position on the trim air valve.

(b) Install the screw [3], the washers [4] and the nut [5] that hold the bonding jumper to the trim air valve.

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(c) Use a intrinsically safe approved bonding meter, COM-1550, to make sure that the bonding resistance between the valve and the bonding jumper is a maximum of 0.0025 ohm.

SUBTASK 21-61-21-020-005

(3) Connect the electrical connector [6] to the trim valve [1].

F. Zone Trim Air Modulating Valve Check

SUBTASK 21-61-21-860-007

(1) If you replaced the trim valve for the control cabin, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	3	C01163	A/C ZONE TEMP VALVE/FAN CONT FLT DECK

SUBTASK 21-61-21-860-008

(2) If you replaced the trim valve for the forward cabin, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-21-860-009

(3) If you replaced the trim valve for the aft cabin, do this step:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS

SUBTASK 21-61-21-740-001

(4) Do the BITE test on the pack/zone temperature controllers. To do the BITE test, do this task: Pack/Zone Temperature Controller BITE Test, TASK 21-61-00-700-806-002 or Pack Flow Temperature Controller BITE Test, TASK 21-61-00-740-801-002.

NOTE: The pack/zone temperature controllers are in the electronics equipment compartment on the E3-3 shelf. The BITE test instructions are on the front of the controllers.

SUBTASK 21-61-21-860-010

(5) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-61-21-860-011

(6) Do these steps on the P5-10 air conditioning panel:

(a) Set the L and R PACK switches to the AUTO position and remove the DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the ON position and remove the DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the ON position and remove the DO-NOT-OPERATE tag.

SUBTASK 21-61-21-860-012

(7) Do these steps on the P5-17 Cabin Temperature Panel:

(a) Set the TRIM AIR switch to the ON position and remove the DO-NOT-OPERATE tag.

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(b) Set the applicable cabin temperature selector (CONT CAB, FWD CAB, or AFT CAB) to the AUTO position and remove the DO-NOT-OPERATE tag.

SUBTASK 21-61-21-790-001

(8) Do a soap bubble test of the duct joints at the trim valve.

NOTE: No air leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches to the OFF position.

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) Loosen the clamps.

3) Make sure the ducts are aligned at the joints.

4) Tighten the clamps.

5) Put the L PACK and R PACK switches to the AUTO position.

6) Make sure the leak has been repaired.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-21-010-003

(1) If you replaced the trim air check valve for the left pack, close this access panel:

Number	Name/Location
192CL	ECS Access Door

SUBTASK 21-61-21-010-004

(2) If you replaced the a trim air check valve for the right pack, close these panels in the specified sequence

Close this access panel:

Number	Name/Location
192CR	ECS Access Door

Close this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

SUBTASK 21-61-21-860-013

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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DUCT TEMPERATURE BULB - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the control cabin duct temperature bulb.

(2) A removal of the passenger cabin duct temperature bulbs.

(3) An installation of the control cabin duct temperature bulb.

(4) An installation of the passenger duct temperature bulbs.

(5) There is a duct temperature bulb installed for each of the three cabin temperature zones.

TASK 21-61-30-000-803-002

2. Duct Temperature Bulb Removal

(Figure 401, Figure 402)

A. References

Reference	Title
25-21-45-000-803-001	Main Ceiling Panel - Removal (P/B 401)

B. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Removal

SUBTASK 21-61-30-860-009-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	8	C00076	AIR CONDITIONING TEMP IND

SUBTASK 21-61-30-010-007-002

(2) To get access the control cabin duct temperature sensor open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-30-010-008-002

(3) To get access the passenger cabin duct temperature sensors remove the applicable ceiling panel that is forward of the overwing escape hatches. To remove the panel, do this task: Main Ceiling Panel - Removal, TASK 25-21-45-000-803-001.

E. Passenger Cabin Duct Temperature Bulb Removal

SUBTASK 21-61-30-020-013-002

(1) Disconnect the electrical connector [1] from the duct temperature bulb [2].

SUBTASK 21-61-30-020-014-002

(2) Remove the duct temperature bulb [2].

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SUBTASK 21-61-30-020-015-002

(3) Remove and discard the o-ring [3] from the duct temperature bulb [2].

F. Control Cabin Duct Temperature Bulb Removal

SUBTASK 21-61-30-020-016-002

(1) Disconnect the electrical connector [22] from the duct temperature bulb [21].

SUBTASK 21-61-30-020-017-002

(2) Remove the duct temperature bulb [21].

SUBTASK 21-61-30-020-018-002

(3) Remove and discard the o-ring [23] from the duct temperature bulb [21].

——— END OF TASK ———

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Passenger Cabin Duct Temperature Bulb Installation
Figure 401/21-61-30-990-804-002 (Sheet 1 of 2)

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PASSENGER CABIN DUCT TEMPERATURE BULB
(FORWARD CABIN BULB IS SHOWN, AFT CABIN BULB IS OPPOSITE)

B

H07387 S0006563602_V2

Passenger Cabin Duct Temperature Bulb Installation
Figure 401/21-61-30-990-804-002 (Sheet 2 of 2)

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ELECTRICAL AND ELECTRONICS COMPARTMENT
(VIEW THROUGH ACCESS DOOR, 117A)

A

FWD

H07388 S0006563603_V2

Control Cabin Duct Temperature Bulb Installation
Figure 402/21-61-30-990-805-002 (Sheet 1 of 2)

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CONTROL CABIN DUCT TEMPERATURE BULB

B

H07390 S0006563604_V2

Control Cabin Duct Temperature Bulb Installation
Figure 402/21-61-30-990-805-002 (Sheet 2 of 2)

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TASK 21-61-30-400-803-002

3. Duct Temperature Bulb Installation

(Figure 401, Figure 402)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
25-21-45-400-803-001	Main Ceiling Panel - Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D50004	Compound - Antiseize	BMS3-28

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Bulb	21-61-30-04-015	AKS ALL

D. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Passenger Cabin Duct Temperature Bulb Installation

SUBTASK 21-61-30-020-019-002

(1) Remove the copper gasket, if installed, from the new duct temperature bulb [2].

SUBTASK 21-61-30-420-010-002

(2) Install a new o-ring [3] on the duct temperature bulb [2].

SUBTASK 21-61-30-640-004-002

(3) Put compound, D50004 on the threads of the duct temperature bulb [2].

SUBTASK 21-61-30-420-011-002

(4) Do these steps to install the duct temperature bulb [2]:

(a) Put the duct temperature bulb [2] in its position in the duct.

(b) Tighten the duct temperature bulb [2] until the o-ring [3] makes contact with the duct.

(c) Tighten the duct temperature bulb [2] an additional 3/4 turn.

SUBTASK 21-61-30-420-012-002

(5) Connect the electrical connector [1] to the duct temperature bulb [1].

G. Control Cabin Duct Temperature Bulb Installation

SUBTASK 21-61-30-020-020-002

(1) Remove the copper gasket, if installed, from the new duct temperature bulb [21].

SUBTASK 21-61-30-420-013-002

(2) If not supplied, install a new o-ring [23] on the duct temperature bulb [21].

SUBTASK 21-61-30-640-005-002

(3) Put compound, D50004 on the threads of the duct temperature bulb [21].

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SUBTASK 21-61-30-420-014-002

(4) Do these steps to install the duct temperature bulb [21]:

(a) Put the duct temperature bulb [21] in its position in the duct.

(b) Tighten the duct temperature bulb [21] until the o-ring [23] makes contact with the duct.

(c) Tighten the duct temperature bulb [21] an additional 3/4 turn.

SUBTASK 21-61-30-420-015-002

(5) Connect the electrical connector [22] to the duct temperature bulb [21].

H. Do a Test of the Duct Temperature Bulb

SUBTASK 21-61-30-860-010-002

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-61-30-860-011-002

(2) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	8	C00076	AIR CONDITIONING TEMP IND

SUBTASK 21-61-30-860-012-002

(3) Put the AIR TEMP selector on the temperature control module on the overhead P5 panel to the SUPPLY DUCT position for the applicable zone.

SUBTASK 21-61-30-710-004-002

(4) Use a thermometer to find the ambient temperature in the cabin.

SUBTASK 21-61-30-710-005-002

(5) Make sure the temperature shown on the indicator on the P5 panel is approximately the same as the ambient temperature in the cabin.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-30-010-009-002

(1) If the control cabin duct temperature sensor was replaced close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-30-010-010-002

(2) Install the ceiling panel if a passenger cabin duct temperature bulb was replaced. To install the panel, do this task: Main Ceiling Panel - Installation, TASK 25-21-45-400-803-001.

——— END OF TASK ———

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CABIN TEMPERATURE BULB - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Cabin Temperature Bulb Removal

(2) Cabin Temperature Bulb Installation.

(3) There is a cabin temperature bulb for each of the forward and aft passenger compartment zones.

TASK 21-61-31-000-801

2. Cabin Temperature Bulb Removal

(Figure 401,)

A. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

B. Preparation for the Removal

SUBTASK 21-61-31-860-001

(1) Do this step for the removal of the temperature bulb for the forward passenger cabin zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-31-860-006

(2) Do this step for the removal of the temperature bulb for the aft passenger compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS

SUBTASK 21-61-31-860-029

(3) Find the bulb for the passenger compartment directly above the passenger seats on the right side of the aisle. The bulb is on the temperature sensor assembly on a panel between the PSUs. Use the illustration to find the correct location.

C. Cabin Temperature Bulb Removal

(Figure 401)

SUBTASK 21-61-31-020-002

(1) To remove the cabin temperature bulb [18] in the passenger compartment, do these steps:

(a) Lower the cabin temperature sensor panel.

1) Put a small allen wrench or other applicable tool in the access holes to release the latches.

2) Partially lower the panel and disconnect the lanyard.

3) Move the panel to the fully lowered position.

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(b) Disconnect the electrical connector [10].

(c) Remove the lockwire [19].

(d) Remove the temperature bulb [18] and the lockwire washer [20].

——— END OF TASK ———

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FORWARD PASSENGER COMPARTMENT

AFT PASSENGER COMPARTMENT

2073693 S0000433708_V2

Cabin Temperature Bulb Installation
Figure 401/21-61-31-990-803 (Sheet 1 of 2)

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CABIN TEMPERATURE SENSOR PANEL (EXAMPLE)

A

NOTE:

THE CABIN TEMPERATURE SENSOR PANEL IS SHOWN IN THE OPEN POSITION.

2081308 S0000435282_V2

Cabin Temperature Bulb Installation
Figure 401/21-61-31-990-803 (Sheet 2 of 2)

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TASK 21-61-31-400-801

3. Cabin Temperature Bulb Installation

(Figure 401,)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
18	Temperature bulb	Not Specified	

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

D. Cabin Temperature Bulb Installation

SUBTASK 21-61-31-420-002

(1) To install the cabin temperature bulb [18] for the passenger compartment, do these steps:

(a) Install the lockwire washer [20] and the temperature bulb [18] on the temperature sensor assembly.

(b) Install the lockwire [19]. To install the lockwire, do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

(c) Install the electrical connector [10].

(d) Partially lift the panel for the cabin temperature bulb and install the lanyard.

(e) Lift the panel for the cabin temperature bulb to its closed position.

SUBTASK 21-61-31-860-015

(2) Do this step for the installation of the cabin temperature bulb for the forward passenger compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-31-860-016

(3) Do this step for the installation of the cabin temperature bulb for the aft passenger compartment zone:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C01170	A/C ZONE TEMP VALVE/FAN CONT AFT PASS

E. Cabin Temperature Bulb Test

SUBTASK 21-61-31-740-001

(1) Do this test of the cabin temperature bulb that was replaced:

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(a) Use a thermometer and make a record of the ambient temperature in the passenger compartment.

(b) Put the AIR TEMP selector on the P5-17 temperature control panel to PASS CABIN.

(c) Make sure that the temperature record with the thermometer and the PASS CABIN TEMP gauge indication are approximately the same.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-31-860-004

(1) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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CABIN TEMPERATURE INDICATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Cabin temperature indicator removal

(2) Cabin temperature indicator installation.

B. The cabin temperature indicator is installed in the P5-17 Cabin Temperature Panel.

C. The P5-17 Cabin Temperature Panel is installed in the P5 Forward Overhead Panel.

TASK 21-61-32-000-801

2. Cabin Temperature Indicator Removal

(Figure 401)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 21-61-32-860-003

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	9	C00329	OVERHEAD 5V SECONDARY

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	8	C00076	AIR CONDITIONING TEMP IND

SUBTASK 21-61-32-010-002

(2) Do these steps to get access to the electrical connectors on the back of the P5-17 cabin temperature module:

(a) Loosen the 1/4-turn fasteners that hold the aft end of the P5 forward overhead panel in the closed position.

NOTE: The forward end of the P5 panel is hinged. The aft end of the P5 panel will turn downward when the fasteners are loose.

(b) Release the safety latch and carefully lower the P5 forward overhead panel to the open position.

C. Cabin Temperature Indicator Removal

SUBTASK 21-61-32-020-010

(1) Do these steps to remove cabin temperature indicator from the P5-17 module:

CAUTION: HOLD THE INDICATOR WHEN YOU LOOSEN THE CLAMP. THE INDICATOR CAN FALL WHEN THE CLAMP IS LOOSE. THE INDICATOR CAN BE DAMAGED IF IT FALLS.

(a) Turn the clamp tension screw in the counterclockwise direction to loosen the clamp that holds the indicator to the P5-17 panel.

1) Do not remove the clamp tension screw.

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(b) Carefully pull the cabin temperature indicator [1] out of the P5-17 panel [2].

(c) Disconnect the electrical connector [3] from the cabin temperature indicator [1].

——— END OF TASK ———

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FLIGHT COMPARTMENT

CABIN TEMPERATURE PANEL

A

G67620 S0006563651_V2

Cabin Temperature Indicator Installation
Figure 401/21-61-32-990-804 (Sheet 1 of 2)

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CABIN TEMPERATURE INDICATOR
(EXAMPLE)

B

G67682 S0006563653_V1

Cabin Temperature Indicator Installation
Figure 401/21-61-32-990-804 (Sheet 2 of 2)

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TASK 21-61-32-400-801

3. Cabin Temperature Indicator Installation
(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
24-22-00-860-812	Remove Electrical Power (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Indicator	21-61-32-10-010	AKS 026, 027
		21-61-32-10A-010	AKS ALL

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Cabin Temperature Indicator Installation

SUBTASK 21-61-32-420-001

(1) Do these steps to install the cabin temperature indicator [1] in the P5-17 panel [2]:
   (a) Connect the electrical connector [3] to the cabin temperature indicator [1].
   (b) Carefully push the cabin temperature indicator [1] into its position in the P5-17 panel [2].
   (c) Tighten the clamp tension screw 5 to 8 pound-inches (0.6 to 0.9 newton-meters).
      1) Hold the indicator [1] against the panel [2] while you tighten the clamp tension screw.

SUBTASK 21-61-32-410-001

(2) Carefully lift the P5 forward overhead panel to the closed position.

SUBTASK 21-61-32-410-002

(3) Tighten the 1/4-turn fasteners that hold the aft end of the P5 forward overhead panel in the closed position.

SUBTASK 21-61-32-860-004

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	9	C00329	OVERHEAD 5V SECONDARY

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	8	C00076	AIR CONDITIONING TEMP IND

E. Cabin Temperature Indicator Test

SUBTASK 21-61-32-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 21-61-32-710-001

(2) Put the AIR TEMP switch on the P5-17 panel in the FWD PASS CABIN position.

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SUBTASK 21-61-32-710-002

(3) Hold a thermometer near the inlet of the forward passenger cabin temperature sensor assembly for one minute.

SUBTASK 21-61-32-970-001

(4) Make a note of the temperature that shows on the thermometer.

SUBTASK 21-61-32-710-003

(5) Make sure that the cabin temperature indicator shows the same temperature as the thermometer.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-32-860-002

(1) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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TRIM AIR PRESSURE REGULATION AND SHUTOFF CONTROL - ADJUSTMENT/TEST

1. General

A. This procedure has one task. The task is an operational test of the trim air pressure regulating and shutoff valve.

TASK 21-62-00-000-801

2. Trim Air Pressure Regulating and Shutoff Valve - Operational Test

(Figure 501)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-803	Supply Pressure to the Pneumatic System with the APU (P/B 201)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
211	Flight Compartment - Left

C. Trim Air Pressure Regulating and Shutoff Valve Operational Test

SUBTASK 21-62-00-860-001

(1) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-62-00-860-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

SUBTASK 21-62-00-860-003

(3) Do these steps on the P5-10 Air Conditioning Panel:

(a) Set the L RECIRC switch to the AUTO position.

(b) Set the R RECIRC switch to the AUTO position.

(c) Set the L PACK switch to the AUTO position.

(d) Set the R PACK switch to the OFF position.

(e) Set the BLEED APU switch to the ON position.

(f) Set the BLEED 1 switch to the OFF position.

(g) Set the BLEED 2 switch to the OFF position.

(h) Set the ISOLATION VALVE switch to the OPEN position.

SUBTASK 21-62-00-860-004

(4) Do these steps on the P5-17 Cabin Temperature Panel:

(a) Set the TRIM AIR switch to the OFF position.

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(b) Set the AIR TEMP selector to the L PACK position.

(c) Set the CONT CAB selector to the full WARM position.

(d) Set the FWD CAB selector to the full WARM position.

(e) Set the AFT CAB selector to the full WARM position.

SUBTASK 21-62-00-860-005

(5) Operate the pack for 3 to 5 minutes to let the output temperature become stable.

SUBTASK 21-62-00-970-001

(6) Make a record of the temperature shown on the AIR TEMP gage (P5-17 panel) for the L PACK.

SUBTASK 21-62-00-860-006

(7) Do these steps on the P5-17 Cabin Temperature Panel:

(a) Set the CONT CAB selector to the full COLD position.

(b) Set the FWD CAB selector to the full COLD position.

(c) Set the AFT CAB selector to the full COLD position.

SUBTASK 21-62-00-970-002

(8) Make sure the temperature shown on the AIR TEMP gage (P5-17 panel) for the L PACK decreases.

SUBTASK 21-62-00-860-007

(9) Set the TRIM AIR switch to the ON position.

SUBTASK 21-62-00-860-008

(10) Operate the pack for 3 to 5 minutes to let the output temperature become stable.

SUBTASK 21-62-00-970-003

(11) Make a record of the temperature shown on the AIR TEMP gage for the L PACK.

SUBTASK 21-62-00-860-009

(12) Set the AIR TEMP selector to the FWD SUPPLY DUCT position.

SUBTASK 21-62-00-970-004

(13) Make a record of the temperature shown on the AIR TEMP gage for the FWD SUPPLY DUCT.

SUBTASK 21-62-00-860-010

(14) Move the FWD CAB temperature selector to the full WARM position.

SUBTASK 21-62-00-970-005

(15) Make sure the temperature shown on the AIR TEMP gage for the FWD SUPPLY DUCT increases.

SUBTASK 21-62-00-860-011

(16) Move the AIR TEMP selector to the L PACK position.

SUBTASK 21-62-00-970-006

(17) Make sure the L PACK temperature stays approximately the same.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-62-00-860-012

(1) Do these steps on the P5-10 Air Conditioning Panel:

(a) Set the L and R PACK switches to the OFF position.

(b) Set the BLEED APU, BLEED 1, and BLEED 2 switches to the ON position.

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SUBTASK 21-62-00-860-013

(2) Do these steps on the P5-17 Cabin Temperature Panel:

(a) Set the TRIM AIR switch to the ON position.

(b) Set the CONT CAB selector to the AUTO position.

(c) Set the FWD CAB selector to the AUTO position.

(d) Set the AFT CAB selector to the AUTO position.

SUBTASK 21-62-00-860-014

(3) Remove pneumatic power if it is not necessary. To remove pneumatic power, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-62-00-860-015

(4) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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FLIGHT COMPARTMENT

AIR CONDITIONING MODULE

A

G59248 S0006563682_V2

Trim Air Pressure Regulation and Shutoff Control Test
Figure 501/21-62-00-990-801

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TRIM AIR PRESSURE REGULATING AND SHUTOFF VALVE - 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) The trim air pressure regulating and shutoff valve will be referred to as the shutoff valve in this procedure.

(4) The shutoff valve is installed in the forward, inboard area of the right air conditioning bay.

TASK 21-62-01-000-801

2. Trim Air Pressure Regulating and Shutoff Valve Removal

(Figure 401)

A. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box
211	Flight Compartment - Left

C. Access Panels

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-62-01-860-001

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-62-01-860-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

SUBTASK 21-62-01-860-003

(3) Do these steps on the P5-10 air conditioning panel (located on the P5 forward overhead panel):

(a) Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-62-01-860-004

(4) Do these steps on the P5-17 Cabin Temperature Panel (located on the P5 forward overhead panel):

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(a) Set the CONT CAB, FWD CAB, and AFT CAB selectors to the OFF position and attach a DO-NOT-OPERATE tag.

(b) Set the TRIM AIR switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-62-01-010-001

(5) To get access to the shutoff valve, open these access panels in the specified sequence:

Open this access panel:

Number	Name/Location
192DR	ECS High Pressure Access Door

Open this access panel:

Number	Name/Location
192CR	ECS Access Door

E. Trim Air Pressure Regulating and Shutoff Valve Removal

SUBTASK 21-62-01-020-001

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS ARE HOT AND CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the electrical connector [3] from the shutoff valve [1].

SUBTASK 21-62-01-020-010

(2) Do these steps to remove the bonding jumper:

(a) Remove the screw [8], washers [5], and the nut [4] that attach the bonding jumper to the shutoff valve.

(b) Move the bonding jumper away from the shutoff valve.

SUBTASK 21-62-01-020-003

(3) Do these steps to remove the sense line:

(a) If you decide to replace the sense line, make a record of which end of the sense line goes to the valve and which end goes to the ducting.

NOTE: The end fittings on the sense line are not always the same.

(b) Loosen the B-nut and disconnect the sense line from the union [6].

(c) Remove the union [6] from the shutoff valve [1].

(d) Remove and discard the packings [7].

SUBTASK 21-62-01-020-004

(4) Do these steps to remove the hose assembly:

(a) Loosen the B-nut to disconnect the hose assembly from the shutoff valve.

(b) Remove the union [6] from the shutoff valve [1].

(c) Remove and discard the packing [7].

SUBTASK 21-62-01-020-005

WARNING: DO NOT TOUCH THE COOLING PACK DUCTS WHEN THEY ARE HOT. THE DUCTS ARE HOT AND CAN CAUSE INJURY TO PERSONS.

(5) To remove the shutoff valve, do these steps:

(a) Loosen the two clamps [2].

(b) Move the clamps [2] to the adjacent ducts.

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(c) Remove the shutoff valve [1] from the ECS bay.

——— END OF TASK ———

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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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TRIM AIR PRESSURE REGULATING AND SHUTOFF VALVE

B

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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)

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)
36-00-00-860-806	Remove Pressure from 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-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 #: C15292 (MODEL T477W) Supplier: 01014 Part #: M1 Supplier: 3AD17 Opt Part #: M1B Supplier: 3AD17

C. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	BAC5008

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-62-01-03-010	AKS ALL

E. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

F. Access Panels

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

G. Trim Air Pressure Regulating and Shutoff Valve Installation

SUBTASK 21-62-01-420-001

(1) To install the shutoff valve do these steps:

(a) Put the shutoff valve [1] in its position between the ducts.

NOTE: Make sure the flow arrow on the shutoff valve points in the forward direction.

(b) Loosely install the clamps [2].

SUBTASK 21-62-01-420-002

(2) To install the sense line on the shutoff valve, do these steps:

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(a) Install a new packing [7] on the union [6].

(b) Apply a thin layer of Never-Seez NSBT compound, D00006 to the threads of the union [6].

(c) Install the union [6] on the valve [1].

(d) Install the sense line on the union [6]:

1) Make sure that you install the same end of the sense line to the valve as you noted at the removal.

NOTE: Some sense lines have different end fittings.

SUBTASK 21-62-01-020-006

(3) Do these steps to install the hose assembly:

(a) Install a new packing [7] on the union [6].

(b) Apply a thin layer of Never-Seez NSBT compound, D00006 to the threads of the union [6].

(c) Install the union [6] on the shutoff valve [1].

(d) Install the sense line on the shutoff valve [1].

SUBTASK 21-62-01-020-009

(4) Do these steps to install the bonding jumper:

(a) Put the bonding jumper in its position on the shutoff valve.

(b) Install the screw [8], washers [5], and the nut [4] that hold the bonding jumper to the shutoff valve.

(c) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the valve and the bonding jumper is a maximum of 0.0025 ohm.

SUBTASK 21-62-01-020-008

(5) Install the electrical connector [3] on the shutoff valve [1].

SUBTASK 21-62-01-420-003

(6) Tighten the clamps [2] 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

H. Trim Air Pressure Regulating and Shutoff Valve Operational Check

SUBTASK 21-62-01-860-005

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	9	C01172	AIR CONDITIONING TRIM AIR PRESS

SUBTASK 21-62-01-860-006

(2) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

SUBTASK 21-62-01-860-007

(3) Do these steps on the P5-10 air conditioning panel:

(a) Set the L and R PACK switches to the AUTO position and remove the DO-NOT-OPERATE tags.

(b) Set the BLEED 1 and 2 switches to the ON position and remove the DO-NOT-OPERATE tags.

(c) Set the BLEED APU switch to the ON position and remove the DO-NOT-OPERATE tag.

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SUBTASK 21-62-01-860-008

(4) Do these steps on the P5-17 Cabin Temperature Panel:

(a) Set the TRIM AIR switch to the ON position and remove the DO-NOT-OPERATE tag.

(b) Set the CONT CAB selector to the fully WARM position and remove the DO-NOT-OPERATE tag.

(c) Set the FWD CAB selector to the fully COLD position and remove the DO-NOT-OPERATE tag.

(d) Set the AFT CAB selector to the fully COLD position and remove the DO-NOT-OPERATE tag.

SUBTASK 21-62-01-860-009

(5) Operate the pack for a minute to let the output temperature become stable.

SUBTASK 21-62-01-860-010

(6) Do these steps on the P5-17 Cabin Temperature Panel:

(a) Set AIR TEMP selector to the each of the three SUPPLY DUCT positions (AFT, FWD and CONT CAB)

(b) Record the temperature shown on the indicator for each of the three SUPPLY DUCT positions.

(c) Make sure the supply duct temperature for the CONT CAB is higher than the supply duct temperatures for the FWD and the AFT.

I. Trim Air Pressure Regulating and Shutoff Valve Leakage Check

SUBTASK 21-62-01-790-001

(1) Do a soap bubble test of the duct joints at the trim valve.

NOTE: No air leakage is permitted.

(a) If there is leakage, do these steps:

1) Put the L PACK and R PACK switches to the OFF position.

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) Loosen the clamps.

3) Make sure the ducts are aligned at the joints.

4) Tighten the clamps.

5) Put the L PACK and R PACK switches to the AUTO position.

6) Make sure the leak has been repaired.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-62-01-010-002

(1) Close these panels:

Number	Name/Location
192CR	ECS Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-62-01-860-011

(2) Remove pneumatic power if it is not necessary. To remove pneumatic power, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

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SUBTASK 21-62-01-860-012

(3) Remove electrical power if it is not necessary. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

——— END OF TASK ———

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