

**CHAPTER**

**21**

**AIR CONDITIONING**



**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**

**CHAPTER 21  
AIR CONDITIONING**

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1 thru 13	Jun 15/2009		37	Feb 15/2009		928	Oct 15/2008	
14	BLANK		38	Feb 15/2009		929	Oct 15/2008	
21-CONTENTS			21-00-00			21-00-00		
1	Feb 15/2008		201	Feb 10/2004		930	Feb 10/2007	
2	Oct 15/2008		202	Feb 10/2007		931	Feb 10/2007	
3	Feb 15/2009		203	Feb 15/2009		932	Feb 10/2007	
4	Feb 15/2009		O 204	Jun 15/2009		933	Feb 10/2007	
5	Feb 15/2009		205	Feb 15/2009		934	Feb 15/2009	
6	Feb 15/2009		206	Jun 10/2007		935	Feb 15/2009	
7	Feb 15/2008		R 207	Jun 15/2009		936	Feb 15/2009	
8	Feb 15/2008		208	BLANK		937	Feb 15/2009	
9	Feb 15/2009		21-00-00			938	Feb 15/2009	
10	Feb 15/2009		901	Feb 15/2009		939	Feb 10/2007	
11	Feb 15/2009		902	Feb 15/2009		940	Oct 15/2008	
12	Feb 15/2009		903	Feb 10/2007		941	Feb 15/2009	
13	Feb 15/2009		904	Feb 10/2007		942	Feb 15/2009	
14	Feb 15/2009		905	Feb 10/2007		943	Feb 15/2009	
15	Feb 15/2009		906	Feb 15/2009		944	Feb 15/2009	
16	Feb 15/2009		907	Feb 15/2009		945	Feb 15/2009	
O 17	Jun 15/2009		908	Feb 10/2007		946	Feb 15/2009	
O 18	Jun 15/2009		909	Feb 10/2007		947	Feb 15/2009	
O 19	Jun 15/2009		910	Feb 15/2009		948	Feb 15/2009	
O 20	Jun 15/2009		911	Feb 15/2009		949	Feb 15/2009	
O 21	Jun 15/2009		912	Feb 15/2009		950	Feb 15/2009	
O 22	Jun 15/2009		913	Feb 15/2009		951	Feb 15/2009	
O 23	Jun 15/2009		914	Feb 15/2009		952	Feb 15/2009	
O 24	Jun 15/2009		915	Feb 15/2009		953	Feb 15/2009	
O 25	Jun 15/2009		916	Feb 15/2009		954	Feb 15/2009	
O 26	Jun 15/2009		917	Feb 10/2007		955	Feb 15/2009	
O 27	Jun 15/2009		918	Feb 10/2007		956	Feb 10/2007	
O 28	Jun 15/2009		919	Feb 15/2009		957	Feb 15/2009	
O 29	Jun 15/2009		920	Feb 15/2009		958	Feb 15/2009	
O 30	Jun 15/2009		921	Feb 15/2009		959	Feb 15/2009	
O 31	Jun 15/2009		922	Feb 10/2007		960	Feb 15/2009	
O 32	Jun 15/2009		923	Oct 15/2008		961	Feb 15/2009	
O 33	Jun 15/2009		924	Oct 15/2008		962	Feb 15/2009	
O 34	Jun 15/2009		925	Oct 15/2008		963	Feb 10/2007	
O 35	Jun 15/2009		926	Oct 15/2008		964	Feb 10/2007	
36	Feb 15/2009		927	Oct 15/2008		965	Feb 10/2007	
						966	Feb 15/2009	

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967	Feb 15/2009		805	Feb 10/2005		844	Feb 15/2008	
968	Feb 15/2009		806	Feb 10/2005		845	Oct 10/2007	
969	Feb 10/2007		807	Feb 15/2008		846	Oct 10/2007	
970	Feb 10/2007		808	Feb 10/2007		21-21-01 Config 1		
971	Feb 10/2007		809	Feb 15/2008		401	Feb 10/2007	
972	Feb 10/2007		810	Feb 10/2007		402	Feb 10/2007	
973	Feb 10/2007		811	Feb 15/2008		403	Feb 10/2007	
974	Feb 10/2007		812	Oct 10/2006		404	Feb 10/2007	
21-00-01			813	Feb 10/2005		405	Jun 15/2008	
201	Jun 15/2008		814	Feb 10/2005		406	Feb 10/2007	
202	Feb 15/2009		815	Feb 15/2008		407	Feb 15/2009	
203	Feb 15/2009		816	Oct 10/2006		408	Feb 10/2007	
204	Jun 15/2008		817	Feb 15/2008		409	Feb 10/2007	
205	Feb 15/2009		818	Oct 10/2006		410	BLANK	
206	Feb 15/2009		819	Feb 15/2008		21-21-01 Config 2		
207	Feb 15/2009		820	Oct 10/2006		401	Feb 15/2009	
208	Feb 10/2007		821	Feb 15/2008		402	Feb 15/2009	
209	Feb 15/2009		822	Oct 10/2006		403	Feb 15/2009	
210	BLANK		823	Feb 15/2008		404	Feb 15/2009	
21-00-05			824	Oct 10/2006		405	Feb 15/2009	
R 201	Jun 15/2009		R 825	Jun 15/2009		406	Feb 15/2009	
202	Oct 15/2008		826	Oct 10/2006		407	Feb 15/2009	
203	Feb 15/2009		827	Oct 10/2006		408	Feb 15/2009	
204	Jun 15/2008		828	Feb 10/2007		409	Feb 15/2009	
205	Feb 15/2009		829	Oct 10/2006		410	Feb 15/2009	
206	Feb 15/2009		R 830	Jun 15/2009		411	Feb 15/2009	
207	Jun 15/2008		831	Oct 10/2006		412	Feb 15/2009	
208	Jun 15/2008		R 832	Jun 15/2009		413	Feb 15/2009	
R 209	Jun 15/2009		833	Oct 10/2006		414	Feb 15/2009	
210	Feb 10/2007		834	Feb 10/2007		415	Feb 15/2009	
211	Feb 10/2007		835	Oct 10/2006		416	Feb 15/2009	
212	Jun 15/2008		836	Oct 10/2006		417	Feb 15/2009	
213	Feb 15/2009		837	Feb 10/2007		418	BLANK	
214	BLANK		R 838	Jun 15/2009		21-21-02		
21-20-02			839	Feb 15/2008		401	Jun 15/2008	
801	Oct 10/2006		840	Feb 15/2008		402	Jun 15/2008	
802	Feb 15/2008		841	Oct 10/2006		403	Feb 10/2007	
803	Oct 10/2006		842	Feb 15/2008		404	Feb 10/2007	
804	Feb 10/2005		843	Oct 10/2007		405	Jun 15/2008	

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406	Feb 10/2007		R 706	Jun 15/2009		401	Feb 15/2009	
21-22-01			707	Feb 15/2009		402	Feb 15/2009	
401	Feb 15/2009		708	BLANK		403	Feb 15/2009	
402	Feb 15/2008		21-22-09			404	Feb 15/2009	
403	Oct 10/2003		401	Feb 15/2009		405	Feb 15/2009	
404	Oct 10/2003		402	Feb 15/2009		406	Feb 15/2009	
405	Feb 15/2009		403	Feb 15/2009		21-25-00 Config 1		
406	Feb 15/2009		404	BLANK		501	Jun 15/2008	
21-22-02			21-23-01			502	Oct 10/2007	
401	Feb 15/2008		201	Feb 15/2008		503	Feb 10/2007	
402	Feb 15/2008		202	Feb 15/2009		504	Feb 10/2007	
403	Oct 10/2006		203	Feb 15/2008		505	Feb 10/2007	
404	Oct 10/2006		204	Feb 15/2008		506	BLANK	
405	Oct 10/2006		205	Feb 15/2008		21-25-00 Config 2		
406	Feb 15/2009		206	Feb 15/2008		501	Feb 15/2009	
407	Feb 15/2009		R 207	Jun 15/2009		502	Feb 15/2009	
408	BLANK		R 208	Jun 15/2009		503	Feb 15/2009	
21-22-02			O 209	Jun 15/2009		504	Feb 15/2009	
501	Oct 10/2003		O 210	Jun 15/2009		505	Feb 15/2009	
502	Oct 10/2003		211	Feb 15/2008		506	BLANK	
503	Oct 10/2003		212	Feb 15/2008		21-25-01		
504	Oct 10/2003		21-23-02			401	Feb 15/2009	
21-22-05			201	Feb 10/2006		402	Feb 15/2009	
401	Feb 15/2009		202	Feb 10/2006		R 403	Jun 15/2009	
402	Feb 15/2009		R 203	Jun 15/2009		R 404	Jun 15/2009	
403	Feb 10/2007		R 204	Jun 15/2009		405	Feb 10/2007	
404	Feb 10/2007		R 205	Jun 15/2009		406	Feb 10/2007	
405	Feb 15/2009		O 206	Jun 15/2009		407	Feb 15/2009	
406	Feb 15/2009		21-23-03			408	Feb 15/2009	
407	Feb 15/2009		201	Feb 10/2006		409	Feb 15/2009	
408	Feb 15/2009		202	Feb 10/2006		410	Feb 15/2009	
409	Feb 15/2009		203	Feb 10/2006		411	Feb 15/2009	
410	Feb 15/2009		204	Feb 10/2006		412	BLANK	
21-22-07			205	Feb 10/2006		21-25-02		
701	Feb 15/2009		206	Feb 10/2006		401	Feb 15/2009	
702	Feb 15/2009		207	Oct 10/2006		402	Feb 15/2009	
703	Feb 15/2009		208	Jun 10/2007		403	Feb 10/2007	
704	Feb 15/2009		209	Jun 10/2007		404	Feb 10/2007	
705	Feb 15/2009		210	BLANK		405	Feb 15/2009	

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R 407	Jun 15/2009		509	Feb 15/2009		202	Jun 10/2005	
408	Feb 15/2009		510	Feb 15/2009		203	Oct 10/2003	
409	Feb 15/2008		511	Feb 15/2009		204	Oct 10/2003	
410	BLANK		512	Feb 15/2009		205	Feb 15/2009	
21-25-03			513	Feb 15/2009		206	Feb 15/2009	
401	Feb 15/2009		514	Feb 15/2009		207	Jun 10/2007	
402	Feb 15/2009		515	Feb 15/2009		208	BLANK	
403	Feb 10/2007		516	Feb 15/2009		21-27-04		
404	Feb 10/2007		517	Feb 15/2009		401	Oct 10/2003	
405	Feb 15/2009		518	Feb 15/2009		402	Jun 10/2005	
406	Feb 15/2009		519	Feb 15/2009		403	Oct 10/2003	
407	Feb 15/2009		520	Feb 15/2009		404	Oct 10/2003	
408	Feb 15/2009		521	Feb 15/2009		R 405	Jun 15/2009	
21-25-03			522	Feb 15/2009		O 406	Jun 15/2009	
601	Feb 15/2009		523	Feb 15/2009		21-27-04		
602	Jun 10/2005		524	Feb 15/2009		701	Jun 15/2008	
21-26-01			525	Feb 15/2009		702	Jun 15/2008	
401	Jun 10/2005		526	Feb 15/2009		21-27-05		
402	Oct 10/2003		527	Feb 15/2009		401	Jun 10/2005	
403	Oct 10/2003		528	Feb 15/2009		402	Jun 10/2005	
404	Oct 10/2003		529	Feb 15/2009		403	Oct 10/2003	
405	Feb 15/2009		530	Feb 15/2009		404	Oct 10/2003	
406	BLANK		531	Feb 15/2009		405	Feb 15/2009	
21-26-03			532	BLANK		406	Feb 15/2009	
201	Oct 15/2008		21-27-01			407	Feb 15/2009	
202	Oct 15/2008		401	Feb 15/2009		408	BLANK	
203	Oct 15/2008		402	Feb 15/2009		21-27-07		
204	Oct 15/2008		403	Oct 10/2003		401	Jun 10/2005	
205	Oct 15/2008		404	Oct 10/2003		402	Oct 10/2003	
206	BLANK		405	Feb 15/2009		403	Feb 15/2009	
21-27-00			406	BLANK		404	BLANK	
501	Feb 15/2009		21-27-02			21-31-00		
502	Feb 15/2009		401	Jun 10/2005		501	Feb 15/2009	
503	Feb 15/2009		402	Jun 10/2006		502	Oct 10/2006	
504	Feb 15/2009		403	Oct 10/2003		503	Jun 10/2007	
505	Feb 15/2009		404	Jun 10/2006		504	Jun 10/2007	
506	Feb 15/2009		R 405	Jun 15/2009		505	Jun 10/2007	
507	Feb 15/2009		O 406	Jun 15/2009		506	Feb 15/2009	

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507	Feb 15/2009		R 409	Jun 15/2009		405	Oct 15/2008	
508	Feb 15/2009		R 410	Jun 15/2009		406	Oct 10/2003	
509	Feb 15/2009		21-32-01			407	Oct 10/2003	
510	Feb 15/2009		R 401	Jun 15/2009		408	Oct 10/2003	
511	Feb 15/2009		402	Oct 10/2003		409	Feb 15/2009	
512	Feb 15/2009		403	Oct 10/2003		410	Feb 10/2006	
513	Jun 15/2008		R 404	Jun 15/2009		21-33-00		
514	Jun 15/2008		R 405	Jun 15/2009		R 501	Jun 15/2009	
515	Jun 15/2008		406	BLANK		R 502	Jun 15/2009	
516	Jun 15/2008		21-32-01			R 503	Jun 15/2009	
517	Jun 15/2008		R 501	Jun 15/2009		O 504	Jun 15/2009	
518	Jun 15/2008		R 502	Jun 15/2009		O 505	Jun 15/2009	
519	Jun 15/2008		R 503	Jun 15/2009		O 506	Jun 15/2009	
520	Jun 15/2008		O 504	Jun 15/2009		507	Feb 15/2009	
521	Jun 15/2008		O 505	Jun 15/2009		508	Oct 15/2008	
522	Jun 15/2008		O 506	Jun 15/2009		A 509	Jun 15/2009	
523	Jun 15/2008		O 507	Jun 15/2009		A 510	Jun 15/2009	
524	BLANK		O 508	Jun 15/2009		21-33-01		
21-31-01			A 509	Jun 15/2009		401	Jun 10/2005	
401	Oct 10/2005		A 510	BLANK		402	Oct 10/2003	
402	Jun 10/2007		21-32-02			403	Oct 10/2003	
403	Feb 15/2009		401	Feb 15/2009		404	Feb 15/2009	
404	Feb 15/2009		402	Oct 10/2003		21-33-02		
405	Feb 15/2009		403	Oct 10/2003		R 401	Jun 15/2009	
406	Oct 15/2008		404	Feb 15/2009		402	Oct 10/2003	
21-31-02			21-32-03			R 403	Jun 15/2009	
401	Jun 10/2005		201	Feb 15/2009		R 404	Jun 15/2009	
402	Oct 10/2003		202	Oct 10/2003		21-33-04		
R 403	Jun 15/2009		203	Oct 10/2003		401	Feb 15/2009	
O 404	Jun 15/2009		204	Oct 10/2003		402	Feb 15/2009	
21-31-03			205	Oct 10/2007		403	Feb 15/2009	
401	Oct 15/2008		206	Feb 15/2009		404	Oct 15/2008	
402	Oct 15/2008		207	Oct 10/2003		405	Feb 15/2009	
403	Oct 10/2003		208	BLANK		406	Oct 15/2008	
404	Oct 10/2003		21-32-05			21-45-00		
405	Oct 10/2003		401	Jun 10/2005		501	Oct 15/2008	
R 406	Jun 15/2009		402	Oct 10/2003		502	Feb 15/2009	
O 407	Jun 15/2009		403	Oct 10/2003		503	Feb 15/2009	
O 408	Jun 15/2009		404	Feb 15/2009		504	Feb 15/2009	

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505	Feb 15/2008		511	Feb 15/2009		405	Feb 15/2009	
506	BLANK		512	Feb 15/2009		406	Feb 15/2009	
21-45-01			513	Feb 15/2009		407	Feb 15/2009	
401	Feb 15/2009		514	Feb 10/2007		408	Feb 15/2009	
402	Feb 15/2009		515	Feb 15/2009		409	Feb 15/2009	
403	Feb 10/2007		516	BLANK		410	Feb 15/2009	
404	Jun 15/2008		21-51-00			411	Feb 15/2009	
405	Jun 15/2008		R 601	Jun 15/2009		412	Feb 15/2009	
406	Jun 10/2006		602	Jun 15/2008		R 413	Jun 15/2009	
R 407	Jun 15/2009		R 603	Jun 15/2009		O 414	Jun 15/2009	
R 408	Jun 15/2009		O 604	Jun 15/2009		O 415	Jun 15/2009	
R 409	Jun 15/2009		O 605	Jun 15/2009		O 416	Jun 15/2009	
O 410	Jun 15/2009		O 606	Jun 15/2009		417	Feb 15/2009	
21-45-02			607	Jun 15/2008		418	Feb 15/2009	
401	Feb 15/2009		608	Jun 15/2008		419	Feb 15/2009	
402	Feb 15/2008		609	Jun 15/2008		420	Feb 15/2009	
403	Oct 10/2003		610	Oct 10/2007		21-51-02		
404	Feb 15/2009		611	Oct 10/2007		401	Feb 15/2009	
405	Feb 15/2009		612	Oct 10/2007		402	Feb 10/2007	
406	Feb 15/2008		613	Oct 10/2007		403	Feb 15/2009	
407	Feb 10/2007		614	Oct 10/2007		404	Feb 15/2009	
408	Feb 15/2009		615	Oct 10/2007		405	Feb 15/2009	
409	Feb 15/2009		616	BLANK		406	Feb 15/2009	
410	Feb 15/2009		21-51-01 Config 1			407	Feb 15/2009	
411	Feb 10/2007		401	Feb 10/2007		408	Jun 10/2007	
412	Feb 15/2009		402	Feb 10/2007		21-51-02 Config 1		
413	Feb 15/2009		403	Feb 10/2007		501	Feb 10/2007	
414	BLANK		404	Feb 10/2007		502	Jun 15/2008	
21-51-00			405	Feb 10/2007		503	Feb 10/2007	
501	Feb 15/2009		406	Feb 10/2007		504	Feb 10/2007	
502	Feb 10/2007		407	Feb 15/2009		505	Feb 10/2007	
503	Feb 10/2007		408	Jun 15/2008		506	Feb 10/2007	
504	Feb 10/2007		409	Jun 15/2008		507	Feb 10/2007	
505	Feb 10/2007		410	Jun 15/2008		508	Feb 10/2007	
506	Feb 15/2009		21-51-01 Config 2			509	Feb 10/2007	
507	Feb 15/2009		401	Feb 15/2009		510	Feb 10/2007	
508	Feb 15/2009		402	Feb 15/2009		511	Feb 10/2007	
509	Feb 15/2009		403	Feb 15/2009		512	Feb 10/2007	
510	Feb 15/2009		404	Feb 15/2009				

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501	Feb 15/2009		408	Feb 15/2009		407	Feb 10/2007	
502	Feb 15/2009		409	Feb 15/2009		408	Oct 15/2008	
503	Feb 15/2009		410	Feb 15/2009		409	Oct 15/2008	
504	Feb 15/2009		411	Feb 15/2009		410	Oct 15/2008	
505	Feb 15/2009		412	Feb 15/2009		411	Oct 15/2008	
506	Feb 15/2009		413	Feb 15/2009		412	BLANK	
21-51-03 Config 1			414	Feb 15/2009		21-51-04 Config 2		
401	Feb 10/2007		415	Feb 15/2009		401	Feb 15/2009	
402	Oct 15/2008		416	Feb 15/2009		402	Feb 15/2009	
403	Oct 15/2008		417	Feb 15/2009		403	Feb 15/2009	
404	Oct 15/2008		R 418	Jun 15/2009		404	Feb 15/2009	
405	Oct 15/2008		R 419	Jun 15/2009		405	Feb 15/2009	
406	Oct 15/2008		O 420	Jun 15/2009		406	Feb 15/2009	
407	Feb 10/2007		O 421	Jun 15/2009		407	Feb 15/2009	
408	Feb 10/2007		O 422	Jun 15/2009		R 408	Jun 15/2009	
409	Feb 10/2007		O 423	Jun 15/2009		R 409	Jun 15/2009	
410	Feb 10/2007		O 424	Jun 15/2009		O 410	Jun 15/2009	
411	Feb 10/2007		O 425	Jun 15/2009		O 411	Jun 15/2009	
412	Feb 10/2007		426	BLANK		O 412	Jun 15/2009	
413	Feb 10/2007		21-51-03			413	Feb 15/2009	
414	Jun 10/2007		701	Feb 15/2009		414	BLANK	
415	Feb 10/2007		702	Jun 10/2006		21-51-05		
416	Feb 10/2007		703	Feb 10/2007		201	Feb 15/2009	
R 417	Jun 15/2009		704	Oct 10/2005		202	Feb 15/2009	
418	Feb 10/2007		705	Feb 10/2007		203	Feb 15/2009	
419	Feb 10/2007		706	Feb 10/2007		204	Feb 10/2007	
420	Feb 10/2007		707	Jun 10/2006		205	Feb 10/2007	
421	Feb 10/2007		708	Oct 10/2005		206	Feb 10/2007	
422	Oct 15/2008		709	Feb 10/2007		207	Feb 10/2007	
423	Oct 15/2008		710	Feb 10/2007		208	Feb 10/2007	
424	BLANK		711	Feb 15/2009		209	Feb 10/2007	
21-51-03 Config 2			712	Feb 15/2009		210	Feb 10/2007	
401	Feb 15/2009		21-51-04 Config 1			211	Feb 10/2007	
402	Feb 15/2009		401	Feb 10/2007		212	Feb 15/2009	
403	Feb 15/2009		402	Jun 15/2008		213	Feb 15/2009	
404	Feb 15/2009		403	Jun 15/2008		214	Feb 15/2009	
405	Feb 15/2009		404	Feb 10/2007		215	Feb 15/2009	
406	Feb 15/2009		405	Jun 15/2008		216	Feb 15/2009	
407	Feb 15/2009		406	Feb 10/2007		217	Feb 15/2009	

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21-51-05 (cont)			21-51-09			21-51-13 (cont)		
218	Feb 15/2009		401	Oct 15/2008		402	Feb 15/2009	
219	Feb 15/2009		402	Feb 10/2007		403	Feb 15/2009	
220	BLANK		403	Feb 10/2007		404	Feb 15/2009	
21-51-06			404	Feb 10/2007		405	Feb 15/2009	
401	Feb 10/2007		405	Feb 10/2007		406	BLANK	
402	Feb 10/2007		406	Feb 10/2007		21-51-14		
403	Feb 10/2007		407	Oct 15/2008		401	Feb 15/2009	
404	Feb 10/2007		408	Oct 15/2008		402	Feb 15/2009	
405	Jun 15/2008		409	Oct 15/2008		403	Feb 15/2009	
406	Feb 10/2007		410	BLANK		404	Feb 15/2009	
407	Feb 10/2007		21-51-10			405	Feb 15/2009	
408	BLANK		401	Feb 15/2009		406	Feb 15/2009	
21-51-07 Config 1			402	Feb 15/2009		407	Feb 15/2009	
401	Feb 10/2007		403	Feb 15/2009		408	BLANK	
402	Feb 10/2007		404	Feb 15/2009		21-51-15		
403	Feb 10/2007		405	Feb 15/2009		401	Feb 15/2009	
404	Feb 10/2007		406	Feb 15/2009		402	Feb 15/2009	
405	Jun 15/2008		407	Feb 15/2009		403	Feb 15/2009	
406	Feb 15/2008		408	BLANK		404	Feb 15/2009	
21-51-07 Config 2			21-51-11			405	Feb 15/2009	
401	Feb 15/2009		401	Feb 15/2009		406	Feb 15/2009	
402	Feb 15/2009		402	Feb 15/2009		407	Feb 15/2009	
403	Feb 15/2009		403	Feb 15/2009		408	BLANK	
404	Feb 15/2009		404	Feb 15/2009		21-51-16		
405	Feb 15/2009		405	Feb 15/2009		401	Feb 15/2009	
406	Feb 15/2009		406	Feb 15/2009		402	Feb 15/2009	
R 407	Jun 15/2009		407	Feb 15/2009		403	Feb 15/2009	
408	Feb 15/2009		408	Feb 15/2009		404	Feb 15/2009	
21-51-08			409	Feb 15/2009		405	Feb 15/2009	
401	Feb 15/2009		410	BLANK		406	Feb 15/2009	
402	Feb 15/2009		21-51-12			407	Feb 15/2009	
403	Feb 15/2009		401	Feb 15/2009		408	Feb 15/2009	
404	Feb 15/2009		402	Feb 15/2009		21-51-17		
405	Feb 15/2009		403	Feb 15/2009		401	Feb 15/2009	
406	Feb 15/2009		404	Feb 15/2009		402	Feb 15/2009	
407	Feb 15/2009		405	Feb 15/2009		403	Feb 15/2009	
408	Feb 15/2009		406	Feb 15/2009		404	Feb 15/2009	
409	Feb 15/2009		21-51-13			405	Feb 15/2009	
410	Feb 15/2009		401	Feb 15/2009		406	Feb 15/2009	

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407	Feb 15/2009		502	Feb 15/2009		411	Feb 15/2009	
408	Feb 15/2009		503	Feb 15/2009		412	Feb 15/2009	
409	Feb 15/2009		504	Jun 15/2008		413	Feb 15/2009	
410	BLANK		505	Feb 15/2009		414	Feb 15/2008	
21-51-20			506	Jun 15/2008		415	Feb 15/2008	
401	Feb 10/2007		507	Jun 15/2008		416	BLANK	
402	Feb 10/2007		508	Jun 15/2008		21-51-24		
403	Feb 10/2007		509	Jun 15/2008		801	Oct 10/2007	
404	Feb 10/2007		510	Jun 15/2008		802	Oct 10/2007	
405	Jun 15/2008		511	Jun 15/2008		803	Feb 15/2008	
406	Feb 10/2007		512	Feb 15/2009		804	Oct 10/2007	
407	Feb 10/2007		513	Feb 15/2009		805	Feb 10/2005	
408	BLANK		514	Feb 15/2009		806	Feb 15/2008	
21-51-21			515	Feb 15/2009		807	Oct 10/2007	
401	Feb 10/2007		516	Feb 15/2009		808	Oct 10/2007	
402	Feb 10/2007		21-51-23			21-51-30		
403	Jun 10/2006		401	Oct 10/2003		401	Feb 10/2007	
404	Oct 10/2003		402	Oct 10/2003		402	Feb 10/2007	
405	Jun 10/2005		403	Oct 10/2005		403	Feb 10/2007	
406	Oct 10/2005		404	Jun 15/2008		404	Feb 10/2007	
407	Jun 10/2006		405	Feb 15/2009		405	Jun 15/2008	
408	Oct 15/2008		406	Oct 10/2005		406	Jun 15/2008	
409	Oct 15/2008		407	Oct 10/2005		21-51-31		
410	Feb 15/2009		408	Feb 15/2009		401	Feb 10/2007	
411	Feb 15/2009		409	Oct 10/2005		402	Feb 10/2007	
412	Oct 15/2008		410	Feb 10/2007		403	Feb 10/2007	
21-51-22			411	Feb 15/2009		404	Feb 10/2007	
401	Feb 10/2007		412	Feb 15/2009		405	Jun 15/2008	
402	Feb 10/2007		21-51-24			406	Jun 15/2008	
403	Oct 10/2003		401	Feb 15/2009		407	Feb 10/2007	
404	Oct 10/2003		402	Feb 15/2009		408	BLANK	
405	Oct 10/2003		403	Feb 15/2009		21-51-32		
R 406	Jun 15/2009		404	Feb 10/2006		401	Feb 10/2007	
407	Oct 10/2007		405	Feb 10/2006		402	Feb 10/2007	
R 408	Jun 15/2009		406	Feb 10/2006		403	Feb 10/2007	
O 409	Jun 15/2009		407	Feb 10/2006		404	Jun 10/2007	
O 410	Jun 15/2009		408	Feb 10/2006		405	Feb 10/2007	
21-51-22			409	Feb 15/2009		406	BLANK	
501	Feb 10/2007		410	Feb 15/2009				

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401	Feb 15/2009		402	Feb 15/2009		406	BLANK	
402	Feb 15/2009		403	Feb 15/2009		21-51-65		
403	Feb 10/2007		404	Feb 10/2007		401	Feb 15/2009	
404	Feb 10/2007		405	Feb 10/2007		402	Jun 10/2005	
405	Feb 15/2009		406	Feb 15/2009		403	Feb 10/2007	
406	Feb 15/2009		407	Feb 15/2009		404	Feb 15/2009	
R 407	Jun 15/2009		408	Feb 15/2009		405	Feb 15/2009	
408	Feb 15/2009		409	Feb 15/2009		406	Feb 15/2009	
409	Feb 10/2007		410	Feb 10/2007		407	Feb 15/2009	
410	BLANK		21-51-51			408	Jun 15/2008	
21-51-41			401	Feb 15/2009		21-61-00 Config 1		
401	Feb 15/2009		402	Feb 15/2009		501	Feb 10/2007	
402	Feb 15/2009		403	Feb 15/2009		502	Feb 10/2007	
403	Feb 10/2007		404	Feb 15/2009		503	Feb 10/2007	
404	Feb 10/2007		405	Feb 15/2009		504	Feb 10/2007	
405	Feb 15/2009		406	Feb 15/2009		505	Feb 10/2007	
406	Feb 15/2009		21-51-51			506	Feb 10/2007	
407	Feb 15/2009		501	Feb 15/2009		507	Feb 10/2007	
408	Feb 15/2009		502	Feb 15/2009		508	Feb 10/2007	
409	Jun 10/2007		503	Feb 15/2009		509	Feb 10/2007	
410	BLANK		504	Feb 15/2009		510	Feb 10/2007	
21-51-42 Config 1			21-51-52			511	Feb 10/2007	
401	Feb 10/2007		401	Feb 15/2009		512	BLANK	
402	Feb 10/2007		402	Feb 15/2009		21-61-00 Config 2		
403	Feb 10/2007		403	Feb 15/2009		501	Feb 15/2009	
404	Feb 10/2007		404	Feb 15/2009		502	Feb 15/2009	
405	Feb 10/2007		405	Feb 15/2009		503	Feb 15/2009	
406	Feb 10/2007		406	BLANK		504	Feb 15/2009	
407	Oct 15/2008		21-51-52			505	Feb 15/2009	
408	Feb 10/2007		501	Feb 15/2009		506	Feb 15/2009	
21-51-42 Config 2			502	Feb 15/2009		507	Feb 15/2009	
401	Feb 15/2009		503	Feb 15/2009		508	Feb 15/2009	
402	Feb 15/2009		504	Feb 15/2009		509	Feb 15/2009	
403	Feb 15/2009		21-51-60			R 510	Jun 15/2009	
404	Feb 15/2009		401	Feb 15/2009		R 511	Jun 15/2009	
405	Feb 15/2009		402	Feb 15/2009		512	Feb 15/2009	
406	Feb 15/2009		403	Feb 15/2009		21-61-01		
21-51-50			404	Feb 15/2009		401	Feb 10/2007	
401	Feb 15/2009		405	Feb 15/2009		402	Feb 10/2007	

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21-61-01 (cont)			21-61-04 Config 2 (cont)			21-61-06 (cont)		
403	Jun 15/2008		408	Feb 15/2009		205	Feb 10/2007	
404	BLANK		21-61-04 Config 1			206	Feb 15/2009	
21-61-02			501	Feb 10/2007		207	Feb 15/2009	
401	Feb 10/2007		502	Feb 10/2007		208	Feb 15/2009	
402	Feb 10/2007		503	Feb 10/2007		209	Feb 15/2009	
403	Feb 10/2007		504	Feb 10/2007		210	Feb 15/2009	
404	Feb 10/2007		505	Feb 10/2007		211	Feb 15/2009	
405	Feb 10/2007		506	Feb 10/2007		212	BLANK	
406	Feb 10/2007		507	Feb 10/2007		21-61-07 Config 1		
407	Jun 15/2008		508	Feb 10/2007		401	Feb 10/2007	
408	Jun 15/2008		21-61-04 Config 2			402	Feb 10/2007	
409	Jun 15/2008		501	Feb 15/2009		403	Feb 10/2007	
410	Jun 15/2008		502	Feb 15/2009		404	Jun 15/2008	
21-61-03			503	Feb 15/2009		405	Feb 10/2007	
401	Feb 10/2007		504	Feb 15/2009		406	BLANK	
402	Feb 10/2007		505	Feb 15/2009		21-61-07 Config 2		
403	Feb 10/2007		506	Feb 15/2009		401	Feb 15/2009	
404	Feb 10/2007		507	Feb 15/2009		402	Feb 15/2009	
405	Feb 10/2007		508	Feb 15/2009		403	Feb 15/2009	
406	Feb 10/2007		21-61-05			404	Feb 15/2009	
21-61-04 Config 1			401	Feb 15/2009		405	Feb 15/2009	
401	Feb 10/2007		402	Feb 10/2007		406	Feb 15/2009	
402	Feb 10/2007		403	Feb 10/2007		21-61-08		
403	Feb 10/2007		404	Feb 10/2007		401	Feb 10/2007	
404	Feb 10/2007		405	Feb 15/2009		402	Feb 10/2007	
405	Feb 10/2007		406	Feb 15/2009		403	Feb 10/2007	
406	Feb 10/2007		407	Feb 15/2009		404	Feb 10/2007	
407	Feb 10/2007		408	Feb 15/2009		405	Feb 10/2007	
408	Feb 10/2007		409	Feb 10/2007		406	Feb 10/2007	
409	Feb 10/2007		410	Feb 10/2007		407	Jun 15/2008	
410	BLANK		411	Feb 15/2009		408	Feb 10/2007	
21-61-04 Config 2			412	Feb 15/2009		409	Feb 10/2007	
401	Feb 15/2009		413	Feb 15/2009		410	BLANK	
402	Feb 15/2009		414	Feb 15/2009		21-61-09		
403	Feb 15/2009		21-61-06			401	Feb 15/2009	
404	Feb 15/2009		201	Feb 15/2009		402	Feb 15/2009	
405	Feb 15/2009		202	Feb 15/2009		403	Feb 15/2009	
406	Feb 15/2009		203	Feb 15/2009		404	Feb 15/2009	
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406	Feb 15/2009		614	Feb 15/2009		413	Feb 15/2009	
407	Feb 15/2009		615	Feb 15/2009		414	Feb 15/2009	
408	BLANK		616	Feb 15/2009		415	Feb 15/2009	
21-61-09			617	Feb 15/2009		416	Feb 15/2009	
601	Feb 15/2009		618	Feb 15/2009		417	Feb 15/2009	
602	BLANK		21-61-11			418	Feb 15/2009	
21-61-10			401	Feb 15/2009		419	Feb 15/2009	
201	Feb 15/2009		402	Feb 15/2009		420	Feb 15/2009	
202	Feb 15/2009		403	Feb 15/2009		421	Feb 15/2009	
203	Feb 10/2007		404	Feb 10/2007		422	BLANK	
204	Feb 15/2009		405	Feb 10/2007		21-61-15		
205	Feb 15/2009		406	Feb 10/2007		401	Oct 10/2005	
206	Feb 15/2009		407	Feb 10/2007		402	Feb 10/2007	
207	Feb 15/2009		408	Feb 10/2007		403	Feb 15/2009	
208	Feb 15/2009		409	Feb 10/2007		404	Feb 15/2009	
209	Feb 15/2009		410	Feb 10/2007		405	Oct 15/2008	
210	Feb 15/2009		411	Feb 15/2009		406	Feb 15/2009	
211	Feb 15/2009		412	Feb 15/2009		21-61-20		
212	Feb 15/2009		413	Feb 15/2009		401	Feb 15/2009	
213	Feb 15/2009		414	Feb 15/2009		402	Feb 15/2009	
214	Feb 15/2009		415	Feb 15/2009		403	Feb 15/2009	
215	Feb 15/2009		416	Feb 15/2009		404	Feb 15/2009	
216	Feb 15/2009		417	Feb 15/2009		405	Feb 15/2009	
217	Feb 15/2009		418	Feb 15/2009		406	BLANK	
218	Feb 15/2009		419	Oct 10/2007		21-61-21		
21-61-10			420	BLANK		401	Feb 15/2009	
601	Feb 10/2007		21-61-12			402	Feb 15/2009	
602	Feb 10/2007		401	Feb 10/2007		403	Feb 15/2009	
603	Feb 10/2007		402	Feb 10/2007		404	Feb 15/2009	
604	Feb 10/2007		403	Feb 10/2007		405	Feb 15/2009	
605	Feb 10/2007		404	Feb 10/2007		406	Feb 15/2009	
606	Feb 10/2007		405	Feb 10/2007		407	Feb 15/2009	
607	Feb 10/2007		406	Feb 10/2007		408	BLANK	
608	Feb 15/2009		407	Feb 10/2007		21-61-30 Config 1		
609	Feb 15/2009		408	Oct 15/2008		401	Feb 10/2007	
610	Feb 15/2009		409	Feb 10/2007		402	Feb 10/2007	
611	Feb 15/2009		410	Feb 15/2009		403	Feb 10/2007	
612	Feb 15/2009		411	Feb 15/2009		404	Feb 10/2007	
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406	BLANK		405	Oct 15/2008				
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401	Feb 15/2009		407	Feb 10/2007				
402	Feb 15/2009		408	BLANK				
403	Feb 15/2009		21-61-34					
404	Feb 15/2009		501	Feb 10/2007				
405	Feb 15/2009		502	Feb 10/2007				
406	Feb 15/2009		503	Feb 10/2007				
407	Feb 15/2009		504	Feb 10/2007				
408	Feb 15/2009		505	Feb 10/2007				
21-61-31			506	Feb 10/2007				
401	Feb 15/2009		507	Feb 10/2007				
402	Feb 15/2009		508	Feb 10/2007				
403	Feb 10/2007		509	Feb 10/2007				
404	Feb 10/2007		510	BLANK				
405	Feb 10/2007		21-61-35					
406	Feb 10/2007		401	Feb 10/2007				
407	Feb 10/2007		402	Feb 10/2007				
408	Feb 15/2009		403	Feb 10/2007				
409	Feb 15/2009		404	Feb 10/2007				
410	Feb 15/2009		405	Feb 10/2007				
411	Feb 15/2009		406	Feb 10/2007				
412	Feb 15/2009		21-62-00					
413	Feb 15/2009		501	Feb 15/2009				
414	Feb 15/2009		502	Feb 15/2009				
21-61-32			503	Feb 15/2009				
401	Feb 15/2008		504	Feb 15/2009				
402	Feb 15/2008		21-62-01					
403	Feb 15/2008		401	Feb 15/2009				
404	Feb 15/2009		R 402	Jun 15/2009				
405	Feb 15/2009		403	Feb 15/2009				
R 406	Jun 15/2009		R 404	Jun 15/2009				
407	Feb 15/2009		R 405	Jun 15/2009				
408	BLANK		R 406	Jun 15/2009				
21-61-33			O 407	Jun 15/2009				
401	Feb 10/2007		408	BLANK				
402	Feb 10/2007							
403	Feb 10/2007							
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Remove Conditioned Air from the Airplane TASK 21-00-00-800-802			204	HAP ALL
Supply Conditioned Air with a Cooling Pack TASK 21-00-00-800-803			204	HAP ALL
Remove Conditioned Air Supplied by a Cooling Pack TASK 21-00-00-800-804			205	HAP ALL
Supply Conditioned Air with a Ground Air Source TASK 21-00-00-800-805			206	HAP ALL
Remove Conditioned Air Supplied by a Ground Air Source TASK 21-00-00-800-806			207	HAP ALL
<u>AIR CONDITIONING - DDG MAINTENANCE PROCEDURES</u>	21-00-00		901	HAP ALL
MMEL 21-1 (DDPG) Preparation - Air Conditioning Pack(s) Inoperative TASK 21-00-00-040-803			902	HAP ALL
MMEL 21-1 (DDPG) Restoration - Air Conditioning Pack(s) Inoperative TASK 21-00-00-040-804			904	HAP ALL
MMEL 21-2 (DDPG) Preparation - Flow Control and Shutoff Valve Inoperative TASK 21-00-00-040-805			905	HAP ALL
MMEL 21-2 (DDPG) Restoration - Flow Control and Shutoff Valve(s) Inoperative TASK 21-00-00-440-801			912	HAP ALL

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M MEL 21-3 (DDPG) Restoration - Pack Trip Warning System Inoperative TASK 21-00-00-440-804			914	HAP ALL
M MEL 21-5 (DDPG) Preparation - Ram Air Modulating System Inoperative TASK 21-00-00-040-806			914	HAP ALL
M MEL 21-5 (DDPG) Restoration - Ram Air Modulation System Inoperative TASK 21-00-00-440-802			919	HAP ALL
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M MEL 21-8 (DDPG) Restoration - Air Mix Valves Inoperative TASK 21-00-00-440-805			922	HAP 101-999
M MEL 21-10 (DDPG) Preparation - Cabin Rate of Climb Indicator Inoperative TASK 21-00-00-040-834			922	HAP ALL
M MEL 21-10 (DDPG) Restoration - Cabin Rate of Climb Indicator Inoperative TASK 21-00-00-440-806			923	HAP ALL
M MEL 21-12 (DDPG) Preparation - Cabin Altitude Indicator Inoperative TASK 21-00-00-040-835			923	HAP ALL
M MEL 21-12 (DDPG) Restoration - Cabin Altitude Indicator Inoperative TASK 21-00-00-440-807			924	HAP ALL
M MEL 21-13 (DDPG) Preparation - Cabin Differential Pressure Indicator Inoperative TASK 21-00-00-040-836			925	HAP ALL

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M MEL 21-14 (DDPG) Preparation - Cabin Pressure Control System - Two Modes Inoperative TASK 21-00-00-040-807			926	HAP ALL
M MEL 21-14 (DDPG) Restoration - Cabin Pressure Control System - Two Modes Inoperative TASK 21-00-00-040-808			927	HAP ALL
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M MEL 21-15 (DDPG) Restoration - Aft Outflow Valve - Two Actuators Inoperative TASK 21-00-00-040-810			929	HAP ALL
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Duct Temperature Limit Sensor Test TASK 21-61-04-000-805-002		2	501	HAP 001-013, 015-026, 028-054
<u>DUCT OVERHEAT SWITCH - REMOVAL/ INSTALLATION</u>	21-61-05		401	HAP ALL
Duct Overheat Switch Removal TASK 21-61-05-000-801			401	HAP ALL
Duct Overheat Switch Installation TASK 21-61-05-400-801			413	HAP ALL
<u>CABIN TEMPERATURE SENSOR ASSEMBLY FILTER - MAINTENANCE PRACTICES</u>	21-61-06		201	HAP ALL
Cabin Temperature Sensor Assembly Filter Removal TASK 21-61-06-000-801			201	HAP ALL
Cabin Temperature Sensor Assembly Filter Cleaning TASK 21-61-06-100-801			208	HAP ALL
Cabin Temperature Sensor Assembly Filter Installation TASK 21-61-06-400-801			209	HAP ALL
<u>CABIN TEMPERATURE SELECTOR - REMOVAL/INSTALLATION</u>	21-61-07	1	401	HAP 101-999
Cabin Temperature Selector Removal TASK 21-61-07-000-804-001		1	401	HAP 101-999
Cabin Temperature Selector Installation TASK 21-61-07-400-804-001		1	404	HAP 101-999
<u>CABIN TEMPERATURE SELECTOR - REMOVAL/INSTALLATION</u>	21-61-07	2	401	HAP 001-013, 015-026, 028-054
Cabin Temperature Selector Removal TASK 21-61-07-000-803-002		2	401	HAP 001-013, 015-026, 028-054
Cabin Temperature Selector Installation TASK 21-61-07-400-803-002		2	405	HAP 001-013, 015-026, 028-054

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Duct Temperature Anticipator Sensor Removal TASK 21-61-08-000-801			401	HAP 101-999
Duct Temperature Anticipator Sensor Installation TASK 21-61-08-400-801			407	HAP 101-999
<u>TRIM AIR CHECK VALVE - REMOVAL/ INSTALLATION</u>	21-61-09		401	HAP 001-013, 015-026, 028-054
Trim Air Check Valve Removal TASK 21-61-09-000-801			401	HAP 001-013, 015-026, 028-054
Trim Air Check Valve Installation TASK 21-61-09-400-801			405	HAP 001-013, 015-026, 028-054
<u>TRIM AIR CHECK VALVE - INSPECTION/ CHECK</u>	21-61-09		601	HAP 001-013, 015-026, 028-054
Trim Air Check Valve Inspection TASK 21-61-09-000-802			601	HAP 001-013, 015-026, 028-054
<u>CABIN TEMPERATURE SENSOR - MAINTENANCE PRACTICES</u>	21-61-10		201	HAP ALL
Cabin Temperature Sensor Removal TASK 21-61-10-000-802			201	HAP ALL
Cabin Temperature Sensor Cleaning TASK 21-61-10-100-801			215	HAP ALL
Cabin Temperature Sensor Installation TASK 21-61-10-400-802			215	HAP ALL
<u>CABIN TEMPERATURE SENSOR - INSPECTION/CHECK</u>	21-61-10		601	HAP ALL
Cabin Temperature Sensor Resistance Check TASK 21-61-10-200-801			601	HAP 101-999
Cabin Temperature Sensor Resistance Check TASK 21-61-10-200-802			608	HAP 001-013, 015-026, 028-054

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<u>CABIN TEMPERATURE SENSOR FAN - REMOVAL/INSTALLATION</u>	21-61-11		401	HAP ALL
Cabin Temperature Sensor Fan Removal TASK 21-61-11-000-801			401	HAP ALL
Cabin Temperature Sensor Fan Installation TASK 21-61-11-400-801			416	HAP ALL
<u>TRIM AIR DUCT PRESSURE SEAL - REMOVAL/INSTALLATION</u>	21-61-12		401	HAP ALL
Trim Air Duct Pressure Seal Removal TASK 21-61-12-000-801			401	HAP 101-999
Trim Air Duct Pressure Seal Installation TASK 21-61-12-400-801			408	HAP 101-999
Trim Air Duct Pressure Seal Removal TASK 21-61-12-000-802			410	HAP 001-013, 015-026, 028-054
Trim Air Duct Pressure Seal Installation TASK 21-61-12-400-802			418	HAP 001-013, 015-026, 028-054
<u>TEMPERATURE CONTROL MODULE - REMOVAL/INSTALLATION</u>	21-61-15		401	HAP ALL
Temperature Control Module Removal TASK 21-61-15-000-801			401	HAP ALL
Temperature Control Module Installation TASK 21-61-15-400-801			404	HAP ALL
<u>PACK/ZONE TEMPERATURE CONTROLLER - REMOVAL/INSTALLATION</u>	21-61-20		401	HAP 001-013, 015-026, 028-054
Pack/Zone Temperature Controller Removal TASK 21-61-20-000-801			401	HAP 001-013, 015-026, 028-054
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Zone Trim Air Modulating Valve Installation TASK 21-61-21-400-801			405	HAP 001-013, 015-026, 028-054
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Duct Temperature Bulb Installation TASK 21-61-30-400-804-001		1	404	HAP 101-999
<u>DUCT TEMPERATURE BULB - REMOVAL/ INSTALLATION</u>	21-61-30	2	401	HAP 001-013, 015-026, 028-054
Duct Temperature Bulb Removal TASK 21-61-30-000-803-002		2	401	HAP 001-013, 015-026, 028-054
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<u>CABIN TEMPERATURE BULB - REMOVAL/ INSTALLATION</u>	21-61-31		401	HAP ALL
Cabin Temperature Bulb Removal TASK 21-61-31-000-801			401	HAP ALL
Cabin Temperature Bulb Installation TASK 21-61-31-400-801			413	HAP ALL
<u>CABIN TEMPERATURE INDICATOR - REMOVAL/INSTALLATION</u>	21-61-32		401	HAP ALL
Cabin Temperature Indicator Removal TASK 21-61-32-000-801			401	HAP ALL
Cabin Temperature Indicator Installation TASK 21-61-32-400-801			406	HAP ALL

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Air Mix Valve Position Indicator Installation TASK 21-61-33-400-801			405	HAP 101-999
<u>AIR MIX VALVE POSITION TRANSMITTER - ADJUSTMENT/TEST</u>	21-61-34		501	HAP 101-999
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Cabin Temperature Module Printed Circuit Assembly Adjustment TASK 21-61-34-820-802			506	HAP 101-999
<u>CABIN TEMPERATURE MODULE PRINTED CIRCUIT ASSEMBLY - REMOVAL/ INSTALLATION</u>	21-61-35		401	HAP 101-999
Cabin Temperature Module Printed Circuit Assembly Removal TASK 21-61-35-000-801			401	HAP 101-999
Cabin Temperature Module Printed Circuit Assembly Installation TASK 21-61-35-400-801			405	HAP 101-999
<u>TRIM AIR PRESSURE REGULATION AND SHUTOFF CONTROL - ADJUSTMENT/ TEST</u>	21-62-00		501	HAP 001-013, 015-026, 028-054
Trim Air Pressure Regulating and Shutoff Valve - Operational Test TASK 21-62-00-000-801			501	HAP 001-013, 015-026, 028-054

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<u>TRIM AIR PRESSURE REGULATING AND SHUTOFF VALVE - REMOVAL/ INSTALLATION</u>	21-62-01		401	HAP 001-013, 015-026, 028-054
Trim Air Pressure Regulating and Shutoff Valve Removal TASK 21-62-01-000-801			401	HAP 001-013, 015-026, 028-054
Trim Air Pressure Regulating and Shutoff Valve Installation TASK 21-62-01-400-801			405	HAP 001-013, 015-026, 028-054

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## AIR CONDITIONING - GENERAL - MAINTENANCE PRACTICES

### 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. References

Reference	Title
SL 737-21-053	Service Letter

B. 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 (SL 737-21-053). To supply conditioned air, do this task: Supply Conditioned Air with a Ground Air Source, TASK 21-00-00-800-805.

C. Procedure

SUBTASK 21-00-00-860-001

- (1) Do one of these tasks to supply conditioned air to the airplane:
  - (a) Do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.
  - (b) Do this task: Supply Conditioned Air with a Ground Air Source, TASK 21-00-00-800-805.

————— **END OF TASK** —————

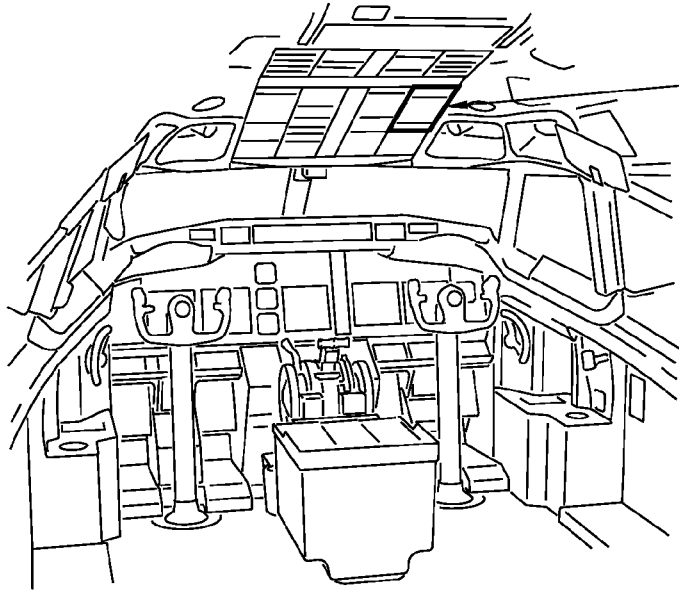
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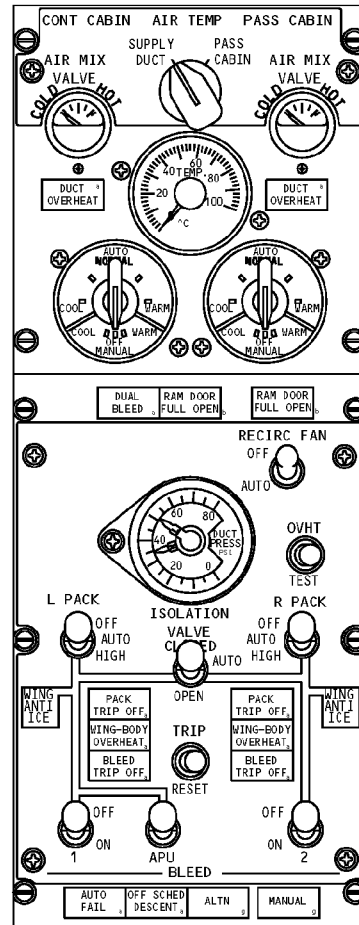
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AIR CONDITIONING  
MODULE

SEE (A)

**FLIGHT COMPARTMENT**



**AIR CONDITIONING  
MODULE**

(A)

**Air Conditioning - General - Maintenance Practices  
Figure 201 (Sheet 1 of 2)/21-00-00-990-801**

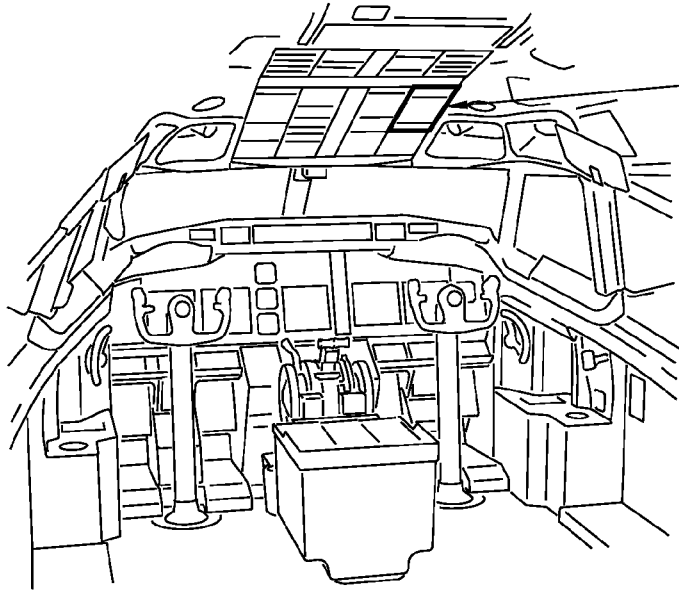
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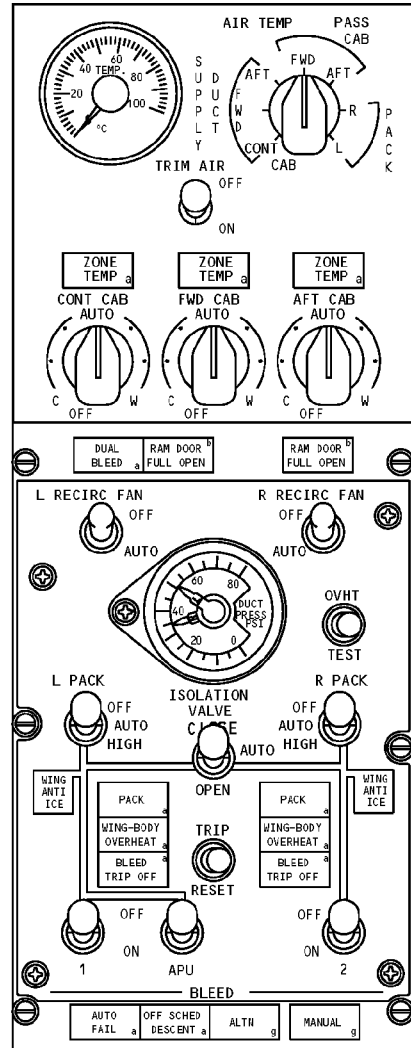
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**FLIGHT COMPARTMENT**

AIR CONDITIONING  
MODULE

SEE (A)



**AIR CONDITIONING  
MODULE**

(A)

**Air Conditioning - General - Maintenance Practices  
Figure 201 (Sheet 2 of 2)/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

Table with 2 columns: Reference, Title. Rows include 24-22-00-860-811 (Supply Electrical Power), 36-00-00-860-801 (Supply Pressure to the Pneumatic System), and SL 737-21-053 (Service Letter).

B. Location Zones

Table with 2 columns: Zone, Area. Rows include 211 (Flight Compartment - Left) and 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 (SL 737-21-053). 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 per (SL 737-21-053).

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.

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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.
  - (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

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SUBTASK 21-00-00-860-103

- (1) Turn these selectors on the P5-17 cabin temperature control panel to the AUTO NORMAL position:
  - (a) CONT CABIN
  - (b) PASS CABIN

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SUBTASK 21-00-00-860-104

- (2) Turn these selectors on the P5-17 cabin temperature control panel to the AUTO position:
  - (a) CONT CAB
  - (b) FWD CAB
  - (c) AFT CAB

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SUBTASK 21-00-00-860-007

- (3) 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)

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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** —————

**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.

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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 cooling packs are off.

SUBTASK 21-00-00-860-013

- (6) 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.
(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

Table with 2 columns: Zone, Area. Row 1: 100, Lower Half of Fuselage

B. Access Panels

Table with 2 columns: Number, Name/Location. Row 1: 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:

Table with 2 columns: Number, Name/Location. Row 1: 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

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- (9) MMEL 21-8 (DDPG) Preparation - Air Mix Valves Inoperative
- (10) MMEL 21-8 (DDPG) Restoration - Air Mix Valves Inoperative

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- (11) MMEL 21-10 (DDPG) Preparation - Cabin Rate of Climb Indicator Inoperative
- (12) MMEL 21-10 (DDPG) Restoration - Cabin Rate of Climb Indicator Inoperative
- (13) MMEL 21-12 (DDPG) Preparation - Cabin Altitude Indicator Inoperative
- (14) MMEL 21-12 (DDPG) Restoration - Cabin Altitude Indicator Inoperative
- (15) MMEL 21-13 (DDPG) Preparation - Cabin Differential Pressure Indicator Inoperative
- (16) MMEL 21-13 (DDPG) Restoration - Cabin Differential Pressure Indicator Inoperative
- (17) MMEL 21-14 (DDPG) Preparation - Cabin Pressure Control System - Two Modes Inoperative
- (18) MMEL 21-14 (DDPG) Restoration - Cabin Pressure Control System - Two Modes Inoperative
- (19) MMEL 21-15 (DDPG) Preparation - Aft Outflow Valve - Two Actuators Inoperative
- (20) MMEL 21-15 (DDPG) Restoration - Aft Outflow Valve - Two Actuators Inoperative
- (21) MMEL 21-16 (DDPG) Preparation - Positive Pressure Relief Valves - One Valve Inoperative
- (22) MMEL 21-16 (DDPG) Restoration - Positive Pressure Relief Valves - One Valve Inoperative

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- (23) MMEL 21-19 (DDPG) Preparation - Passenger Cabin Temperature Control System Inoperative
- (24) MMEL 21-19 (DDPG) Restoration - Passenger Cabin Temperature Control System Inoperative
- (25) MMEL 21-21 (DDPG) Preparation - Flight Deck Temperature Control System Inoperative
- (26) MMEL 21-21 (DDPG) Restoration - Flight Deck Temperature Control System Inoperative

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- (27) MMEL 21-25 (DDPG) Preparation - Water Separator Anti-Icing Systems Inoperative

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- (28) MMEL 21-25 (DDPG) Restoration - Water Separator Anti-Icing Systems Inoperative

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- (29) MMEL 21-26 (DDPG) Preparation - Ground Preconditioned Air Connection Check Valve Inoperative  
(30) MMEL 21-26 (DDPG) Restoration - Ground Preconditioned Air Connection Check Valve Inoperative  
(31) MMEL 21-27 (DDPG) Preparation - Electrical/Electronic Equipment Cooling Blowers Inoperative  
(32) MMEL 21-27 (DDPG) Restoration - Electrical/Electronic Equipment Cooling Blowers Inoperative

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- (33) MMEL 21-33 (DDPG) Preparation - Pack Temperature Control Valves Inoperative  
(34) MMEL 21-33 (DDPG) Restoration - Pack Temperature Control Valves Inoperative  
(35) MMEL 21-34 (DDPG) Preparation - Standby Pack Temperature Control Valves Inoperative  
(36) MMEL 21-34 (DDPG) Restoration - Standby Pack Temperature Control Valves Inoperative  
(37) MMEL 21-35 (DDPG) Preparation - Trim Air Pressure Regulating and Shutoff Valve Inoperative  
(38) MMEL 21-35 (DDPG) Restoration - Trim Air Pressure Regulating and Shutoff Valve Inoperative  
(39) MMEL 21-36 (DDPG) Preparation - Zone Trim Air Modulating Valve Inoperative  
(40) MMEL 21-36 (DDPG) Restoration - Zone Trim Air Modulating Valve Inoperative

#### HAP ALL

- (41) MMEL 21-38 (DDPG) Preparation - Outflow Valve Position Indicator Inoperative  
(42) MMEL 21-38 (DDPG) Restoration - Outflow Valve Position Indicator Inoperative

#### HAP 001-013, 015-026, 028-054

- (43) MMEL 21-39 (DDPG) Preparation - Trim Air Check Valve Inoperative  
(44) MMEL 21-39 (DDPG) Restoration - Trim Air Check Valve Inoperative

#### HAP ALL

- (45) MMEL 21-40 (DDPG) Preparation - Equipment Cooling Overboard Exhaust Valve Inoperative  
(46) MMEL 21-40 (DDPG) Restoration - Equipment Cooling Overboard Exhaust Valve Inoperative  
(47) MMEL 21-41 (DDPG) Preparation - Door Area Heater Systems Inoperative  
(48) MMEL 21-41 (DDPG) Restoration - Door Area Heater Systems Inoperative  
(49) MMEL 21-42 (DDPG) Preparation - Equipment Cooling Low Flow Detector System Inoperative  
(50) MMEL 21-42 (DDPG) Restoration - Equipment Cooling Low Flow Detector System Inoperative  
(51) MMEL 21-43 (DDPG) Preparation - Equipment Cooling Air Filter Removal  
(52) MMEL 21-43 (DDPG) Restoration - Equipment Cooling Air Filter Removal

#### 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.

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## 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. One Air Conditioning Pack Inoperative - Deactivation Procedure

SUBTASK 21-00-00-040-045

- (1) The flow control and shutoff valve for the applicable pack is usually Closed but not necessary. To close the valve, do this task: MMEL 21-2 (DDPG) Preparation - Flow Control and Shutoff Valve Inoperative, TASK 21-00-00-040-805.

SUBTASK 21-00-00-880-008

- (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.

SUBTASK 21-00-00-710-047

- (3) Put these switches on the P5-10 air conditioning panel to the following positions:
  - (a) Operate the applicable pack.
    - NOTE: Operate the Pack in high to get the maximum cooling while the Airplane is on the ground.
  - (b) Put the right recirculation fan switch to the OFF position.

## D. 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	AIR CONDITIONING OVERBOARD EXHAUST VALVE RECONFIG CONT

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.
    - NOTE: If the airplane has the optional Passenger Cabin Telecommunications System installed on the E6 rack, then put the P6-1 panel Entertainment Pass Tel Ctu circuit breaker to the OPEN position and attach a DO-NOT-CLOSE tag.
  - (c) Advise dispatch of unpressurized flight. Maximum altitude for flight planning will be affected.

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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. M MEL 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. One Air Conditioning Pack Inoperative - Reactivation Procedure

SUBTASK 21-00-00-860-122

- (1) Put the flow control and shutoff valve in its usual condition. To put the valve in its usual condition, do this task: M MEL 21-2 (DDPG) Restoration - Flow Control and Shutoff Valve(s) Inoperative, TASK 21-00-00-440-801.

#### E. 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	AIR CONDITIONING OVERBOARD EXHAUST 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: M MEL 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.

#### F. 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.

**NOTE:** If the airplane has the optional Passenger Cabin Telecommunications System installed on the E6 rack, then remove the DO-NOT-CLOSE tag from the P6-1 panel Entertainment Pass Tel Ctu circuit breaker and return the circuit breaker to the CLOSED 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. M MEL 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

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### 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 21-00-00-010-003

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

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-00-00-010-004

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

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

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

SUBTASK 21-00-00-020-002

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

SUBTASK 21-00-00-020-003

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

SUBTASK 21-00-00-020-021

- (3) Disconnect and stow both D488 and D492 electrical connectors to deactivate the left and right flow control and shutoff valves. Doing so will prevent the operation of both packs and prevent the airplane from being pressurized.

SUBTASK 21-00-00-040-043

- (4) 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.
- (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.

SUBTASK 21-00-00-040-044

- (5) 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.

SUBTASK 21-00-00-980-001

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

- (a) Pull out the manual control shaft.

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(b) Push in the manual control shaft.

SUBTASK 21-00-00-410-001

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

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-00-00-410-002

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

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

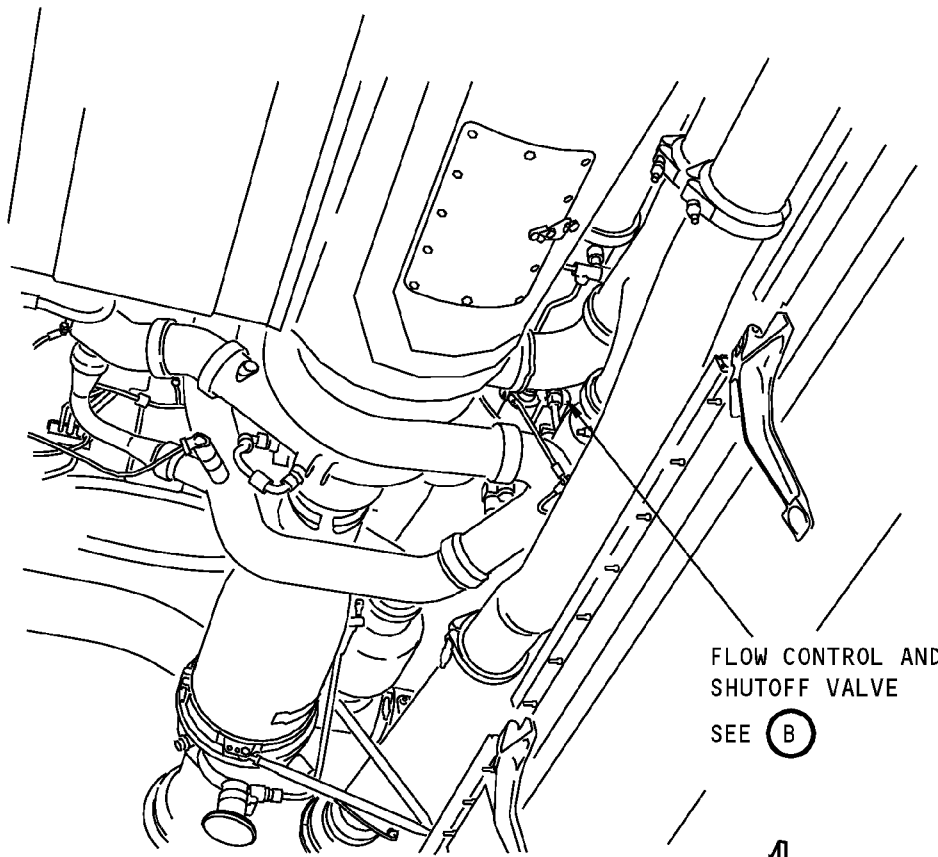
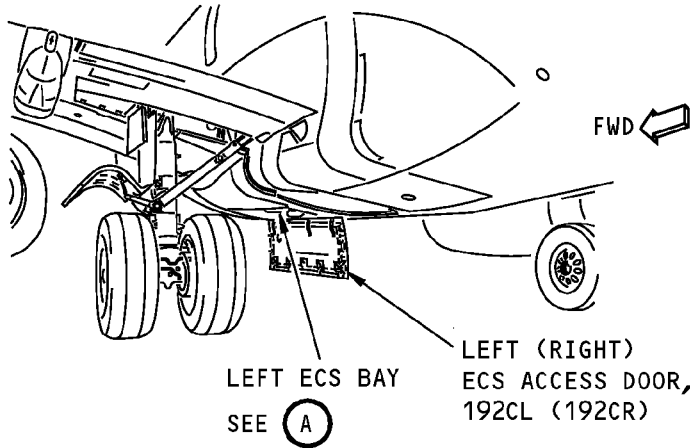
————— **END OF TASK** —————

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**LEFT ECS BAY  
(RIGHT ECS BAY IS OPPOSITE)**

(A)

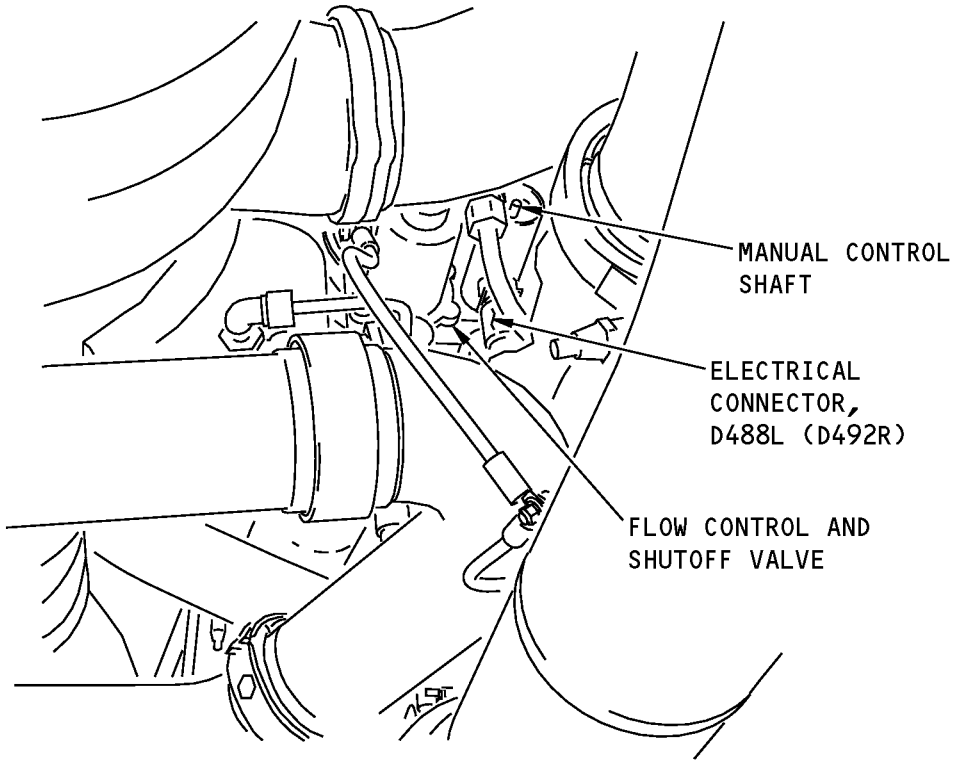
**Flow Control and Shutoff Valve Deactivation  
Figure 901 (Sheet 1 of 4)/21-00-00-990-802**

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**FLOW CONTROL  
AND SHUTOFF VALVE**

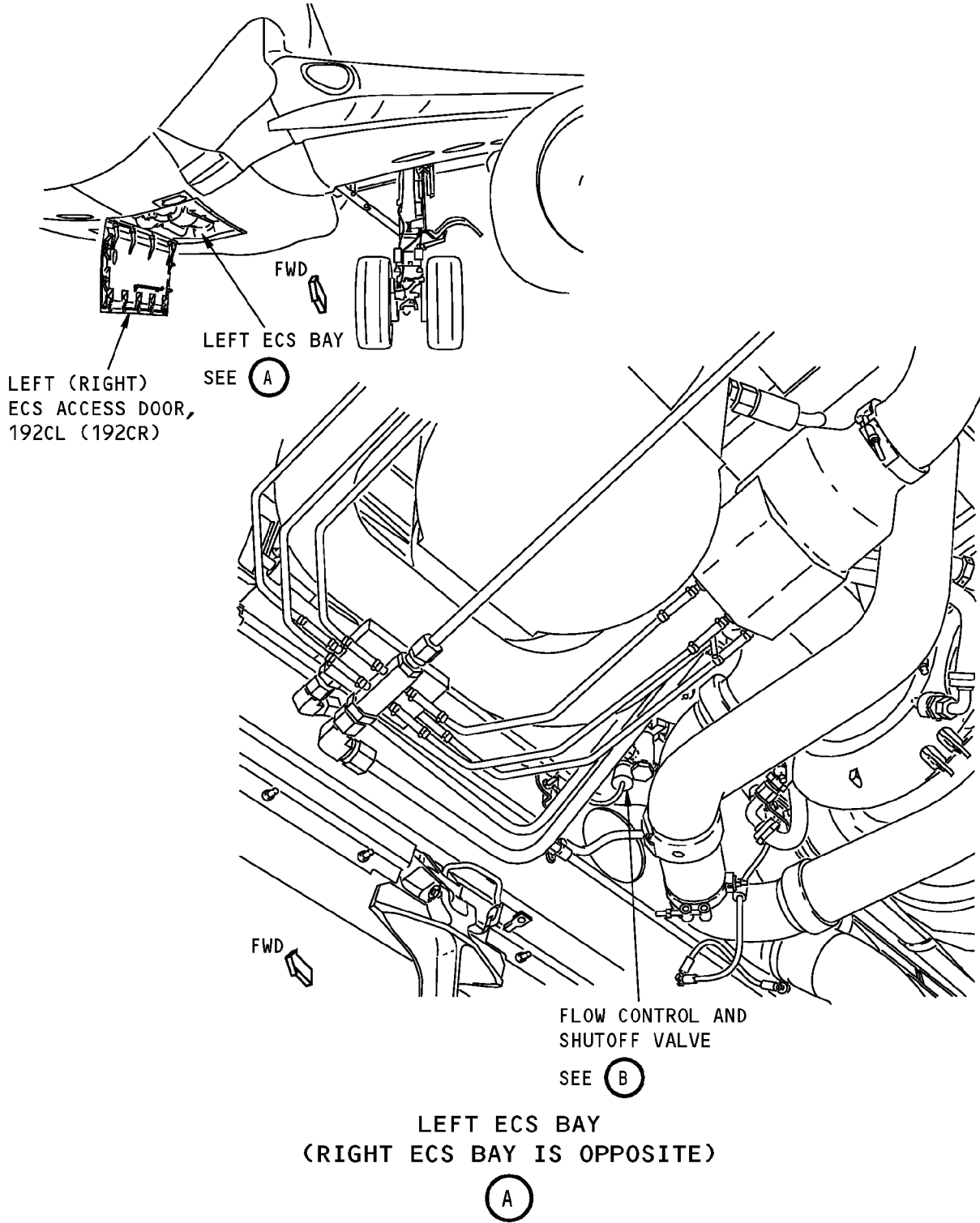
FWD

(B)

**Flow Control and Shutoff Valve Deactivation  
Figure 901 (Sheet 2 of 4)/21-00-00-990-802**

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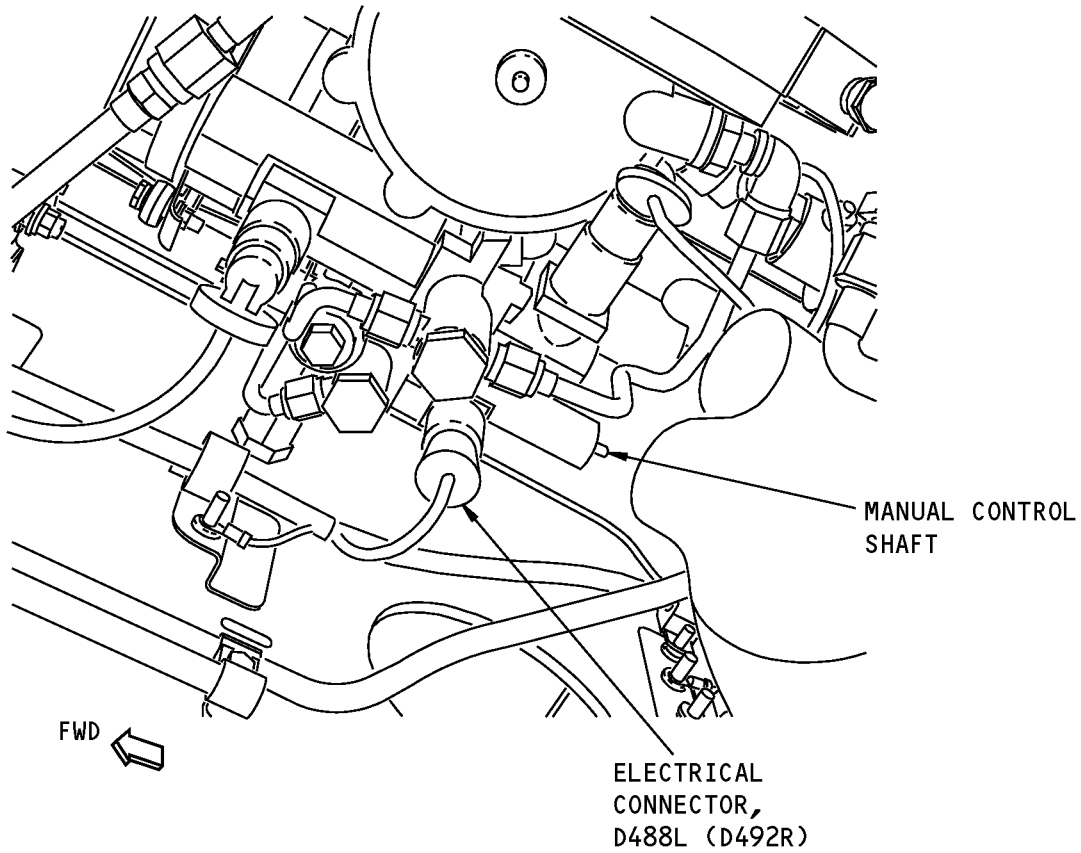
**Flow Control and Shutoff Valve Deactivation  
Figure 901 (Sheet 3 of 4)/21-00-00-990-802**

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HAP 001-013, 015-026, 028-054

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**FLOW CONTROL  
AND SHUTOFF VALVE**

**B**

**Flow Control and Shutoff Valve Deactivation  
Figure 901 (Sheet 4 of 4)/21-00-00-990-802**

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HAP 001-013, 015-026, 028-054

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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

Table with 2 columns: Reference, Title. Rows include 24-22-00-860-811, 36-00-00-860-801, 36-00-00-860-806.

C. Location Zones

Table with 2 columns: Zone, Area. Rows include 192, 212.

D. Access Panels

Table with 2 columns: Number, Name/Location. Rows include 192CL, 192CR, 192DR.

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 21-00-00-010-005

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

Table with 2 columns: Number, Name/Location. Row includes 192CL, Air Conditioning Access Door.

SUBTASK 21-00-00-010-006

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

Table with 2 columns: Number, Name/Location. Rows include 192CR, 192DR.

F. Flow Control Valve and Shutoff Valve Reactivation

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.

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SUBTASK 21-00-00-440-003

- (2) 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.

SUBTASK 21-00-00-020-004

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

SUBTASK 21-00-00-020-005

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

## 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.

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 —————

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## TASK 21-00-00-440-804

### 7. M MEL 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: M MEL 21-1 (DDPG) Restoration - Air Conditioning Pack(s) Inoperative, TASK 21-00-00-040-804.

**END OF TASK**

## TASK 21-00-00-040-806

### 8. M MEL 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.

#### B. Location Zones

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

#### C. Access Panels

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

#### D. Prepare for Deactivation

SUBTASK 21-00-00-860-034

- (1) When the ram air inlet door 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	C00399	AIR CONDITIONING RAM AIR MOD LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT
<b>HAP 001-013, 015-026, 028-054</b>			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT

**HAP ALL**

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SUBTASK 21-00-00-860-035

- (2) When the ram air inlet door for the right cooling pack will be deactivated, do this step:
  - (a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
<b>HAP 101-999</b>			
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT
<b>HAP 001-013, 015-026, 028-054</b>			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT
<b>HAP ALL</b>			

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:

<u>Number</u>	<u>Name/Location</u>
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:

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

## E. Ram Air Modulating System Deactivation (Secured Open)

SUBTASK 21-00-00-020-006

- (1) Disconnect and stow the electrical connector [1].

SUBTASK 21-00-00-020-007

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

SUBTASK 21-00-00-020-008

- (3) Retain the bolt [2], the washers [3], and the nut [4].

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.
  - (b) Install the bolt [5] through the rigging pin holes.
 

**NOTE:** 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. The shank end must be drilled for a cotter pin.
  - (c) Install the nut [6] and cotter pin [7] on the bolt [5].

**NOTE:** Use a BACN10JD3 nut or an equivalent nut. Use a MS24665-105 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.

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SUBTASK 21-00-00-420-001

(5) Safety wire the actuator rod end to the bellcrank.

SUBTASK 21-00-00-860-036

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

<u>Number</u>	<u>Name/Location</u>
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:

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

SUBTASK 21-00-00-860-038

(8) If you deactivated the ram air inlet door 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT
<b>HAP 001-013, 015-026, 028-054</b>			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT
<b>HAP ALL</b>			

SUBTASK 21-00-00-860-039

(9) If you deactivated the ram air inlet door 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
<b>HAP 101-999</b>			
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT
<b>HAP 001-013, 015-026, 028-054</b>			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT
<b>HAP ALL</b>			

————— END OF TASK —————

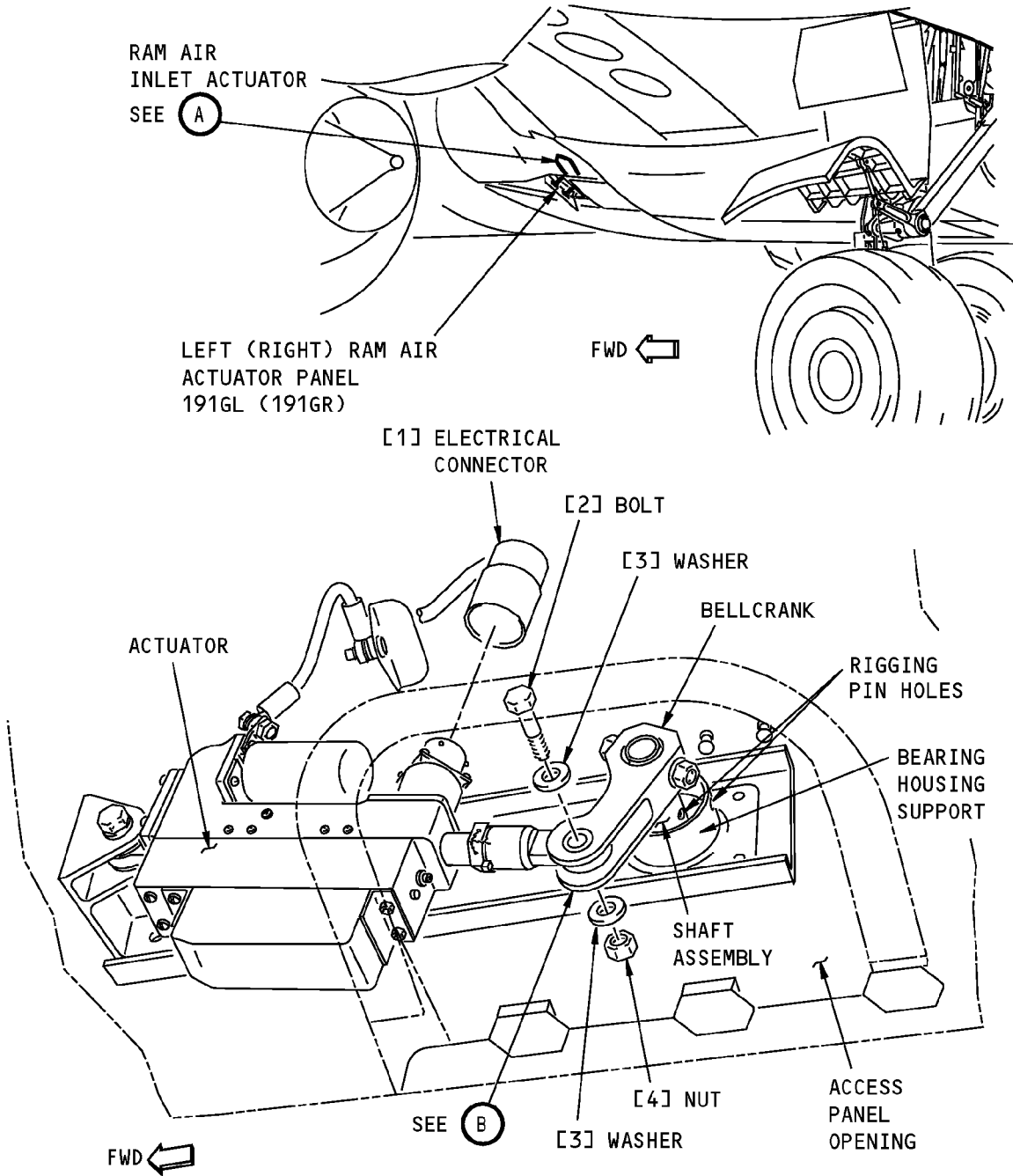
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**LEFT RAM AIR INLET ACTUATOR  
(RIGHT RAM AIR INLET ACTUATOR IS OPPOSITE)**

(A)

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

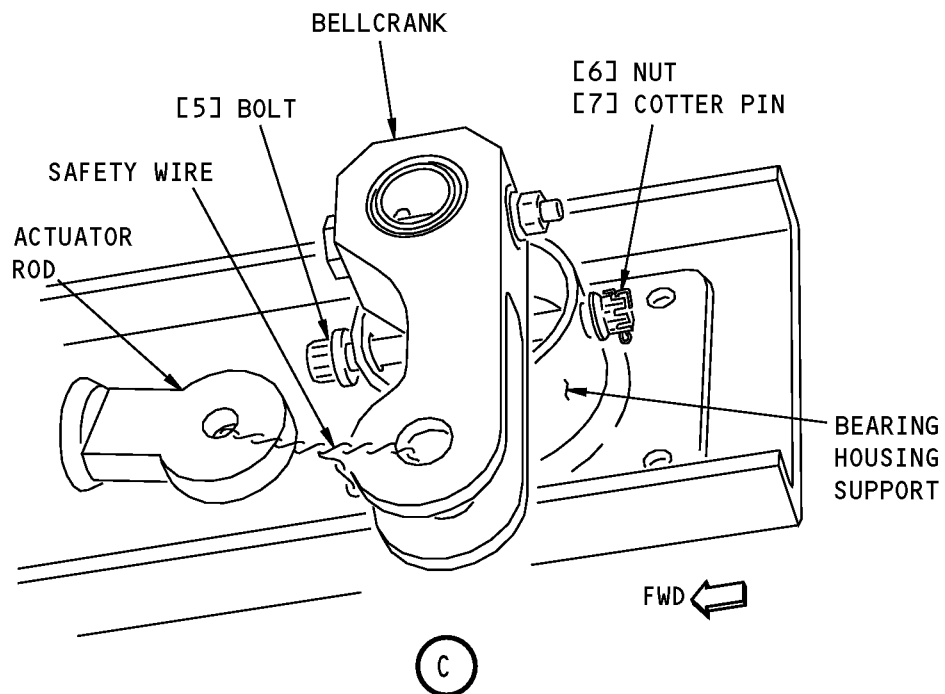
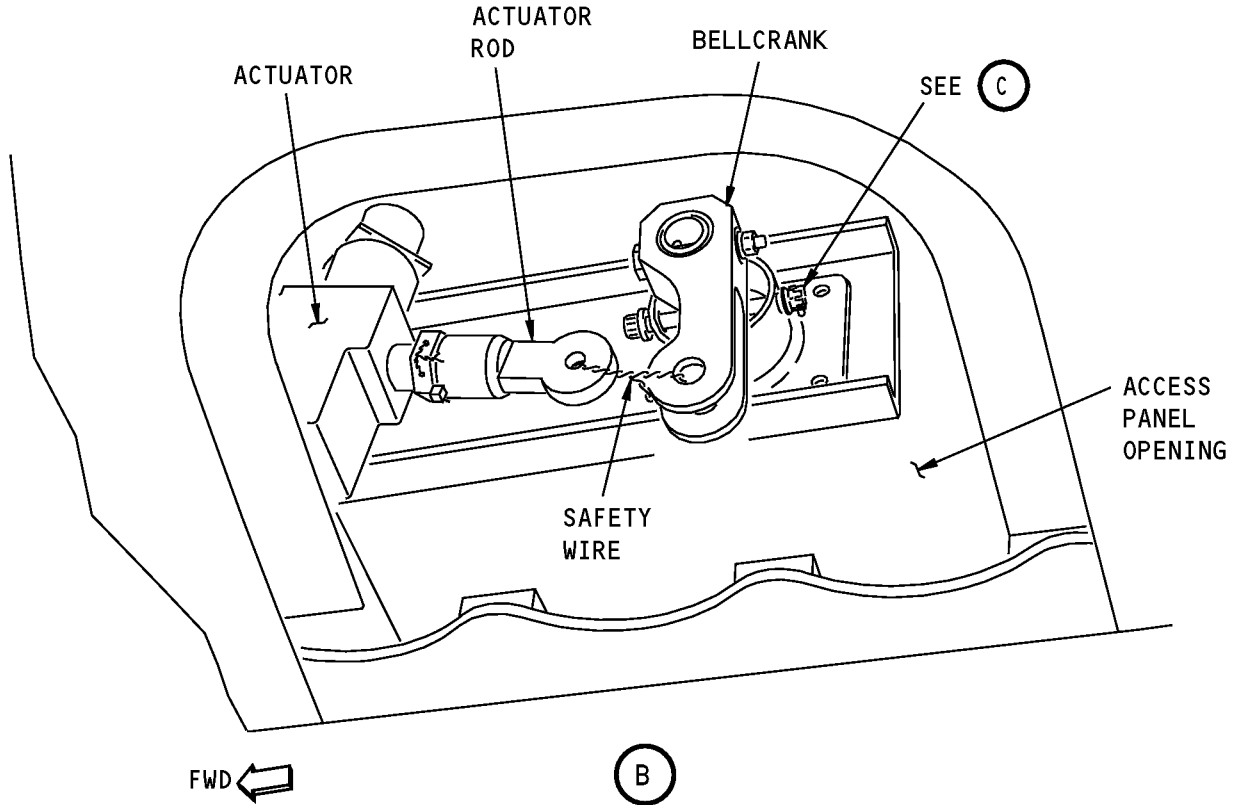
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**Ram Air Modulation System Deactivation  
Figure 902 (Sheet 2 of 2)/21-00-00-990-803**

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#### TASK 21-00-00-440-802

#### 9. MEL 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
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

##### 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 21-00-00-860-041

- (2) If the ram air inlet door for the left cooling 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	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT
<b>HAP 001-013, 015-026, 028-054</b>			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT

**HAP ALL**

SUBTASK 21-00-00-860-042

- (3) If the ram air inlet door for the right cooling 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	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
<b>HAP 101-999</b>			
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

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## HAP 101-999 (Continued)

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-054</b>			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT
<b>HAP ALL</b>			

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:

<u>Number</u>	<u>Name/Location</u>
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:

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

### F. Ram Air Modulating System Reactivation

SUBTASK 21-00-00-420-002

(1) Remove the safety wire from the actuator rod end and the bellcrank.

SUBTASK 21-00-00-820-001

(2) Remove the cotter pin [7], the nut [6], and the bolt [5] from the rigging pin holes.

SUBTASK 21-00-00-820-002

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

SUBTASK 21-00-00-420-003

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

SUBTASK 21-00-00-420-004

(5) Install the electrical connector [1] on the actuator.

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:

<u>Number</u>	<u>Name/Location</u>
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:

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

SUBTASK 21-00-00-860-045

(8) If the ram air inlet door for the left cooling pack was put back to its usual condition, do this step:

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

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Rows include HAP 101-999, HAP 001-013, 015-026, 028-054, and HAP ALL.

SUBTASK 21-00-00-860-046

- (9) If the ram air inlet door for the right cooling pack was put back to its usual condition, do this step:

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

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Rows include HAP 101-999, HAP 001-013, 015-026, 028-054, and HAP ALL.

G. 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

HAP 101-999

TASK 21-00-00-040-833

10. MMEL 21-8 (DDPG) Preparation - Air Mix Valves Inoperative

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the air mix valves inoperative.

B. Location Zones

Table with 2 columns: Zone, Area. Rows include 192 Lower Wing-To-Body Fairing - Under Wing Box and 212 Flight Compartment - Right.

C. Prepare for Unpressurized Flight.

SUBTASK 21-00-00-040-034

- (1) For dispatch with both air mix 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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HAP 101-999 (Continued)

TASK 21-00-00-440-805

11. M MEL 21-8 (DDPG) Restoration - Air Mix Valves Inoperative

A. General

(1) This task puts the airplane to its usual condition after operation with the air mix valves inoperative.

B. Location Zones

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

C. Both Air Mix Valves Reactivation

SUBTASK 21-00-00-840-003

(1) With both air mix valves inoperative, do this task: MMEL 21-1 (DDPG) Restoration - Air Conditioning Pack(s) Inoperative, TASK 21-00-00-040-804.

HAP ALL

END OF TASK

TASK 21-00-00-040-834

12. M MEL 21-10 (DDPG) Preparation - Cabin Rate of Climb Indicator Inoperative

A. General

(1) This task gives the maintenance steps (1) 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.

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

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST 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

13. 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	AIR CONDITIONING OVERBOARD EXHAUST 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

14. 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	AIR CONDITIONING OVERBOARD EXHAUST 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

### 15. 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

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#### C. Cabin Altitude Indicator Restoration.

SUBTASK 21-00-00-760-002

- (1) Close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST VALVE RECONFIG CONT

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

#### 16. 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

<u>Zone</u>	<u>Area</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST VALVE RECONFIG CONT

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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

17. 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.

B. Location Zones

Table with 2 columns: Zone, Area. Rows: 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

Table with 4 columns: Row, Col, Number, Name. Row: D, 2, C01445, AIR CONDITIONING OVERBOARD EXHAUST 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

18. MMEL 21-14 (DDPG) Preparation - Cabin Pressure Control System - Two Modes Inoperative

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with two modes of the cabin pressure control system inoperative.
(2) The cabin pressure control system has two automatic modes and one manual mode. When two of the three modes do not operate, the airplane must be prepared for unpressurized flight.

B. Location Zones

Table with 2 columns: Zone, Area. Rows: 145 Aft Cargo Compartment Equipment Bay - Left, 212 Flight Compartment - Right

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C. Prepare for Unpressurized Flight.

SUBTASK 21-00-00-860-048

- (1) Do this task: MMEL 21-15 (DDPG) Preparation - Aft Outflow Valve - Two Actuators Inoperative, TASK 21-00-00-040-809.

END OF TASK

TASK 21-00-00-040-808

19. MMEL 21-14 (DDPG) Restoration - Cabin Pressure Control System - Two Modes Inoperative

A. General

- (1) This task puts the airplane to its usual condition usual after operation with two modes of the cabin pressure control system Inoperative.

B. Location Zones

Table with 2 columns: Zone, Area. Rows: 145 Aft Cargo Compartment Equipment Bay - Left, 212 Flight Compartment - Right

C. 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.

END OF TASK

TASK 21-00-00-040-809

20. 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

Table with 2 columns: Reference, Title. Rows: 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

Table with 2 columns: Zone, Area. Rows: 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.

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- (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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST 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%.

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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST 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:

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- (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	AIR CONDITIONING OVERBOARD EXHAUST VALVE RECONFIG CONT

————— END OF TASK —————

#### TASK 21-00-00-040-810

### 21. 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.

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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	AIR CONDITIONING OVERBOARD EXHAUST 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

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

(Figure 903)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with One Positive Pressure Relief Valve Inoperative.

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.

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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.

————— **END OF TASK** —————

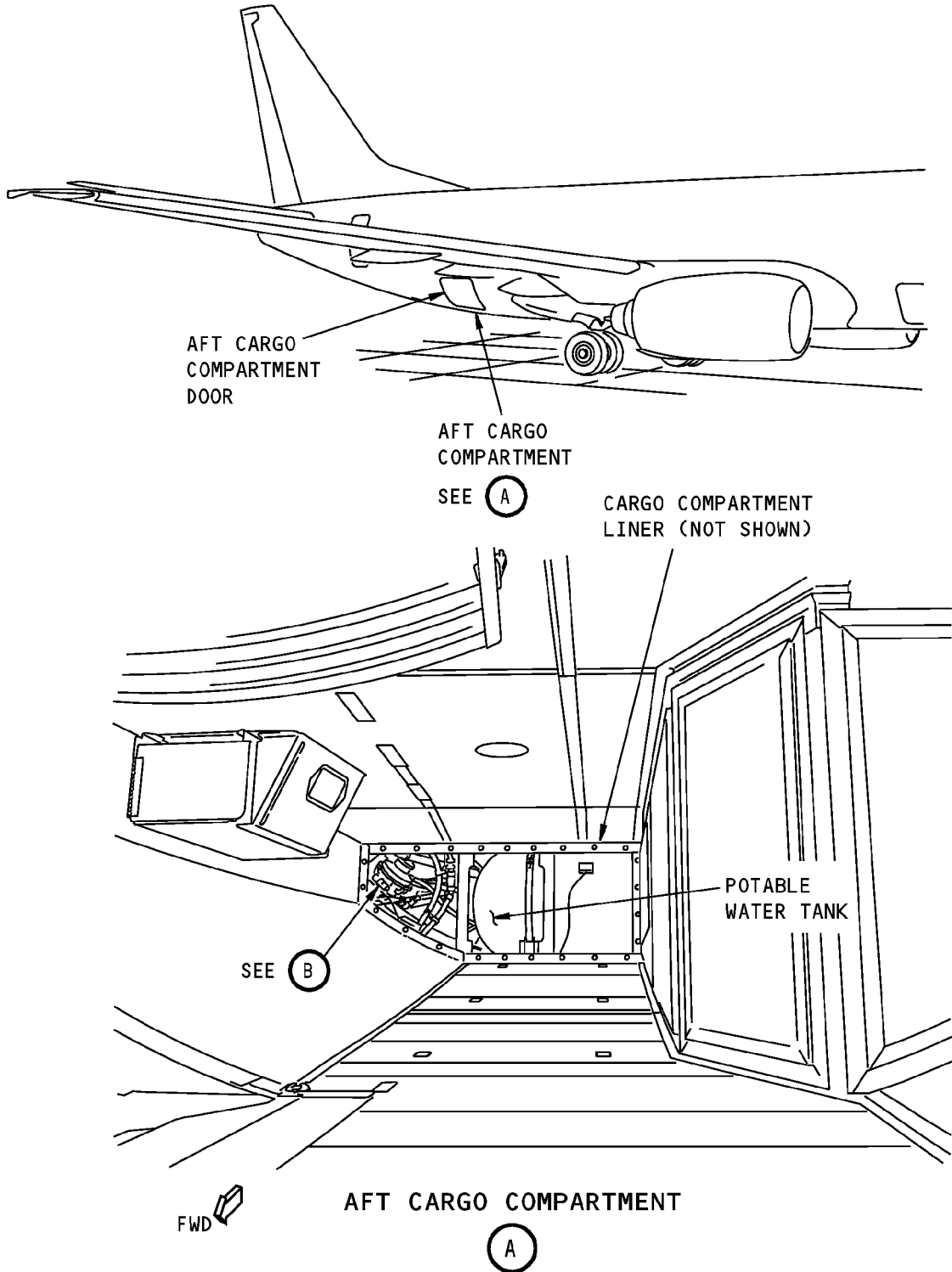
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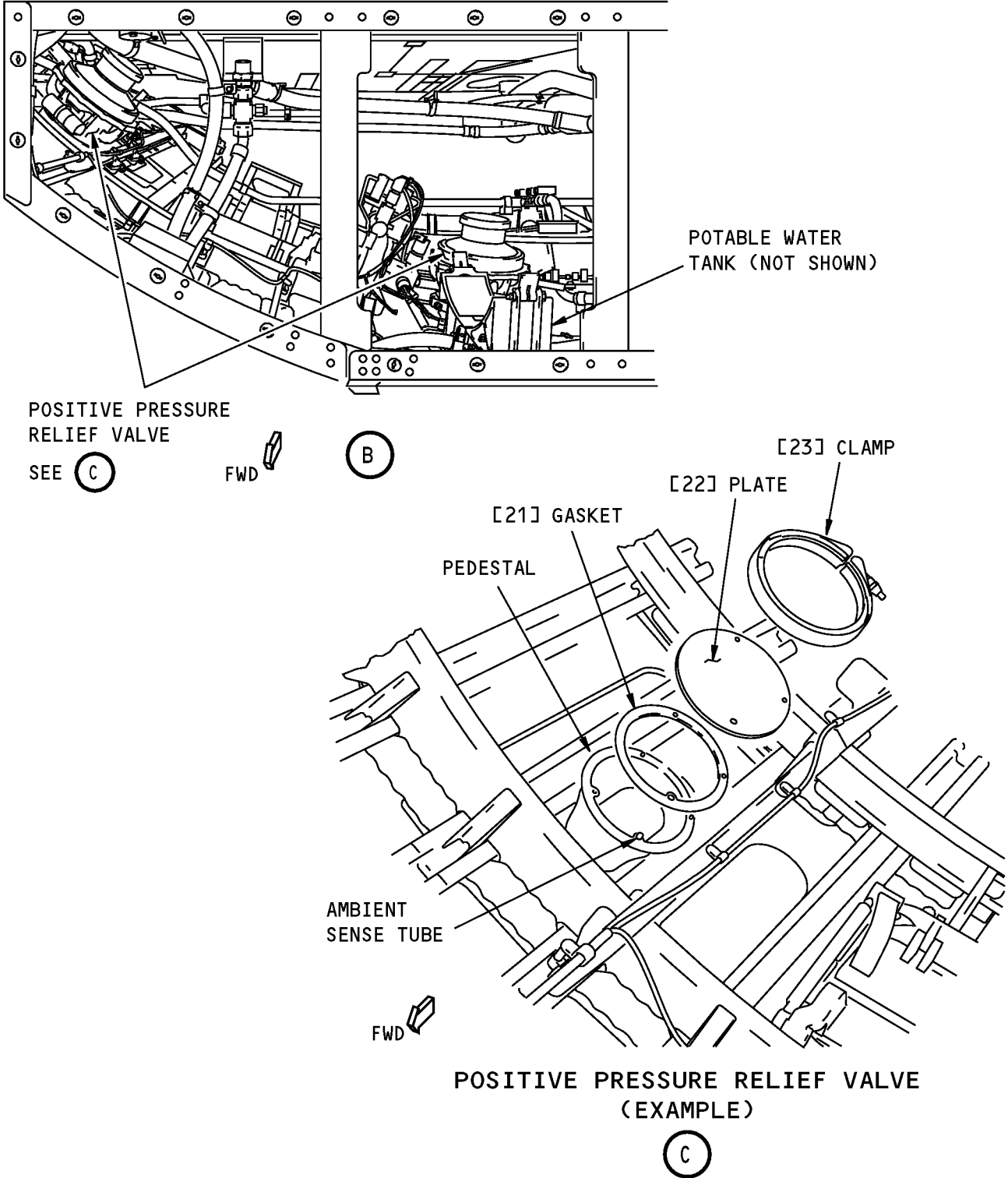


**Positive Pressure Relief Valve Deactivation  
Figure 903 (Sheet 1 of 2)/21-00-00-990-804**

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**Positive Pressure Relief Valve Deactivation  
Figure 903 (Sheet 2 of 2)/21-00-00-990-804**

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TASK 21-00-00-440-803

23. M MEL 21-16 (DDPG) Restoration - Positive Pressure Relief Valves - One Valve Inoperative

(Figure 903)

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.

END OF TASK

HAP 001-013, 015-026, 028-054

TASK 21-00-00-040-816

24. M MEL 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.

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HAP 001-013, 015-026, 028-054 (Continued)

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 21-00-00-040-004

- (1) To close the trim air pressure regulating and shutoff valve, do this task: MMEL 21-35 (DDPG) Preparation - Trim Air Pressure Regulating and Shutoff Valve Inoperative, TASK 21-00-00-040-820.

D. Zone Trim Air Modulating Valve Deactivation

SUBTASK 21-00-00-040-005

- (1) To close 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

25. 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 21-00-00-040-007

- (1) To return the trim air pressure regulating and shutoff valve to its usual condition, do this task: MMEL 21-35 (DDPG) Restoration - Trim Air Pressure Regulating and Shutoff Valve Inoperative, TASK 21-00-00-040-821.

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.

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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

26. 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

Table with 2 columns: Zone, Area. Row 1: 192, Lower Wing-To-Body Fairing - Under Wing Box. Row 2: 212, Flight Compartment - Right.

C. Trim Air Pressure Regulating and Shutoff Valve Deactivation

SUBTASK 21-00-00-040-009

(1) To close the trim air pressure regulating and shutoff valve, do this task: MMEL 21-35 (DDPG) Preparation - Trim Air Pressure Regulating and Shutoff Valve Inoperative, TASK 21-00-00-040-820.

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.

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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

### 27. M MEL 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 21-00-00-040-012

- (1) To return the trim air pressure regulating and shutoff valve to its usual condition, do this task: M MEL 21-35 (DDPG) Restoration - Trim Air Pressure Regulating and Shutoff Valve Inoperative, TASK 21-00-00-040-821.

#### 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: M MEL 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:
  - (a) Put the L PACK switch to the AUTO position.

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- (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

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TASK 21-00-00-040-837

28. MMEL 21-25 (DDPG) Preparation - Water Separator Anti-Icing Systems Inoperative

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the water separator anti-icing 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 21-00-00-040-038

- (1) For dispatch with both water separator anti-icing 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 21-00-00-440-809

29. MMEL 21-25 (DDPG) Restoration - Water Separator Anti-Icing Systems Inoperative

A. General

- (1) This task puts the airplane to its usual condition after operation with the water separator anti-icing systems inoperative.

B. Location Zones

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

C. Both Water Separator Anti-Icing Systems Reactivation

SUBTASK 21-00-00-840-004

- (1) With both water separator anti-icing systems inoperative, do this task: MMEL 21-1 (DDPG) Restoration - Air Conditioning Pack(s) Inoperative, TASK 21-00-00-040-804.

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END OF TASK

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TASK 21-00-00-040-838

30. 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

Table with 2 columns: Zone, Area. Rows: 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

Table with 4 columns: Row, Col, Number, Name. Row: D, 2, C01445, AIR CONDITIONING OVERBOARD EXHAUST 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

TASK 21-00-00-440-810

31. 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

Table with 2 columns: Zone, Area. Rows: 118 (Electrical and Electronics Compartment - Right), 122 (Forward Cargo Compartment - Right)

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Zone	Area
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	AIR CONDITIONING OVERBOARD EXHAUST 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**

**32. 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 associated SUPPLY or EXHAUST switch to the operative fan position (NORM or ALTN).

(a) Make sure that the associated SUPPLY or EXHAUST switch OFF light goes off.

————— **END OF TASK** —————

**TASK 21-00-00-440-811**

**33. 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

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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 —————

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**TASK 21-00-00-040-840**

**34. M MEL 21-33 (DDPG) Preparation - Pack Temperature Control Valves Inoperative**

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the 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 Unpressurized Flight.

SUBTASK 21-00-00-040-040

- (1) For dispatch with 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 —————

**TASK 21-00-00-440-812**

**35. M MEL 21-33 (DDPG) Restoration - Pack Temperature Control Valves Inoperative**

A. General

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

B. Location Zones

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

C. Both Pack Temperature Control Valves Reactivation

SUBTASK 21-00-00-040-041

- (1) With 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**

**36. M MEL 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.

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B. Location Zones

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

C. Prepare for Unpressurized Flight.

SUBTASK 21-00-00-040-042

- (1) For dispatch with 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

37. 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

C. Both Standby Pack Temperature Control Valves Reactivation

SUBTASK 21-00-00-840-005

- (1) With 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

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

(Figure 904)

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

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#### D. Access Panels

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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.

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SUBTASK 21-00-00-010-015

(3) Close these panels in the specified sequence:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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** —————

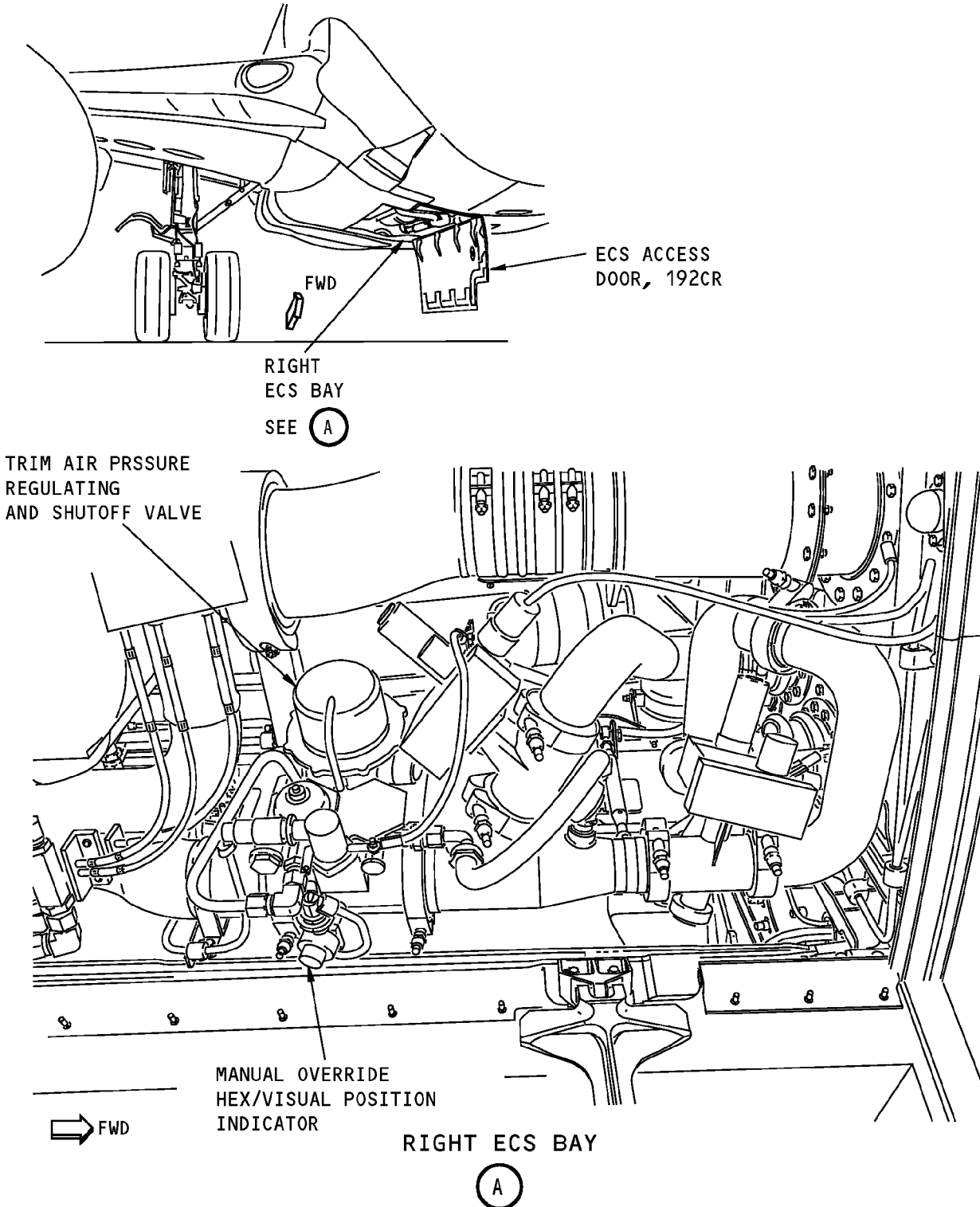
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**Trim Air Pressure Regulating and Shutoff Valve Deactivation  
Figure 904/21-00-00-990-805**

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**TASK 21-00-00-040-821**

**39. M MEL 21-35 (DDPG) Restoration - Trim Air Pressure Regulating and Shutoff Valve Inoperative**

(Figure 904)

**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	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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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HAP 001-013, 015-026, 028-054 (Continued)

## TASK 21-00-00-040-822

### 40. M MEL 21-36 (DDPG) Preparation - Zone Trim Air Modulating Valve Inoperative

(Figure 905)

#### 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
192CL	Air Conditioning Access Door
192CR	Air Conditioning 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 21-00-00-860-081

- (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 21-00-00-860-082

- (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 21-00-00-010-017

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

Number	Name/Location
192CL	Air Conditioning Access Door

SUBTASK 21-00-00-010-018

- (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:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

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

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.

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

SUBTASK 21-00-00-040-019

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

SUBTASK 21-00-00-010-019

- (3) When the zone trim air modulating valve in the left ECS bay was deactivated, close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

SUBTASK 21-00-00-860-083

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

SUBTASK 21-00-00-860-084

- (6) 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

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(c) BLEED APU

————— END OF TASK —————

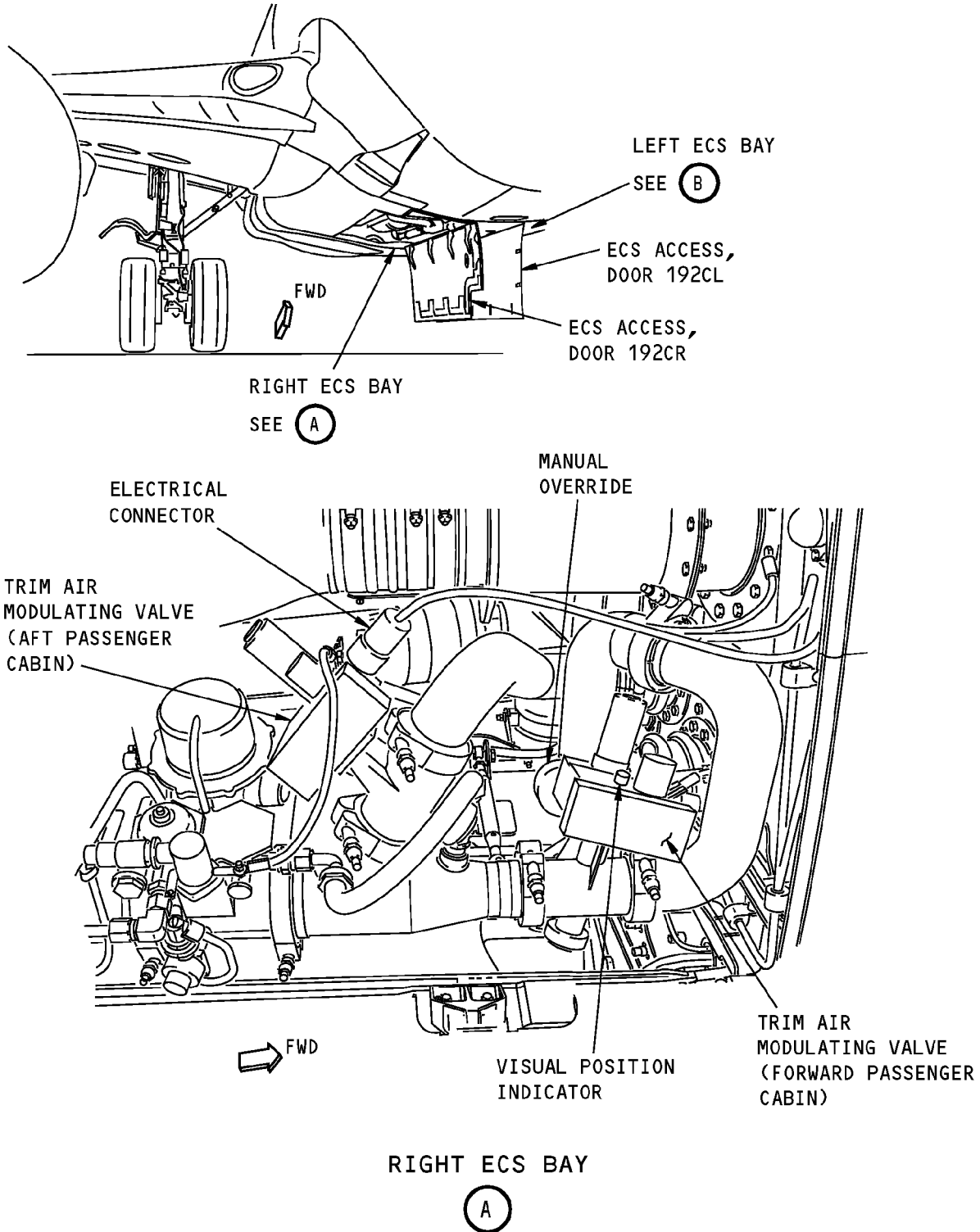
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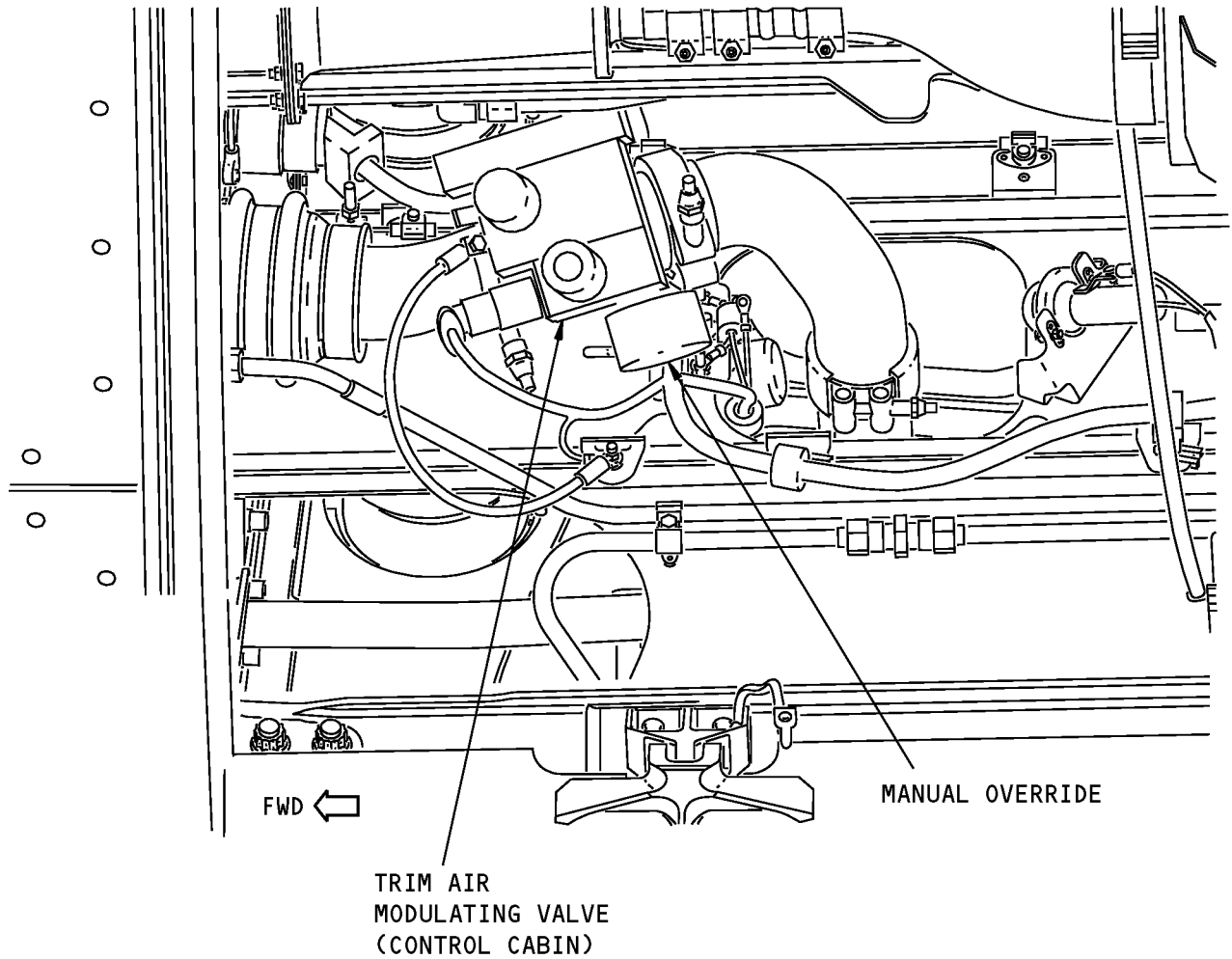
**Zone Trim Air Modulating Valve Deactivation  
Figure 905 (Sheet 1 of 2)/21-00-00-990-806**

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LEFT ECS BAY

(B)

**Zone Trim Air Modulating Valve Deactivation  
Figure 905 (Sheet 2 of 2)/21-00-00-990-806**

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HAP 001-013, 015-026, 028-054 (Continued)

#### TASK 21-00-00-040-823

#### 41. M MEL 21-36 (DDPG) Restoration - Zone Trim Air Modulating Valve Inoperative

(Figure 905)

##### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

##### E. Prepare for Deactivation

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	Air Conditioning Access Door

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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:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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.

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SUBTASK 21-00-00-810-017

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

HAP ALL

END OF TASK

TASK 21-00-00-040-824

42. 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.

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.

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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 —————

#### TASK 21-00-00-040-825

### 43. 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 —————

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**TASK 21-00-00-040-826**

**44. M MEL 21-39 (DDPG) Preparation - Trim Air Check Valve Inoperative**

(Figure 906)

**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)

**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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

**E. 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	Air Conditioning 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

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HAP 001-013, 015-026, 028-054 (Continued)

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

### F. 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) Put a plate between the check valve and the duct flange.
  - (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.

SUBTASK 21-00-00-010-025

- (6) When the trim air check valve in the left ECS bay was deactivated, close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

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SUBTASK 21-00-00-010-026

- (7) When the trim air check valve in the right ECS bay was deactivated, close these panels in the specified sequence:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

SUBTASK 21-00-00-860-098

- (8) 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 —————

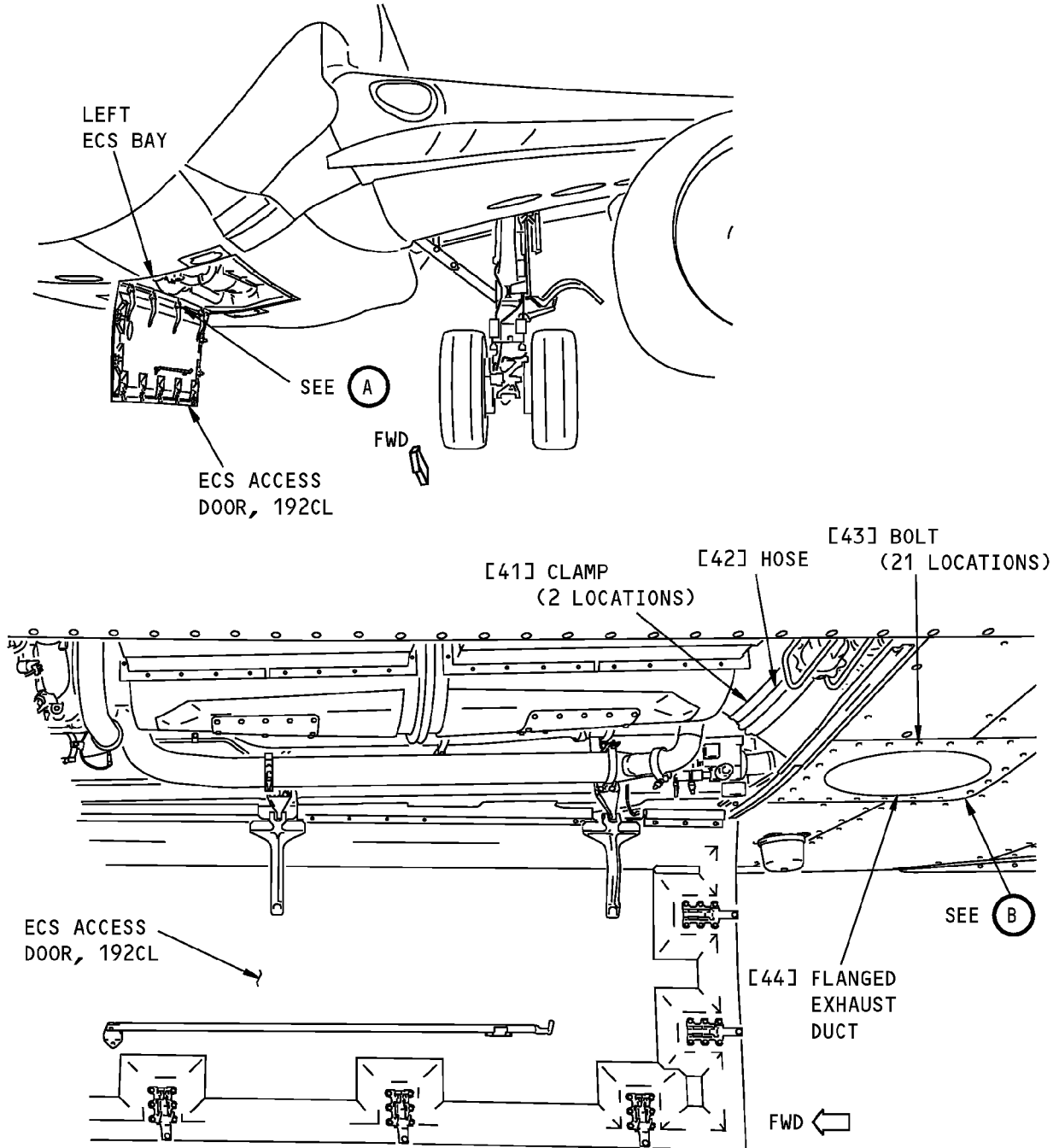
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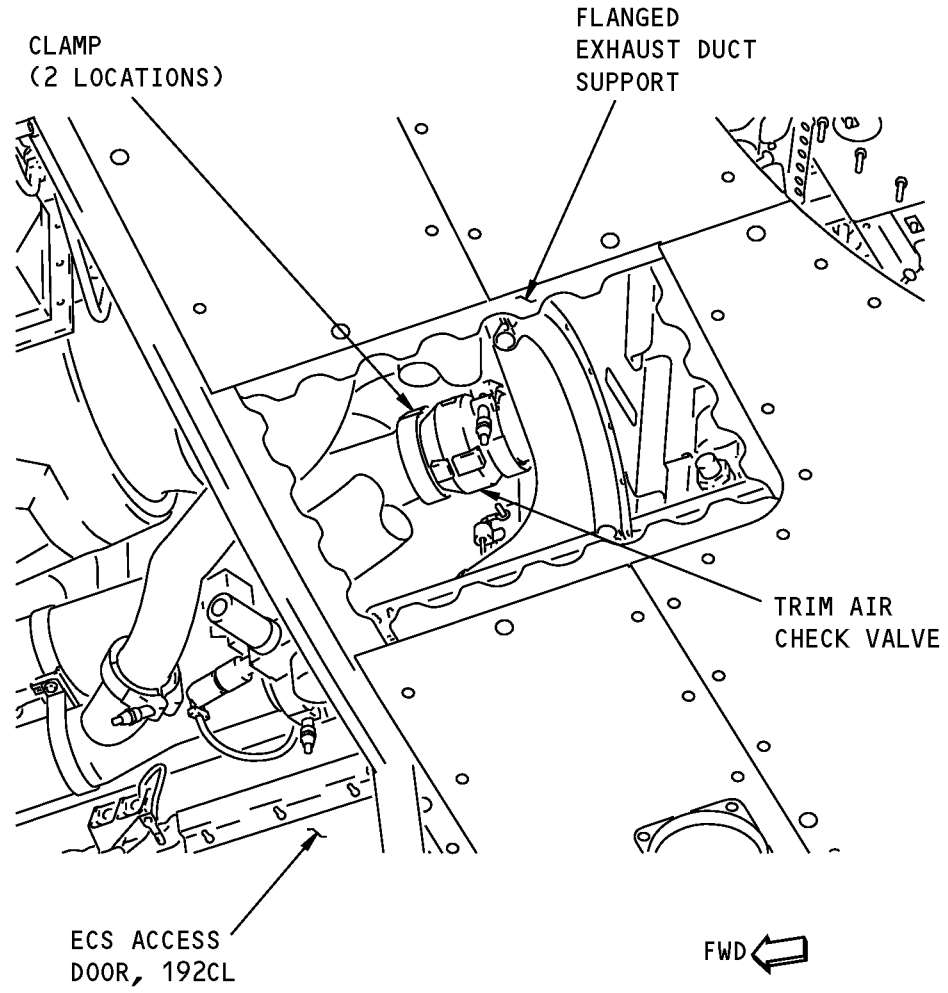
**LEFT ECS BAY  
(RIGHT ECS BAY IS OPPOSITE)**

**(A)**

**Trim Air Check Valve Deactivation  
Figure 906 (Sheet 1 of 2)/21-00-00-990-807**

**EFFECTIVITY**  
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**B**

**Trim Air Check Valve Deactivation  
Figure 906 (Sheet 2 of 2)/21-00-00-990-807**

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TASK 21-00-00-040-827

45. M MEL 21-39 (DDPG) Restoration - Trim Air Check Valve Inoperative

(Figure 906)

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.

NOTE: Do not install the blanking plate.

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

HAP ALL

————— END OF TASK —————

TASK 21-00-00-040-828

46. M MEL 21-40 (DDPG) Preparation - Equipment Cooling Overboard Exhaust Valve Inoperative

(Figure 907)

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.

B. Tools/Equipment

Reference	Description
STD-3907	Mirror - Dental

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### C. Location Zones

<u>Zone</u>	<u>Area</u>
118	Electrical and Electronics Compartment - Right

### D. Access Panels

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

### E. 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:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
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 21-00-00-010-029

- (4) Install the access panel.

SUBTASK 21-00-00-010-030

- (5) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

————— **END OF TASK** —————

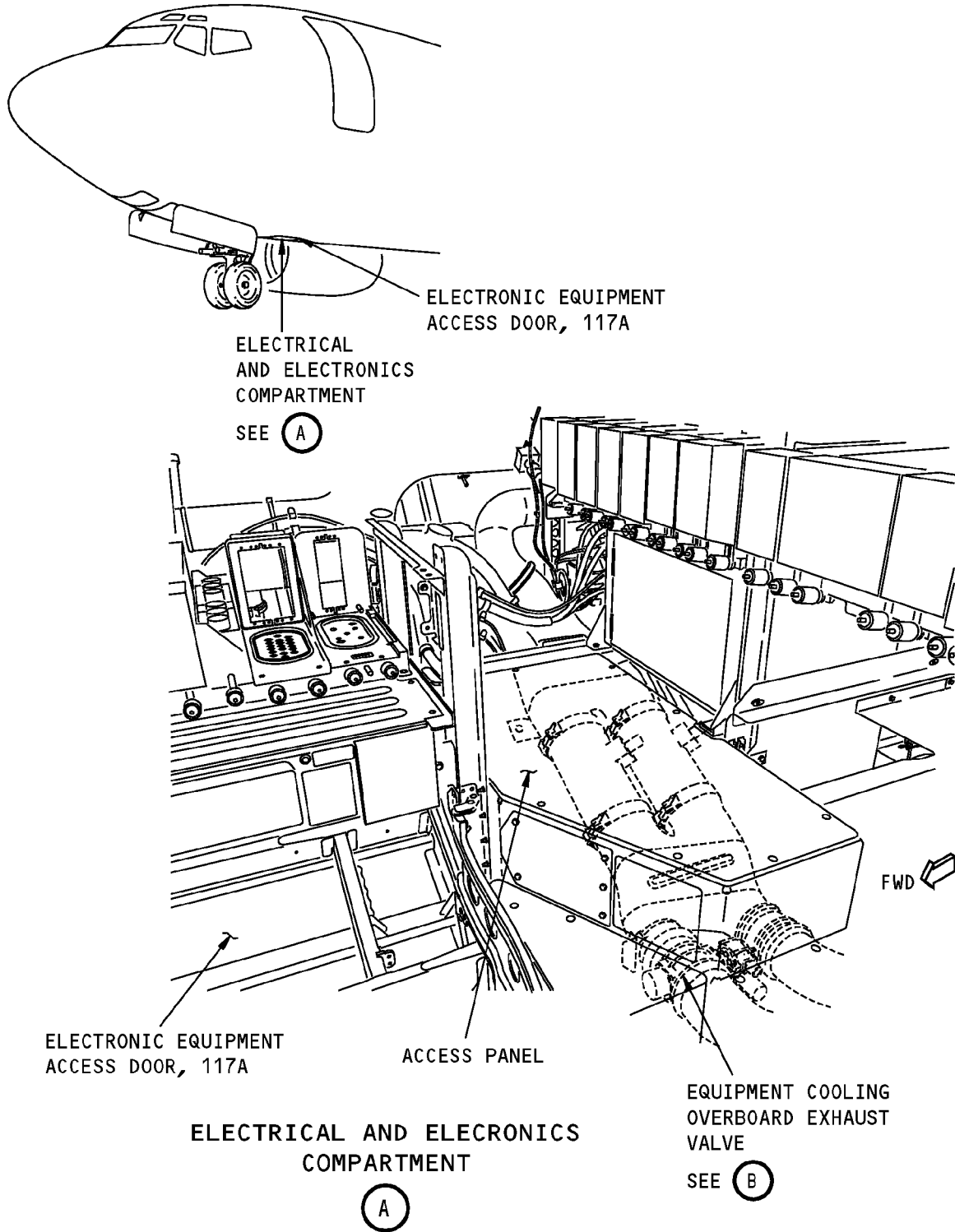
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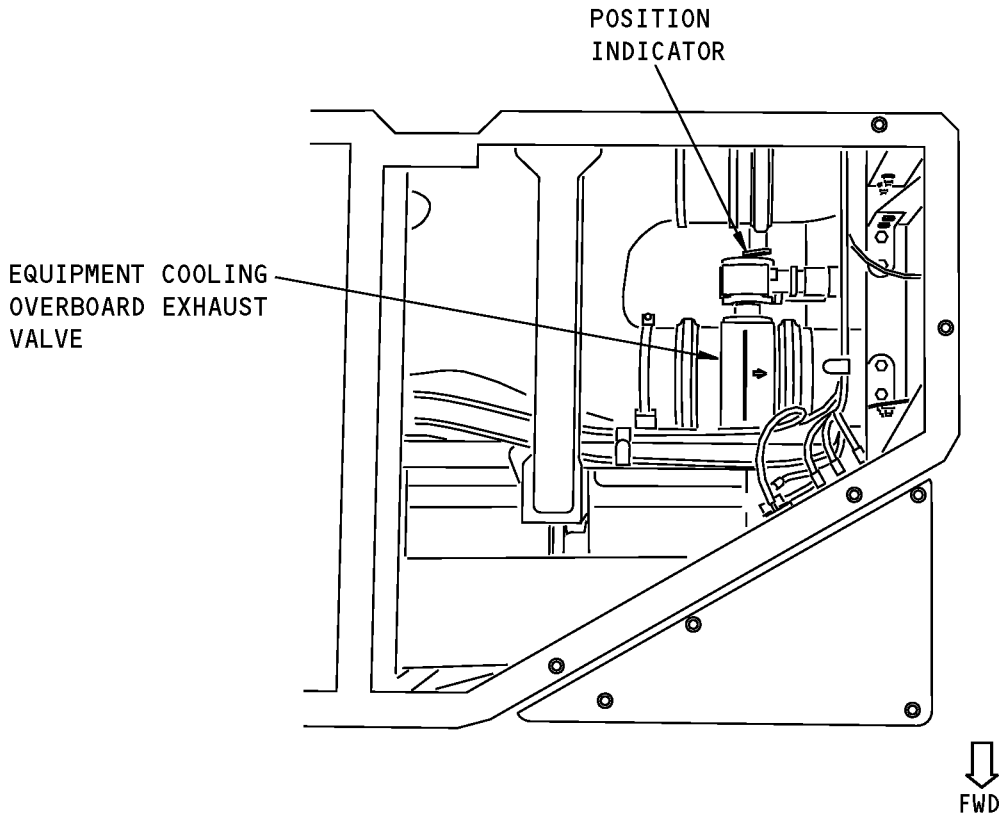
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**Equipment Cooling Overboard Exhaust Valve Deactivation  
Figure 907 (Sheet 1 of 2)/21-00-00-990-808**

EFFECTIVITY  
HAP ALL

**21-00-00**



**EQUIPMENT COOLING OVERBOARD EXHAUST VALVE  
(OXYGEN BOTTLE INSTALLATION NOT SHOWN FOR CLARITY)  
(VIEW IN THE DOWN DIRECTION)**

**(B)**

**Equipment Cooling Overboard Exhaust Valve Deactivation  
Figure 907 (Sheet 2 of 2)/21-00-00-990-808**

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TASK 21-00-00-040-829

47. M MEL 21-40 (DDPG) Restoration - Equipment Cooling Overboard Exhaust Valve Inoperative

(Figure 907)

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

Table with 2 columns: Zone, Area. Row 1: 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

48. M MEL 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

Table with 2 columns: Zone, Area. Row 1: 830, Subzone - Passenger Compartment Doors, Left. Row 2: 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 these circuit breakers and install safety locks:

Power Distribution Panel Number 1, P91

Table with 4 columns: Row, Col, Number, Name. Rows: HAP 001-013, 015-026, 028-036; A 16 C01280 DOOR AREA HTR-FWD; HAP 037-054, 101-999; D 9 C01280 DOOR AREA HTR-FWD; HAP ALL

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SUBTASK 21-00-00-865-002

- (2) To deactivate the aft door area heater system,  
Open these circuit breakers and install safety locks:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	14	C01279	DOOR AREA HTR-AFT
<b>HAP 037-054, 101-999</b>			
D	7	C01279	DOOR AREA HTR-AFT
<b>HAP ALL</b>			

————— **END OF TASK** —————

**TASK 21-00-00-040-844**

**49. 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

<u>Reference</u>	<u>Title</u>
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

<u>Zone</u>	<u>Area</u>
830	Subzone - Passenger Compartment Doors, Left
840	Subzone - Passenger Compartment Doors, Right

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#### 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 locks and close these circuit breakers:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	16	C01280	DOOR AREA HTR-FWD

**HAP 037-054, 101-999**

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 locks and close these circuit breakers:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	14	C01279	DOOR AREA HTR-AFT

**HAP 037-054, 101-999**

D	7	C01279	DOOR AREA HTR-AFT
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**HAP ALL**

#### 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** —————

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## TASK 21-00-00-040-830

### 50. M MEL 21-42 (DDPG) Preparation - Equipment Cooling Low Flow Detection System Inoperative

(Figure 908)

#### 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

#### 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. If you feel vibration, 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.

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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:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-00-00-930-001

- (11) When an equipment cooling fan does not operate, identify the related switch with an INOP label. If an equipment cooling fan does not operate refer to ITEM 21-27 in the Dispatch Deviation Guide.

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** —————

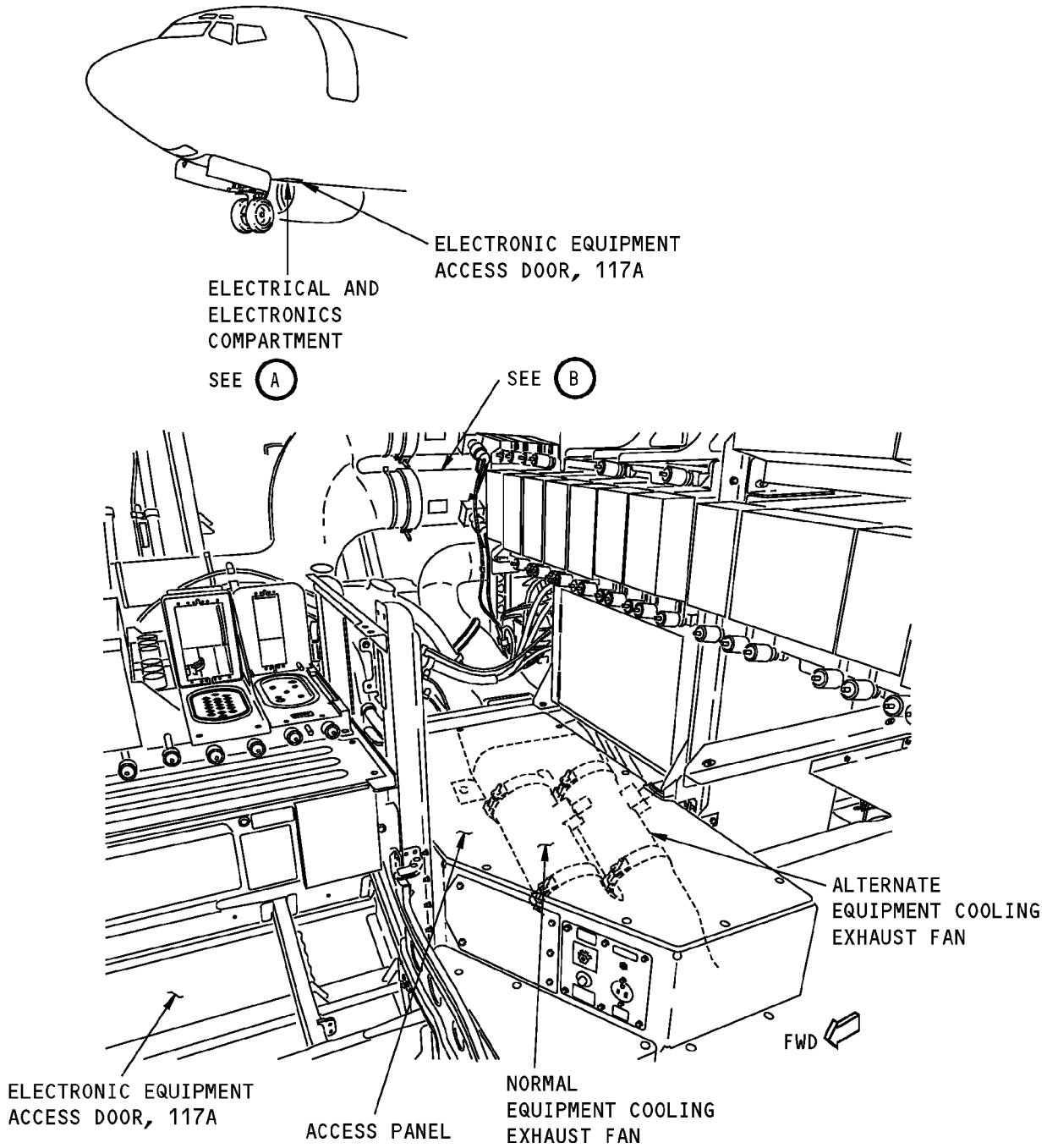
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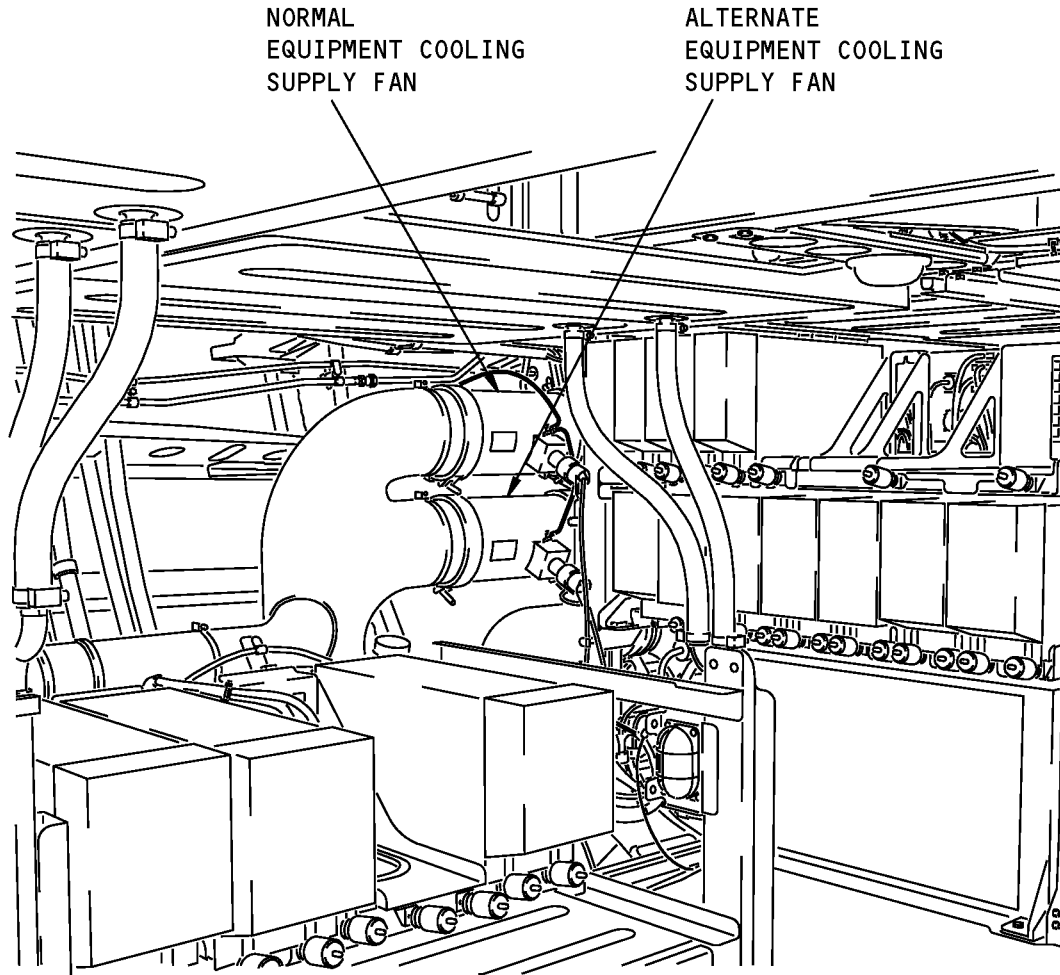
**ELECTRICAL AND ELECTRONICS COMPARTMENT**

(A)

**Equipment Cooling Low Flow Detector System Deactivation  
Figure 908 (Sheet 1 of 2)/21-00-00-990-809**

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**B**

FWD

**Equipment Cooling Low Flow Detector System Deactivation  
Figure 908 (Sheet 2 of 2)/21-00-00-990-809**

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#### TASK 21-00-00-040-831

#### 51. M MEL 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

#### 52. M MEL 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**

**53. 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** —————

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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)
21-51-04-000-801-001	Air Cycle Machine (ACM) Removal (P/B 401)
21-51-04-000-802-002	Air Cycle Machine (ACM) Removal (P/B 401)
21-51-04-400-801-001	Air Cycle Machine (ACM) Installation (P/B 401)
21-51-04-400-802-002	Air Cycle Machine Installation (P/B 401)
21-51-05-000-801	Water Separator Removal (P/B 201)
21-51-05-100-801	Coalescer Bag Cleaning (P/B 201)
21-51-05-400-802	Water Separator Installation (P/B 201)
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 (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
COM-2462	Deactivator - Check Valve (Part #: PF80-012-500, Supplier: 3D5B2, A/P Effectivity: 737-ALL)

## 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	Air Conditioning Access Door
192CR	Air Conditioning 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 these access panels, in this sequence:

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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, COM-2462, in the ground air connector as follows:

- (a) Put the deactivator, COM-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, COM-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.

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.

### HAP 101-999

- 2) RECIRC FAN switch is set to OFF.

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HAP 101-999 (Continued)

### HAP 001-013, 015-026, 028-054

- 3) L RECIRC FAN and R RECIRC FAN switches are set to OFF.

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- (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, 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, COM-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, COM-2462, in the ground air connector as follows:
  - 1) Put the deactivator, COM-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, COM-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, COM-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.

### HAP 101-999

(b) Turn the CONT CABIN and PASS CABIN temperature selectors, on the P5-17 cabin temperature control panel, to MANUAL WARM.

### HAP 001-013, 015-026, 028-054

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

(d) Turn the CONT CAB, FWD CAB, AND AFT CAB temperature selectors, on the P5-17 cabin temperature control panel, to the full WARM position.

### HAP ALL

(e) Let the packs operate until the air that goes into the control cabin and the passenger cabin has no smell of the oil contamination.

(f) 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

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SUBTASK 21-00-01-020-014

- (19) Remove the left pack and right pack water collectors. To remove them, do this task: Water Separator Removal, TASK 21-51-05-000-801.

SUBTASK 21-00-01-100-008

- (20) Clean the water collectors and the coalescer bags. To clean them, do this task: Coalescer Bag Cleaning, TASK 21-51-05-100-801.

SUBTASK 21-00-01-420-009

- (21) Install the left pack and right pack water collectors. To install them, do this task: Water Separator Installation, TASK 21-51-05-400-802.

**HAP ALL**

SUBTASK 21-00-01-200-001

- (22) 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 21-51-04-000-801-001 or 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.
- (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 (ACM) Installation, TASK 21-51-04-400-801-001 or Air Cycle Machine Installation, TASK 21-51-04-400-802-002.

SUBTASK 21-00-01-100-009

- (23) 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.

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-00-01-210-005

- (24) 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

**HAP ALL**

SUBTASK 21-00-01-160-001

- (25) Clean the pneumatic ducts and the components where you can see the oil contamination.

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SUBTASK 21-00-01-960-001

(26) Replace the components if they have too much contamination.

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SUBTASK 21-00-01-210-004

(27) Examine the recirculation fan filter for contamination:

(a) Replace the recirculation air filter if it has 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.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-00-01-210-001

(28) 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.

### HAP ALL

F. Put the Airplane Back to its Usual Condition

SUBTASK 21-00-01-010-002

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-00-01-010-003

(2) Close these panels, in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

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 —————

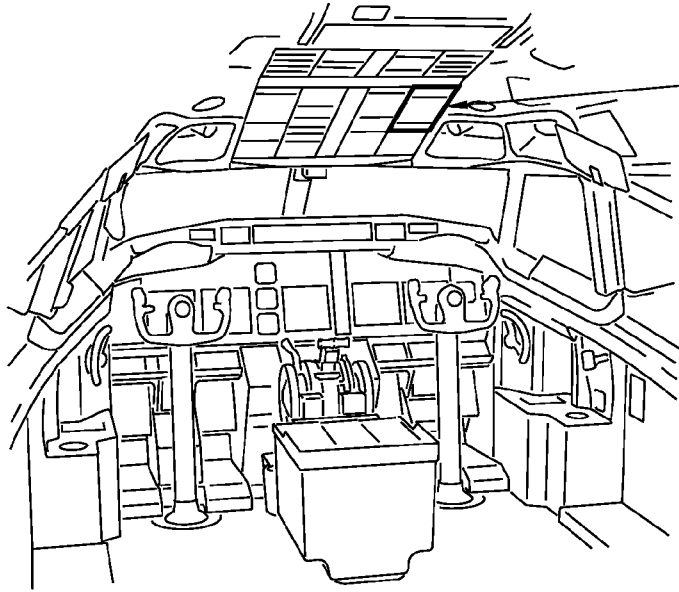
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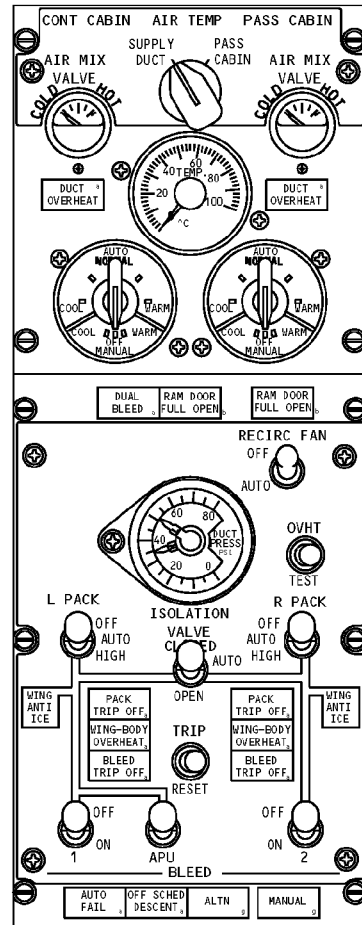
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AIR CONDITIONING  
MODULE

SEE (A)

**FLIGHT COMPARTMENT**



**AIR CONDITIONING  
MODULE**

(A)

**Air Conditioning System Oil Contamination - Removal  
Figure 201 (Sheet 1 of 2)/21-00-01-990-801**

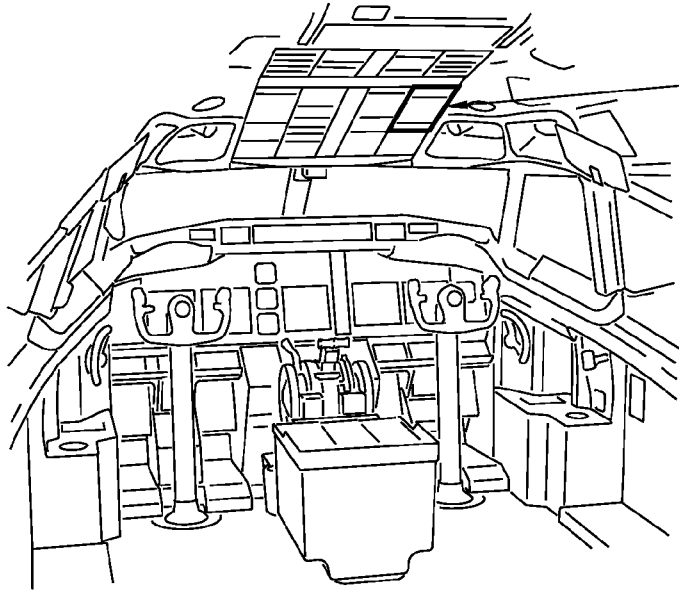
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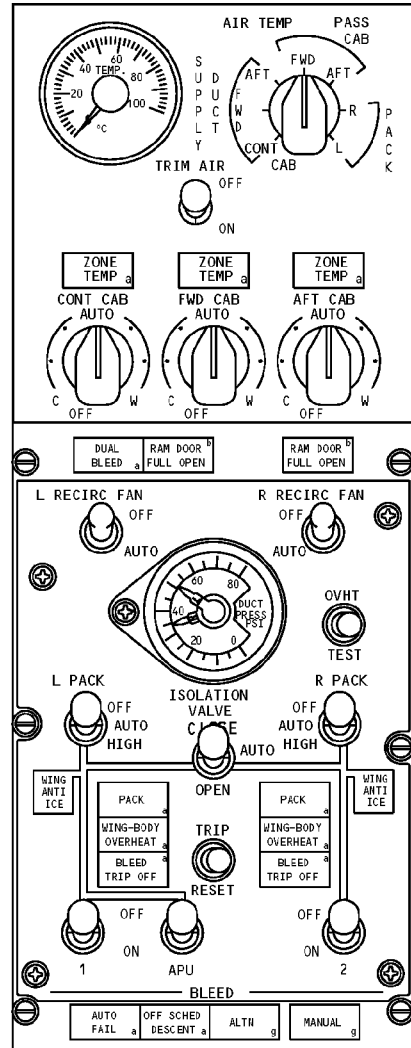
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AIR CONDITIONING  
MODULE

SEE (A)

**FLIGHT COMPARTMENT**



**AIR CONDITIONING  
MODULE**

(A)

**Air Conditioning System Oil Contamination - Removal  
Figure 201 (Sheet 2 of 2)/21-00-01-990-801**

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## AIRCRAFT MAINTENANCE MANUAL

### CONFIDENCE CHECK OF AIRPLANE ABILITY TO MAINTAIN CABIN PRESSURE IN FLIGHT ON SINGLE PACK OPERATION - MAINTENANCE PRACTICES

#### 1. General

- A. This procedure contains scheduled maintenance task data.
- B. 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 (reference Service Letter 737-SL-21-045).

#### **TASK 21-00-05-780-801**

#### 2. Airplane Dispatch with Single Pack Operation - Confidence Check

##### A. General

- (1) This procedure is a scheduled maintenance task.
- (2) This confidence check consists primarily of these three tests:
  - (a) Phase I Test - pressurize cabin from 0.0 to 4.0 PSID per AMM 05-51-91/201, 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.
- (3) Figure 201 provides a graphical representation of the three confidence check tests.
- (4) Figure 202 provides a data sheet to record the Phase I, II, III test results.
- (5) Figure 203 provides supplemental troubleshooting information.

##### B. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
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 (P/B 201)

##### C. Consumable Materials

Reference	Description	Specification
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)

##### D. Location Zones

Zone	Area
200	Upper Half of Fuselage

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#### E. Access Panels

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

#### F. 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 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	Air Conditioning 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	Air Conditioning Access Door

- (g) Do the steps that follow to prepare the forward and the aft door sill drain ports:
  - 1) Install a rubber plug in the door sill drain port.
  - 2) Apply Scotch Flatback Masking Tape 250, G00270 to the rubber plug.

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.

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## AIRCRAFT MAINTENANCE MANUAL

- (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.
  - 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.

### HAP 101-999

SUBTASK 21-00-05-860-004

- (5) Set the RECIRC FAN switch on the air conditioning panel to AUTO.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-00-05-860-005

- (6) Set the L and R RECIRC FAN switches on the air conditioning panel to AUTO.

### HAP ALL

SUBTASK 21-00-05-860-011

- (7) Start the APU by doing this task: APU Starting and Operation, TASK 49-11-00-860-801.
  - (a) Let the APU become stable at the governed speed.

SUBTASK 21-00-05-860-006

- (8) Position the ISOLATION VALVE switch to OPEN.

SUBTASK 21-00-05-860-010

- (9) 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

- (10) 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) Put 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.

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- (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

(11) Pressurize the airplane with both packs as follows:

(a) Pressurize the airplane to 4.0 psid as follows:

**NOTE:** Follow the instructions in this procedure when you pressurize the airplane:  
(TASK 05-51-91-790-801)

- 1) Start the right engine using the APU bleed air.
    - 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.
    - 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 aft outflow valve to maintain the cabin pressure of 4.0 psid as follows:
- 1) Make sure the pressurization mode selector is set to MAN.
  - 2) Position the CLOSED/OPEN toggle switch as necessary to maintain 4.0 psid on the DIFF PRESS gauge.

G. 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 in AUTO mode (low flow) 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 L PACK switch on the P5-10 air conditioning panel to OFF.
  - (c) Set the APU BLEED switch on the P5-10 air conditioning panel to OFF.
  - (d) Make sure the BLEED 2 switch is set to ON.
  - (e) Manually operate the outflow valve to the closed position.
  - (f) Make sure the R PACK switch is set to AUTO.
  - (g) 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.

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- (h) Monitor the ANALOG DISC 1/4 page on the FMC CDU to make sure the pack and isolation valve operation is as commanded.

SUBTASK 21-00-05-780-003

- (2) Do this check of the right pack capability to pressurize the passenger cabin in the HIGH mode (high flow):
  - (a) Slowly move the right engine throttle until N2% increases to 72% (+0%, -2%).

### HAP 101-999

- (b) Make sure the RECIRC FAN switch on the air conditioning panel to AUTO.

### HAP 001-013, 015-026, 028-054

- (c) Make sure the L and R RECIRC FAN switches on the air conditioning panel to AUTO.

### HAP ALL

- (d) Make sure the ISOLATION VALVE switch in the CLOSE position.
- (e) Make sure the L PACK switch to OFF.
- (f) Put the R PACK switch to HIGH.
- (g) Make sure the APU BLEED switch is OFF.
- (h) Make sure the engine BLEED 1 switch is OFF.
- (i) Make sure the ECS PACK H/L indication on the FMC Maintenance Discrete page shows HI for the right pack.
- (j) 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.
- (k) Move the right engine throttle to the ground idle position.
- (l) Put the R PACK switch to AUTO.
- (m) Manually operate the outflow valve MANUAL VALVE switch to CLOSED as necessary to achieve a steady 4.0 psid cabin pressure on the DIFF PRESS indicator.

SUBTASK 21-00-05-868-002

- (3) Start the left engine with the APU bleed air.
  - (a) APU BLEED switch is set to ON.

SUBTASK 21-00-05-863-001

- (4) Put the BLEED 1 switch to ON.

SUBTASK 21-00-05-881-001

- (5) Make sure the L PACK switch is set to AUTO.

SUBTASK 21-00-05-860-009

- (6) Make sure the ISOLATION VALVE switch remains CLOSED.

SUBTASK 21-00-05-881-002

- (7) Put the R PACK switch to OFF.

SUBTASK 21-00-05-864-001

- (8) Put the BLEED 2 switch to OFF.

SUBTASK 21-00-05-780-010

- (9) Shut down the right engine.

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SUBTASK 21-00-05-864-002

(10) Make sure the APU BLEED switch is set to OFF.

SUBTASK 21-00-05-780-004

(11) Do this check of the left pack capability to pressurize the passenger cabin in the AUTO Mode (low flow):

- (a) Manually operate the outflow valve MANUAL VALVE switch to CLOSED as necessary to achieve a steady 4.0 psid cabin pressure on the DIFF PRESS indicator.
- (b) 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.
- (c) Monitor the ANALOG DISC 1/4 page on the FMC CDU to make sure the operation of the pack valve and isolation valve are as commanded.

SUBTASK 21-00-05-780-005

(12) Do this check of the left pack capability to maintain pressure to the passenger cabin with the pack in the HIGH Mode (high flow):

- (a) Slowly move the left engine throttle until N2% increases to 72% (+0%, -2%).

### HAP 101-999

- (b) Make sure the RECIRC FAN switch on the air conditioning panel is set to AUTO.

### HAP 001-013, 015-026, 028-054

- (c) Make sure the L and R RECIRC FAN switches on the air conditioning panel are set to AUTO.

### HAP ALL

- (d) Make sure the ISOLATION VALVE switch is set to CLOSE.
- (e) Make sure the R PACK switch is OFF.
- (f) Put the L PACK switch to HIGH.
- (g) Make sure the BLEED 1 switch is ON.
- (h) Make sure the BLEED 2 switch is OFF.
- (i) Make sure the APU BLEED switch is OFF.
- (j) Make sure the ECS PACK H/L indication on the FMC Maintenance Discrete page shows HI for the left pack.
- (k) 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.
- (l) Move the left engine throttle to the ground idle position.
- (m) Put the L PACK switch to AUTO.
- (n) Manually operate the outflow valve MANUAL VALVE switch to CLOSED as necessary to achieve a steady 4.0 psid cabin pressure on the DIFF PRESS indicator.

### H. 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) When 4.0 psid on the DIFF PRESS gauge has been achieved and stabilized, fully close (manually) the aft outflow valve.

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- 1) Make sure that the indication on the gauge above the CLOSED/OPEN switch on the P5-17 pressurization control panel shows that the valve is fully closed.
- (c) Put the APU BLEED switch to ON.
- (d) Set the BLEED 1 switch to OFF.
- (e) Shut down the left engine.

SUBTASK 21-00-05-210-003

(2) 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 21-00-05-040-001

(3) 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.

(4) Continue to operate the APU.

SUBTASK 21-00-05-700-001

(5) Make a record of the pressure differential indications during the cabin pressure leak down in Figure 202.

- (a) Start the check at 4.0 psid (time zero).
- (b) Make a record of the pressure differential indications on the data sheet 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

(6) 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.
- (b) Modulate the outflow valve to depressurize the airplane at approximately 500 feet per minute.

SUBTASK 21-00-05-860-008

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

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

SUBTASK 21-00-05-080-002

(9) Remove the rubber plugs and tape from the forward and the aft door sill drain ports.

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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.

I. 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	BEST 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	Greater than 110 seconds is excellent; 100 -110 seconds is good; less than 100 seconds requires service.

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** —————

EFFECTIVITY HAP ALL
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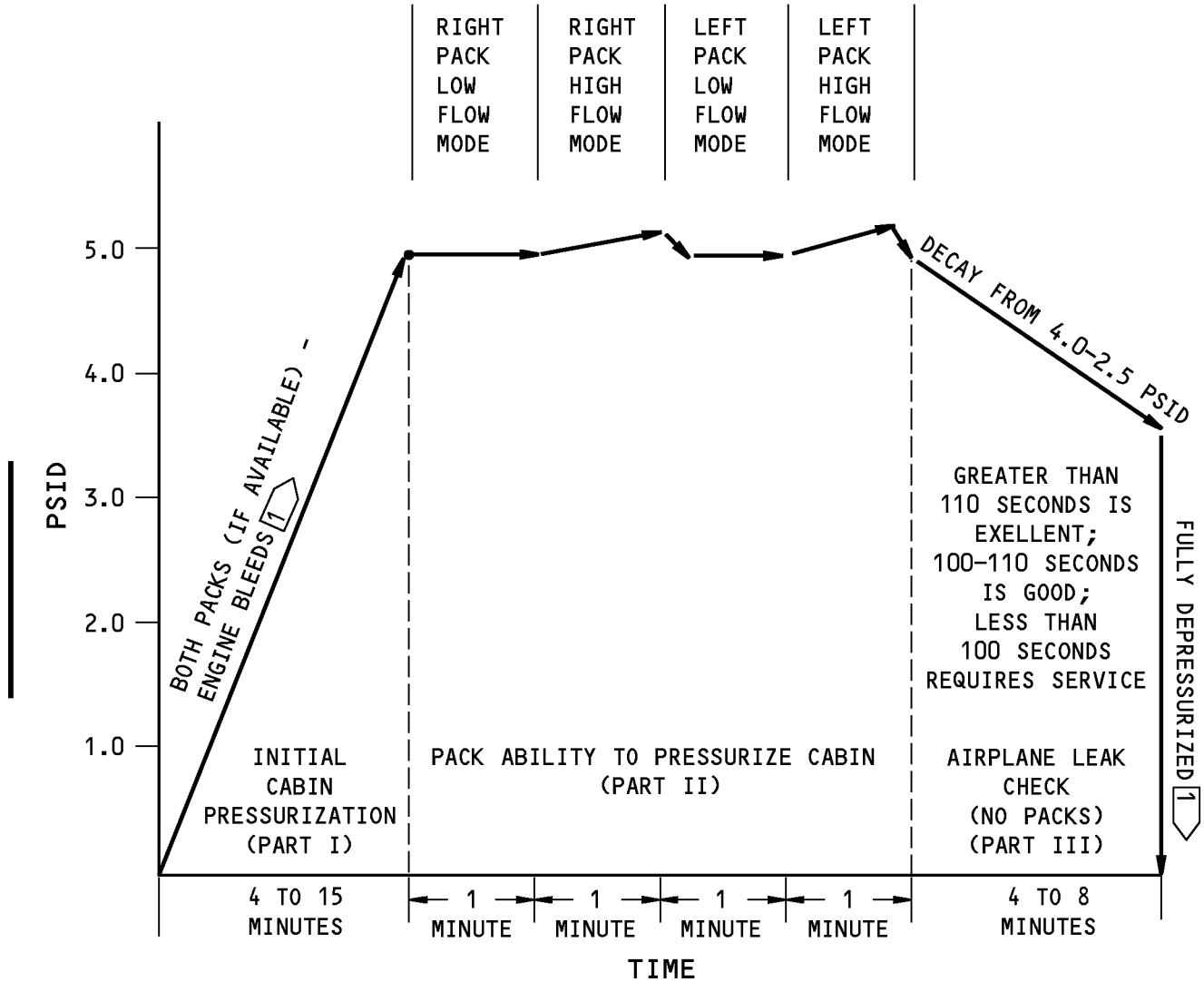
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[1] OUTFLOW VALVE IN MANUAL MODE

L06909 S0006562371\_V2

**Airplane Dispatch with Single Pack Operation - Confidence Check**  
**Figure 201/21-00-05-990-801**

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AIRCRAFT MAINTENANCE MANUAL

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 \_\_\_\_\_

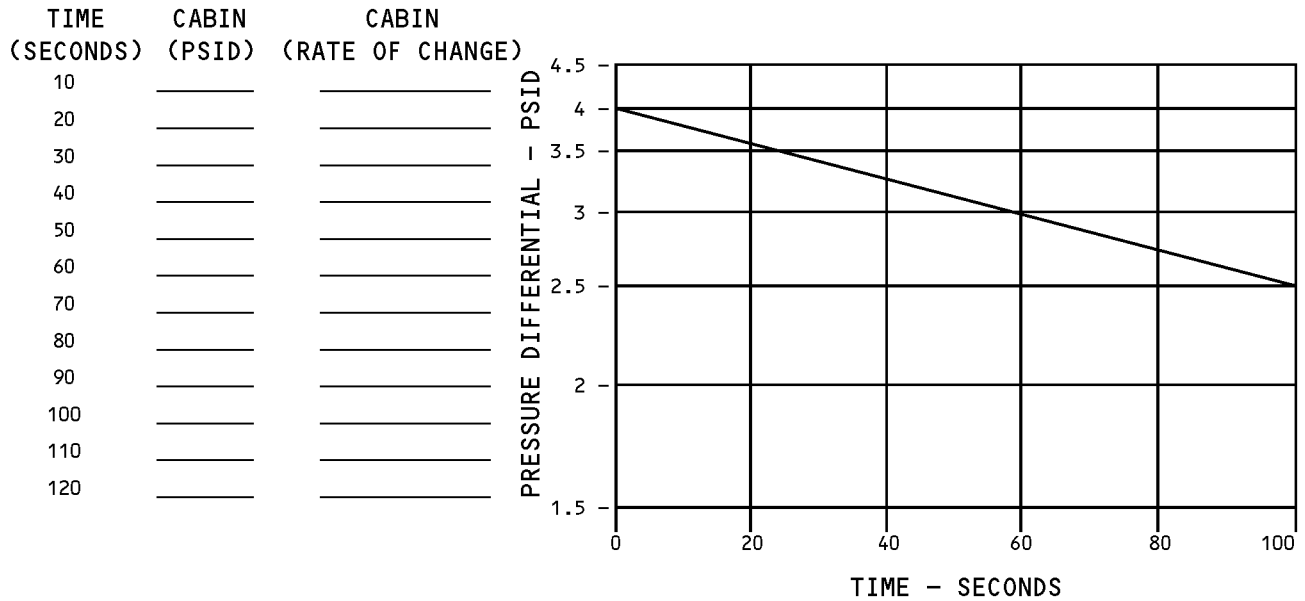
BLEED SOURCE(S) USED TO ACHIEVE 4.0 PSID LEFT ENGINE RIGHT ENGINE APU

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 \_\_\_\_\_



Airplane Dispatch with Single Pack Operation - Confidence Check - Data Sheet Figure 202/21-00-05-990-802

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**AIRCRAFT MAINTENANCE MANUAL**

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 NO MORE THAN -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:  <u>OUTFLOW</u> 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.  <u>INFLOW</u> 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 GREATER	CONFIDENCE IS HIGH THAT AIRPLANE WILL MAINTAIN PRESSURE WITH SINGLE PACK IN HIGH FLOW MODE WHILE AT CRUISE.	

**Airplane Dispatch with Single Pack Operation - Troubleshooting  
Figure 203 (Sheet 1 of 3)/21-00-05-990-803**

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**AIRCRAFT MAINTENANCE MANUAL**

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:  <u>DOORS AND HATCHES</u> - 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).  <u>OVERBOARD EXHAUST VALVE</u> - P/N 20798-01 OEV SHOULD CLOSE AT 0.7 TO 1.1 PSID.  <u>BILGE DRAINS</u> - 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\_V3

**Airplane Dispatch with Single Pack Operation - Troubleshooting  
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**AIRCRAFT MAINTENANCE MANUAL**

SYSTEM	MINIMUM REQUIREMENT	REQUIREMENT SATISFIED	
		YES	NO
ENGINE BLEED DUCT PRESSURE - GROUND IDLE	WITH N2 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 N2 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\_V3

**Airplane Dispatch with Single Pack Operation - Troubleshooting  
Figure 203 (Sheet 3 of 3)/21-00-05-990-803**

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## AIRCRAFT MAINTENANCE MANUAL

### 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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## AIRCRAFT MAINTENANCE MANUAL

- (1) Existing insulation material can be removed and re-installed if it is not damaged. Replacement insulation material must meet the flame propagation requirement.
- (2) BMS8-385 is the preferred foam insulation material that meets the flame propagation requirement.
- (3) If BMS8-300 foam insulation material is used, it must be completely covered with tape 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.

### 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 - DC 1200	
G00031	Fabric - Glass, Finished, For Resin Laminates	SAE-AMS-~ C-9084 (MIL-C-9084 specification canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5

### 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.

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## AIRCRAFT MAINTENANCE MANUAL

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 DC 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 DC 1200 primer, C00580 on the duct.

SUBTASK 21-20-02-340-004

- (4) Smooth the Fiberglass glass fabric, G00031 to remove any bubbles or any wrinkles.

SUBTASK 21-20-02-340-005

- (5) Wrap the glass cloth tape around the two edges of the Fiberglass fabric repair. Make sure the tape lies flat with no wrinkles or gaps.

### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-20-02-840-006

- (1) If insulation was removed from the duct joint, install new insulation.

SUBTASK 21-20-02-840-007

- (2) Replace the panels or other airplane structure removed to gain access to the duct joint.

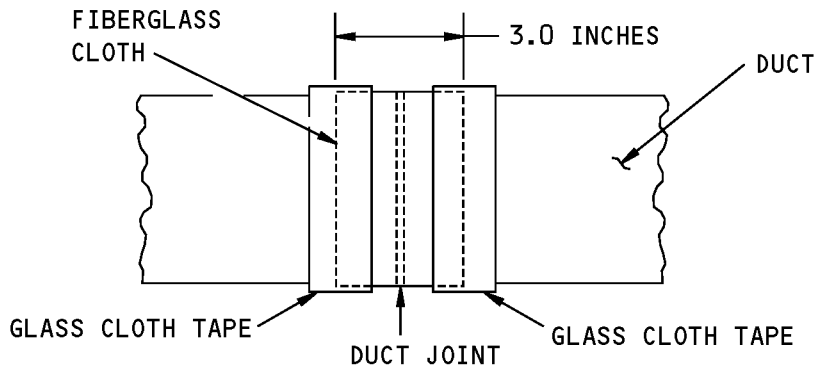
————— **END OF TASK** —————

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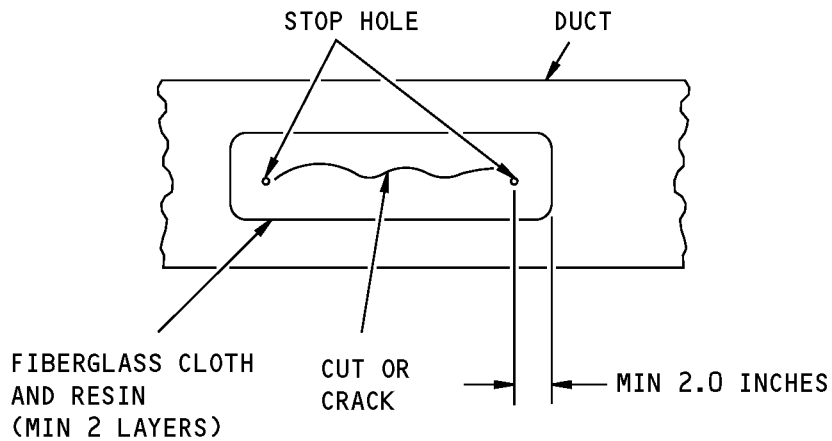
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**TAPED JOINT REPAIR – FIBERGLASS/KEVLAR DUCT**

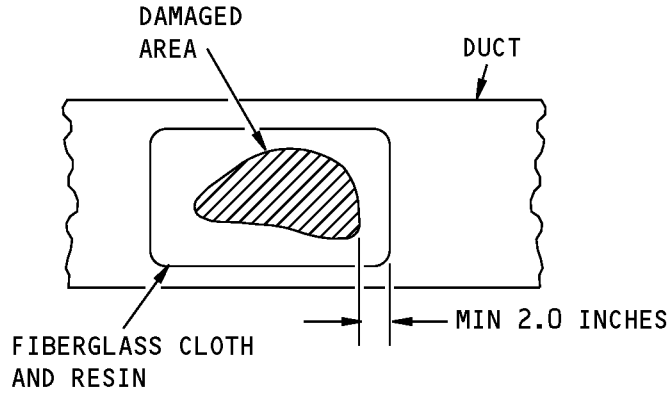


**EXTERNAL PATCH – FIBERGLASS/KEVLAR DUCT**

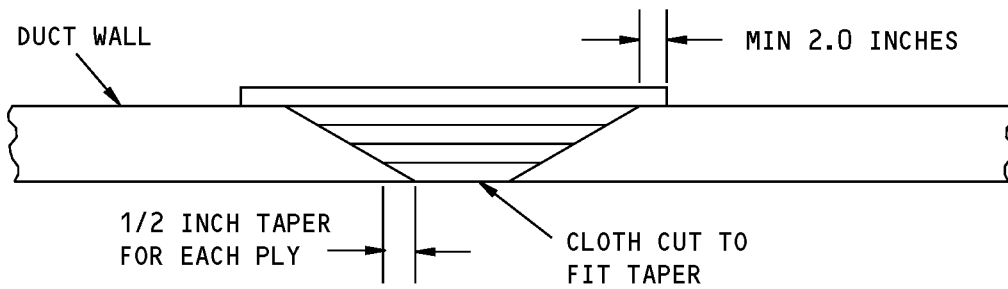
**Air Conditioning System Ducts Repair  
Figure 801 (Sheet 1 of 3)/21-20-02-990-802**

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**STRUCTURAL REPAIR – FIBERGLASS/KEVLAR DUCT – OVERHEAD VIEW**



**STRUCTURAL REPAIR – FIBERGLASS/KEVLAR DUCT – CROSS-SECTION VIEW**

**Air Conditioning System Ducts Repair  
Figure 801 (Sheet 2 of 3)/21-20-02-990-802**

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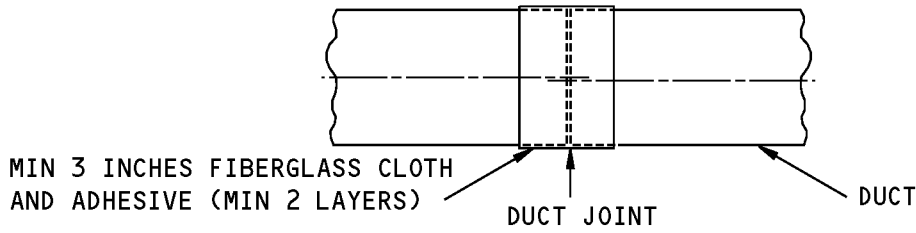
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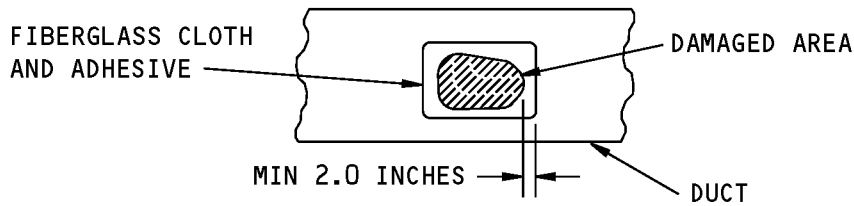
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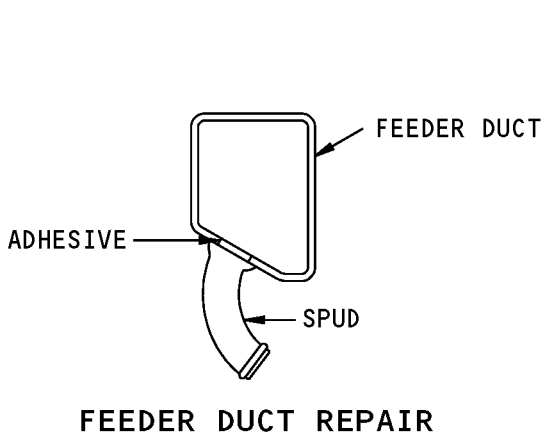
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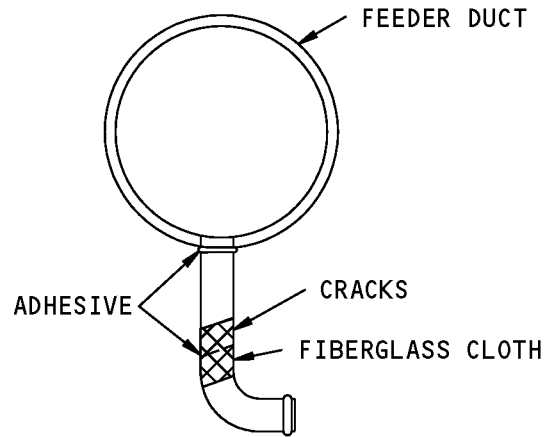
**REPAIR FOR THE TAPE CONNECTION AT THE DUCT JOINT AREA**



**REPAIR OF A DUCT WITHOUT INNER LINING DAMAGE**



**FEEDER DUCT REPAIR**



**FEEDER DUCT REPAIR**

**Air Conditioning System Ducts Repair  
Figure 801 (Sheet 3 of 3)/21-20-02-990-802**

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### AIRCRAFT MAINTENANCE MANUAL

#### 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	SAE-AMS-~ C-9084 (MIL-C-9084 specification canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
G02137	Resin - Polyester - Hetron 92	

##### 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.
- (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.

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## AIRCRAFT MAINTENANCE MANUAL

(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.

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.

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- (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

Table with 2 columns: Reference, Title. Row 1: 36-00-00-860-806, Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Table with 3 columns: Reference, Description, Specification. Rows include A00040 (Resin - Self-Extinguishing Laminating - Epocast 50-A1 with Epocast 9816), B00148 (Solvent - Methyl Ethyl Ketone (MEK)), G00031 (Fabric - Glass, Finished, For Resin Laminates), G00034 (Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)), G02137 (Resin - Polyester - Hetron 92)

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.

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.

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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.

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 wrinkles.

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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.

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 —————

## 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	SAE-AMS-~ C-9084 (MIL-C-9084 specification canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5

#### 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.

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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.

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** —————

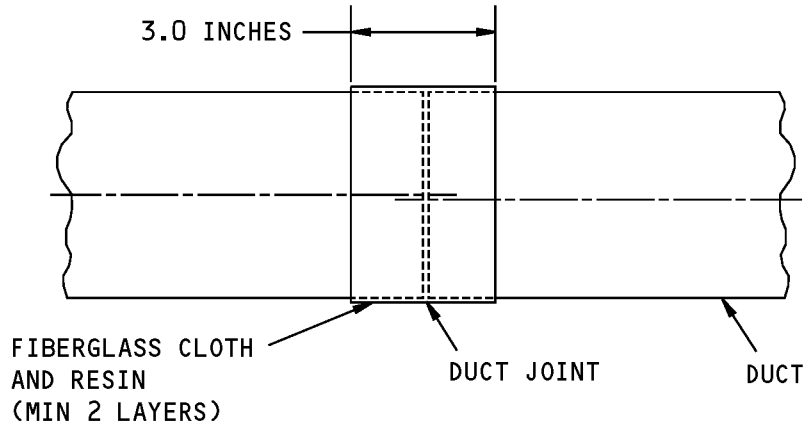
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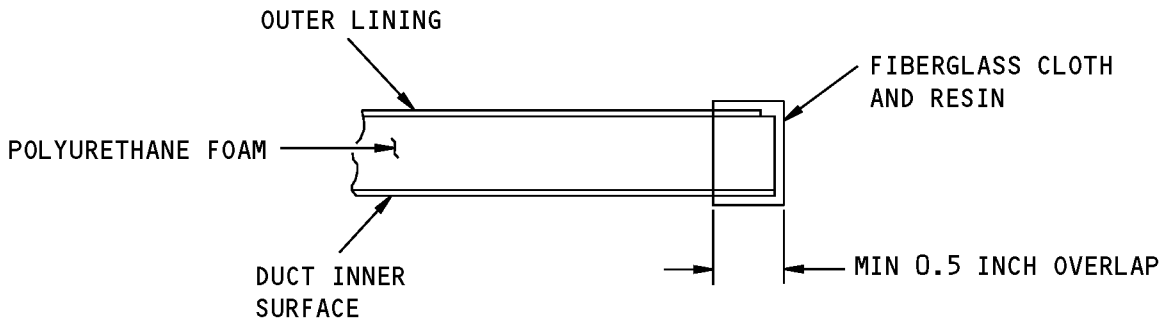
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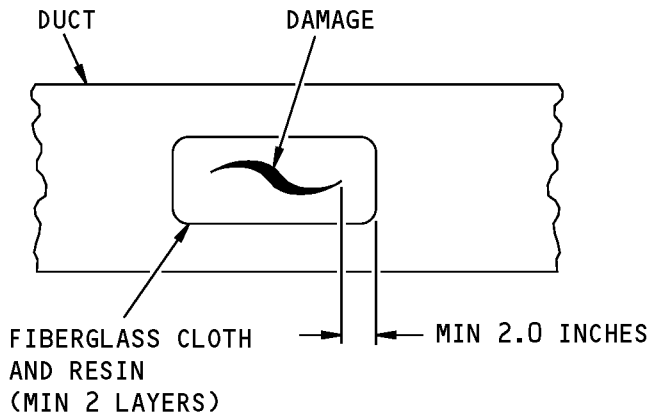
**AIRCRAFT MAINTENANCE MANUAL**



**TAPED JOINT REPAIR - POLYURETHANE FOAM DUCT**



**DUCT END REPAIR - POLYURETHANE FOAM DUCT**



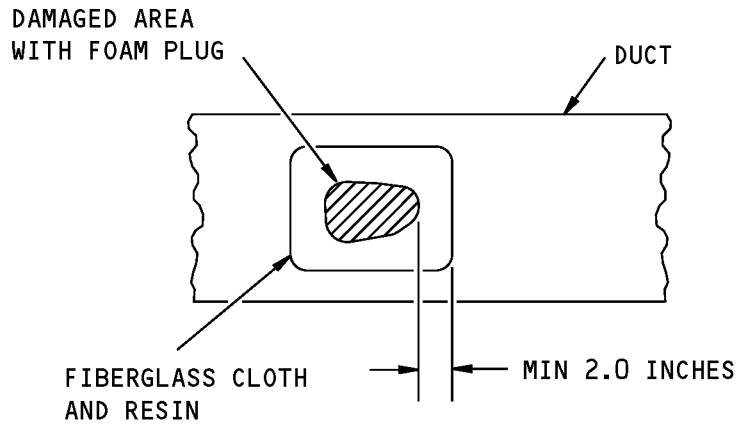
**EXTERNAL PATCH - POLYURETHANE FOAM DUCT**

**Air Conditioning System Ducts Repair**  
**Figure 802 (Sheet 1 of 2)/21-20-02-990-803**

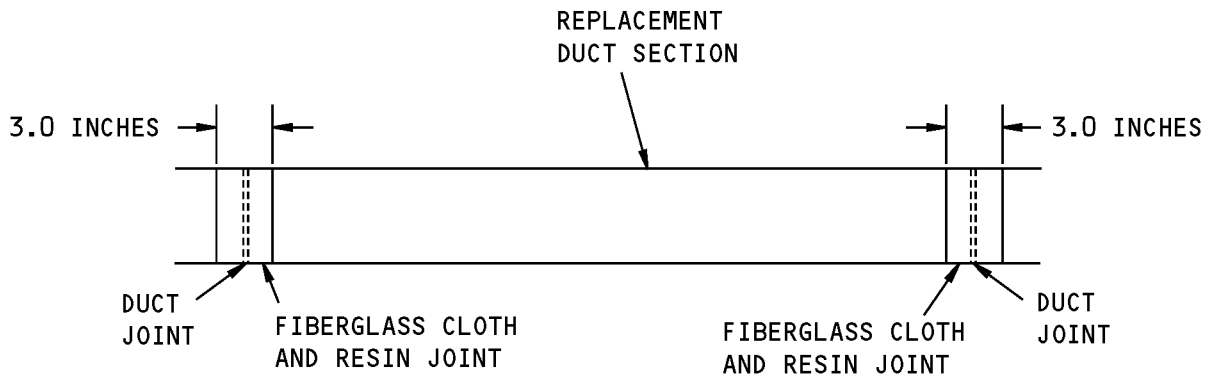
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**STRUCTURAL REPAIR – POLYURETHANE FOAM DUCT**



**DUCT SECTION REPLACEMENT – POLYURETHANE FOAM DUCT**

**Air Conditioning System Ducts Repair  
Figure 802 (Sheet 2 of 2)/21-20-02-990-803**

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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	SAE-AMS-~ C-9084 (MIL-C-9084 specification canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
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.

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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.

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)

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### AIRCRAFT MAINTENANCE MANUAL

#### C. Consumable Materials

Reference	Description	Specification
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
G00031	Fabric - Glass, Finished, For Resin Laminates	SAE-AMS-~ C-9084 (MIL-C-9084 specification canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5

#### 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:

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- (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)

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C. Consumable Materials

Reference	Description	Specification
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
G00031	Fabric - Glass, Finished, For Resin Laminates	SAE-AMS-~ C-9084 (MIL-C-9084 specification canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5

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 to fit the area where the damaged foam was removed. Place the foam in the opening to make sure it is the correct size and shape.

SUBTASK 21-20-02-840-042

- (8) Cut two pieces of the Fiberglass fabric 2 inches larger on all sides than the damaged area. Round the corners of the Fiberglass fabric pieces.

SUBTASK 21-20-02-840-043

- (9) Prepare the potting compound.

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### E. Repair the Duct

SUBTASK 21-20-02-340-036

- (1) Apply potting compound to the area where the polyurethane foam was removed. Put the piece of polyurethane foam in the area where the damaged foam was removed. Put a piece of plastic sheet on the piece of the polyurethane foam and press on it to align the surface of the piece with the surface of the duct.

SUBTASK 21-20-02-340-037

**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) Remove any unwanted resin from the edges of the piece of polyurethane foam with a cotton wiper, G00034 soaked with solvent, B00148.

SUBTASK 21-20-02-340-038

- (3) Leave the plastic sheet on the repair area and allow the potting compound to cure for 5 hours at 125 °F. Apply heat with a heat gun, heat lamp or heating blanket.

SUBTASK 21-20-02-340-039

- (4) Remove the plastic sheet and smooth the surface of the foam with sandpaper.

SUBTASK 21-20-02-340-040

**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 solvent, B00148 and a cotton wiper, G00034 to remove any dust from the duct.

SUBTASK 21-20-02-340-041

- (6) Prepare the applicable resin.

SUBTASK 21-20-02-340-042

- (7) Place a piece of the Fiberglass glass fabric, G00031 on the resin so that it extends beyond the damaged area a minimum of 2 inches on all sides.

SUBTASK 21-20-02-340-043

- (8) Soak the Fiberglass fabric with resin.

SUBTASK 21-20-02-340-044

- (9) 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 21-20-02-340-045

- (10) Remove the plastic sheet from the patch and remove unwanted resin with a cotton wiper, G00034.

SUBTASK 21-20-02-340-046

- (11) Follow the same procedure to apply the second piece of the Fiberglass fabric.

SUBTASK 21-20-02-340-047

- (12) Allow the resin to cure for 24 hours at room temperature.

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SUBTASK 21-20-02-340-048

**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.

- (13) 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 21-20-02-840-044

- (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	SAE-AMS-~ C-9084 (MIL-C-9084 specification canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5

#### 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.

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- (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.

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.

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#### 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	SAE-AMS-~ C-9084 (MIL-C-9084 specification canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5

#### 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.

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.

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- (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.

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.

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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, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement.
  - (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, 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, 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)

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 IV Grade 1

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### 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 to the repair area (Figure 803).

- (a) Make sure the tape, G50327 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 to completely cover all exposed surfaces of foam insulation as shown in (Figure 803).

- (a) The tape, G50327 must cover 100% of the brown colored hypalon insulation surface.
- (b) Cut the tape, G50327 as required to fit around air outlets, branches and insulation vent holes.
- (c) The tape, G50327 may be installed spiral wrapped or lengthwise down the duct depending on installers preference.
- (d) The tape, G50327 may be installed in any configuration as long as 100% complete coverage of the foam, G02470 insulation is obtained.
- (e) Maintain a minimum of 1/8 inch overlap of tape, G50327.
- (f) Avoid compression of the foam, G02470 insulation.
- (g) Wrinkles in the tape, G50327 are acceptable if pinched together and contain no voids.
- (h) The tape, G50327 may be installed to the foam, G02470 insulation prior to installation on the duct if desired by the installer.
- (i) For foam, G02470 insulation installed on duct joints, tape, G50327 may be applied to the foam, G02470 insulation before or after the foam, G02470 insulation is installed over the duct joint.

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(j) The tape, G50327 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** —————

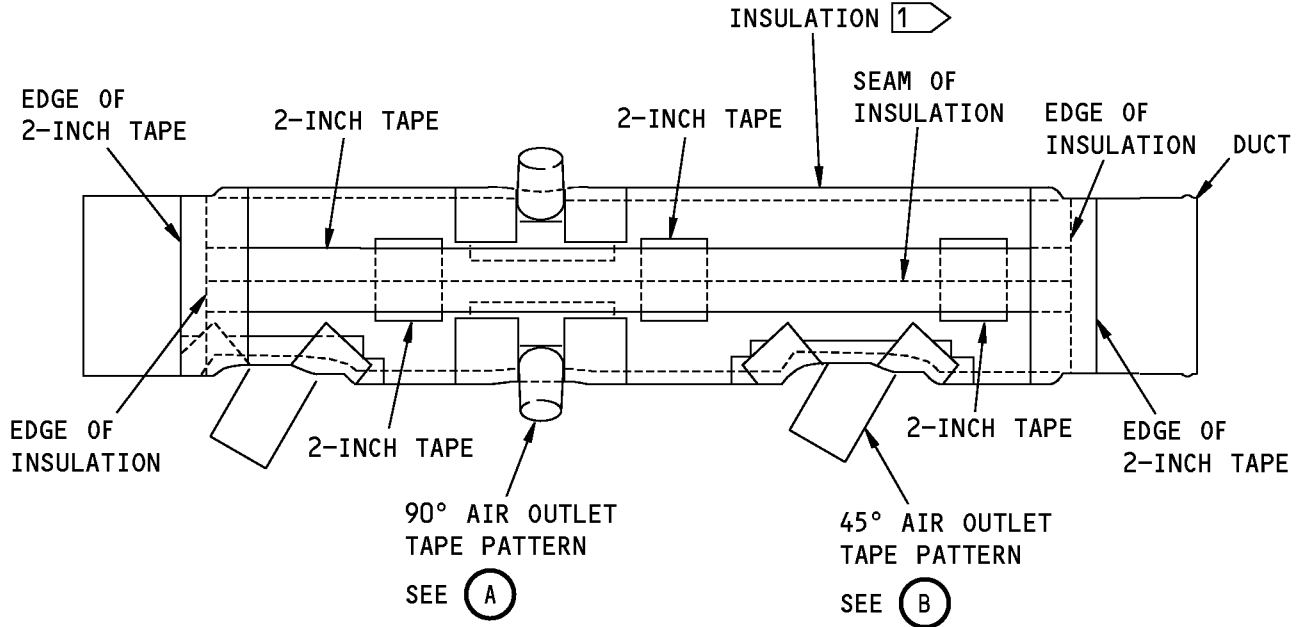
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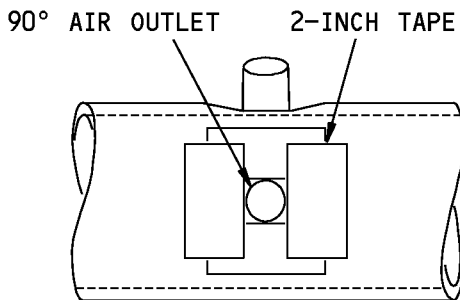
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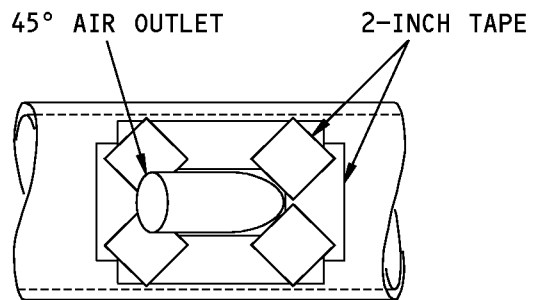


**FOAM WRAPPED INSULATED DUCT (EXAMPLE)**



**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.

**Air Conditioning System Insulated Duct Repair (Foam Wrapped)**

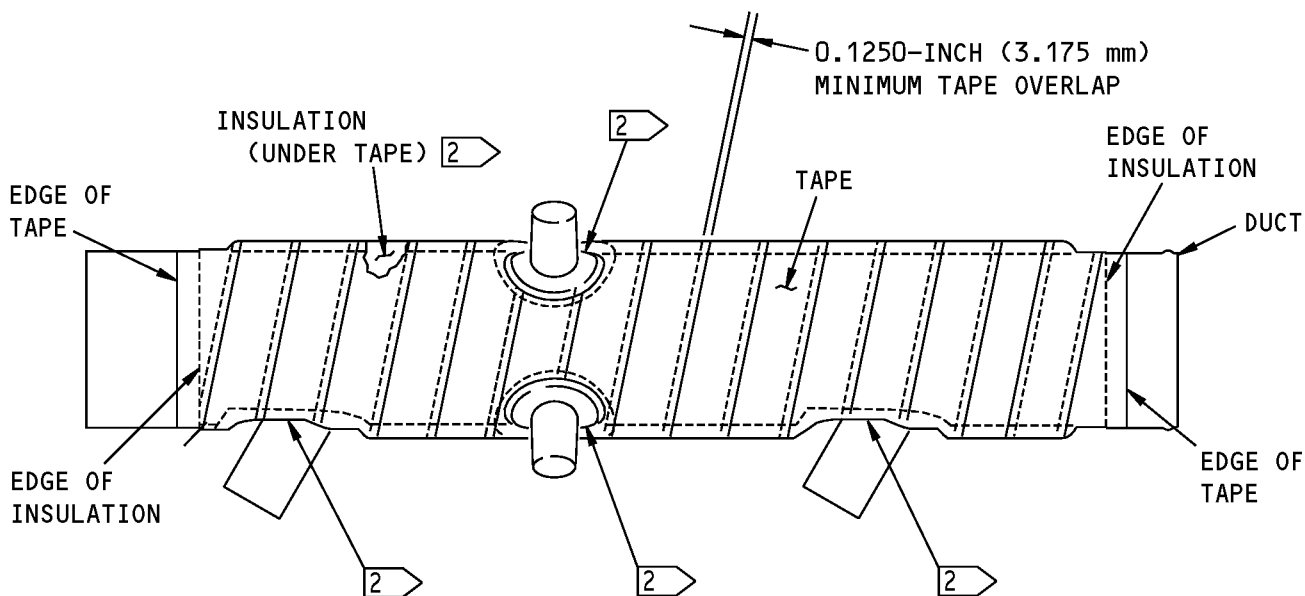
Figure 803 (Sheet 1 of 2)/21-20-02-990-804

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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.

**Air Conditioning System Insulated Duct Repair (Foam Wrapped)**

Figure 803 (Sheet 2 of 2)/21-20-02-990-804

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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, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement.
  - (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, 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, 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)

### 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 IV Grade 1

### 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.

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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 to completely cover the damaged area of the insulation (Figure 803).
  - (a) Make sure the tape, G50327 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 Polymide 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 must cover 100% of the brown colored hypalon insulation surface.
  - (b) Cut the tape, G50327 as required to fit around air outlets, branches and insulation vent holes.
  - (c) The tape, G50327 may be installed spiral wrapped or lengthwise down the duct depending on installers preference.
  - (d) The tape, G50327 may be installed in any configuration as long as 100% complete coverage of the foam, G02470 insulation is obtained.
  - (e) Maintain a minimum of 1/8 inch overlap of tape, G50327.
  - (f) Avoid compression of the foam, G02470 insulation.
  - (g) Wrinkles in the tape, G50327 are acceptable if pinched together and contain no voids.
  - (h) The tape, G50327 may be installed to the foam, G02470 insulation prior to installation on the duct if desired by the installer.
  - (i) For foam, G02470 insulation installed on duct joints, tape, G50327 may be applied to the foam, G02470 insulation before or after the foam, G02470 insulation is installed over the duct joint.
  - (j) The tape, G50327 orientation is optional.

SUBTASK 21-20-02-420-009

- (2) If necessary, install the air conditioning duct.

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#### 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, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement.
  - (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, 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, 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)

#### 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 IV Grade 1

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### 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 the new foam, G50449 or foam, G02470 on 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 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 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 as shown in (Figure 803)

### F. Rework Ducts insulated with Polyimide Foam Insulation

SUBTASK 21-20-02-420-005

- (1) Install tape, G50327 to completely cover all exposed surfaces of foam insulation as shown in (Figure 803).
  - (a) The tape, G50327 must cover 100% of the brown colored hypalon insulation surface.

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- (b) Cut the tape, G50327 as required to fit around air outlets, branches and insulation vent holes.
- (c) The tape, G50327 may be installed spiral wrapped or lengthwise down the duct depending on installers preference.
- (d) The tape, G50327 may be installed in any configuration as long as 100% complete coverage of the foam, G02470 insulation is obtained.
- (e) Maintain a minimum of 1/8 inch overlap of tape, G50327.
- (f) Avoid compression of the foam, G02470 insulation.
- (g) Wrinkles in the tape, G50327 are acceptable if pinched together and contain no voids.
- (h) The tape, G50327 may be installed to the foam, G02470 insulation prior to installation on the duct if desired by the installer.
- (i) For foam, G02470 insulation installed on duct joints, tape, G50327 may be applied to the foam, G02470 insulation before or after the foam, G02470 insulation is installed over the duct joint.
- (j) The tape, G50327 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**

**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	
G02361	Tape - Cargo Lining Joint Seal	BMS5-146

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### 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).

SUBTASK 21-20-02-840-094

- (5) Install the tape, G02361 to the repair area (Figure 803, Figure 804).

- (a) Use a continuous strip of tape to wrap around the insulation/covering and the duct.
- (b) Make sure the tape has an overlap of the edges of the adjacent tape by a minimum of 0.12 inch (3.17 mm).
- (c) Make sure the new tape has an overlap onto the ends of the duct by a minimum of 1.00 inch (25.4 mm).

SUBTASK 21-20-02-840-095

- (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** —————

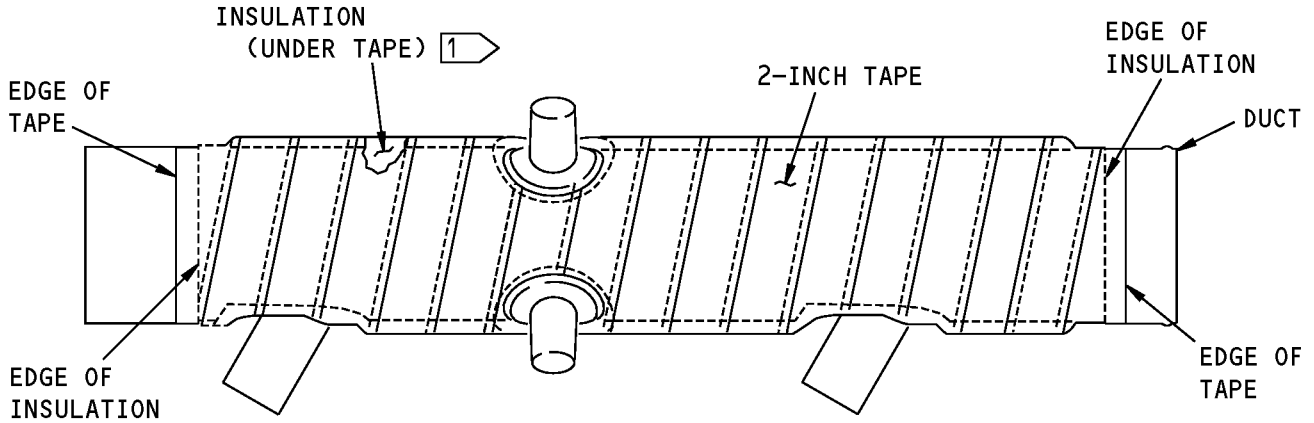
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**FIBERGLASS INSULATED DUCT  
(EXAMPLE)**

**1** COVER ALL EXPOSED INSULATION WITH CARGO LINER JOINT SEALER TAPE.  
CUT TAPE AS REQUIRED TO FIT AROUND AIR OUTLETS.

**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).

### 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	
G02361	Tape - Cargo Lining Joint Seal	BMS5-146

### D. Prepare for the Repair

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) 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).

SUBTASK 21-20-02-840-101

- (5) Install a minimum 2.0 inch (50.8 mm) wide patch of the tape, G02361 to completely cover the damaged area of the insulation (Figure 804).

- (a) Make sure the tape has an overlap of all the edges of the damaged area by a minimum of 0.50 inch (12.7 mm).

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SUBTASK 21-20-02-840-102

(6) If necessary, install the air conditioning duct.

E. 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, G02470 must be wrapped with tape, G50327 to meet new flammability/flame propagation requirements. Wrap the tape, G50327 across 100% of the brown hypalon insulation surface on the polyimide foam, 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

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, 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
G00316	Fabric - Woven Glass Reinforcements For Laminating Plastics	BMS9-3
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS 8-201, Type IV (Supersedes BMS 8-201, 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.

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- (c) Make sure fibers from the damaged area of the duct do not extend more than 0.125 inches (3.175 mm) into the inside of the duct.

SUBTASK 21-20-02-340-069

- (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 —————

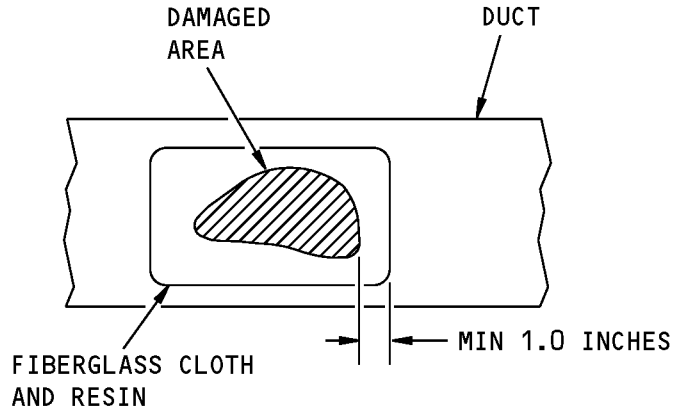
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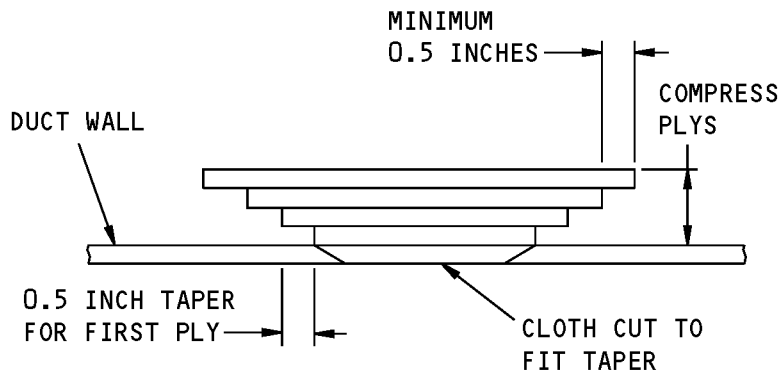
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**STRUCTURAL REPAIR – REINFORCED THERMOPLASTIC LAMINATE –  
OVERHEAD VIEW**



**STRUCTURAL REPAIR – REINFORCED THERMOPLASTIC LAMINATE –  
CROSS-SECTION VIEW**

**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.
(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

Table with 2 columns: Reference, Title. Row 1: 36-00-00-860-806, Remove Pressure from the Pneumatic System (P/B 201)

C. Consumable Materials

Table with 3 columns: Reference, Description, Specification. Rows include B00062 (Solvent - Acetone), B00148 (Solvent - Methyl Ethyl Ketone), G00034 (Cotton Wiper), G00316 (Fabric - Woven Glass Reinforcements), G50400 (Resin - Fiberglass Layup)

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.

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- (c) Use sandpaper to prepare the surface of the duct an additional 0.50 inches (12.7 mm) from the repair area.
- (d) Make sure fibers from the damaged area of the duct do not extend more than 0.125 inches (3.175 mm) into the inside of the duct.
- (e) Use the solvent, B00062 and a cotton wiper, G00034 to clean the duct joint area.

SUBTASK 21-20-02-350-001

- (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 wrinkles.

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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
G00316	Fabric - Woven Glass Reinforcements For Laminating Plastics	BMS9-3
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS 8-201, Type IV (Supersedes BMS 8-201, 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.

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SUBTASK 21-20-02-010-007

(3) If insulation is installed on the duct, then remove the insulation.

SUBTASK 21-20-02-120-003

(4) Do these steps to prepare the damaged area of the duct.

- (a) 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 ( $0.50 \times 6.0 = 3.0$  inches)( $12.7 \times 152.4 = 76.2$  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, G00316 0.50 inches (12.7 mm) wider than the piece before.
  - 4) Round the corners of the last piece of the Fiberglass fabric.
- (b) Prepare the Fiberglass duct repair resin, G50400.

### 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 wrinkles.

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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## AIRCRAFT MAINTENANCE MANUAL

### GROUND CONDITIONED AIR CONNECTION DUCT AND CHECK VALVE DUCT - 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 duct
- (4) An installation of the ground conditioned air check valve duct.

B. The ground conditioned air connection duct is installed below the mix bay. Access to the duct is through the ground conditioned air access door on the outside of the airplane. The function of the duct is to provide a connection for a supply of external conditioned air.

C. The check valve duct is installed in the mix bay just forward of the air conditioning bays. The function of the check valve duct 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.

#### **TASK 21-21-01-000-801-001**

#### 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

D. Preparation for the Removal

SUBTASK 21-21-01-860-001-001

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

SUBTASK 21-21-01-860-002-001

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

SUBTASK 21-21-01-010-001-001

- (3) Open the forward cargo compartment door.

SUBTASK 21-21-01-010-002-001

- (4) Remove the center panel of 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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### E. Ground Conditioned Air Connection Duct Removal

SUBTASK 21-21-01-010-003-001

- (1) Remove the bolts [12] and washers [13] at eighteen locations that attach the ground conditioned air connection duct [9] to the airplane skin.

SUBTASK 21-21-01-010-004-001

- (2) To get access to the ground conditioned air connection duct [9], do this step:

Open this access panel:

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

SUBTASK 21-21-01-970-001-001

- (3) Make a record of the correct position to make sure that the air connection duct [9] can be installed the same position.

SUBTASK 21-21-01-020-001-001

- (4) Remove the air connection duct [9].

SUBTASK 21-21-01-410-001-001

- (5) To prevent the entry of unwanted materials into the check valve duct, do this step:

Close this access panel:

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

————— **END OF TASK** —————

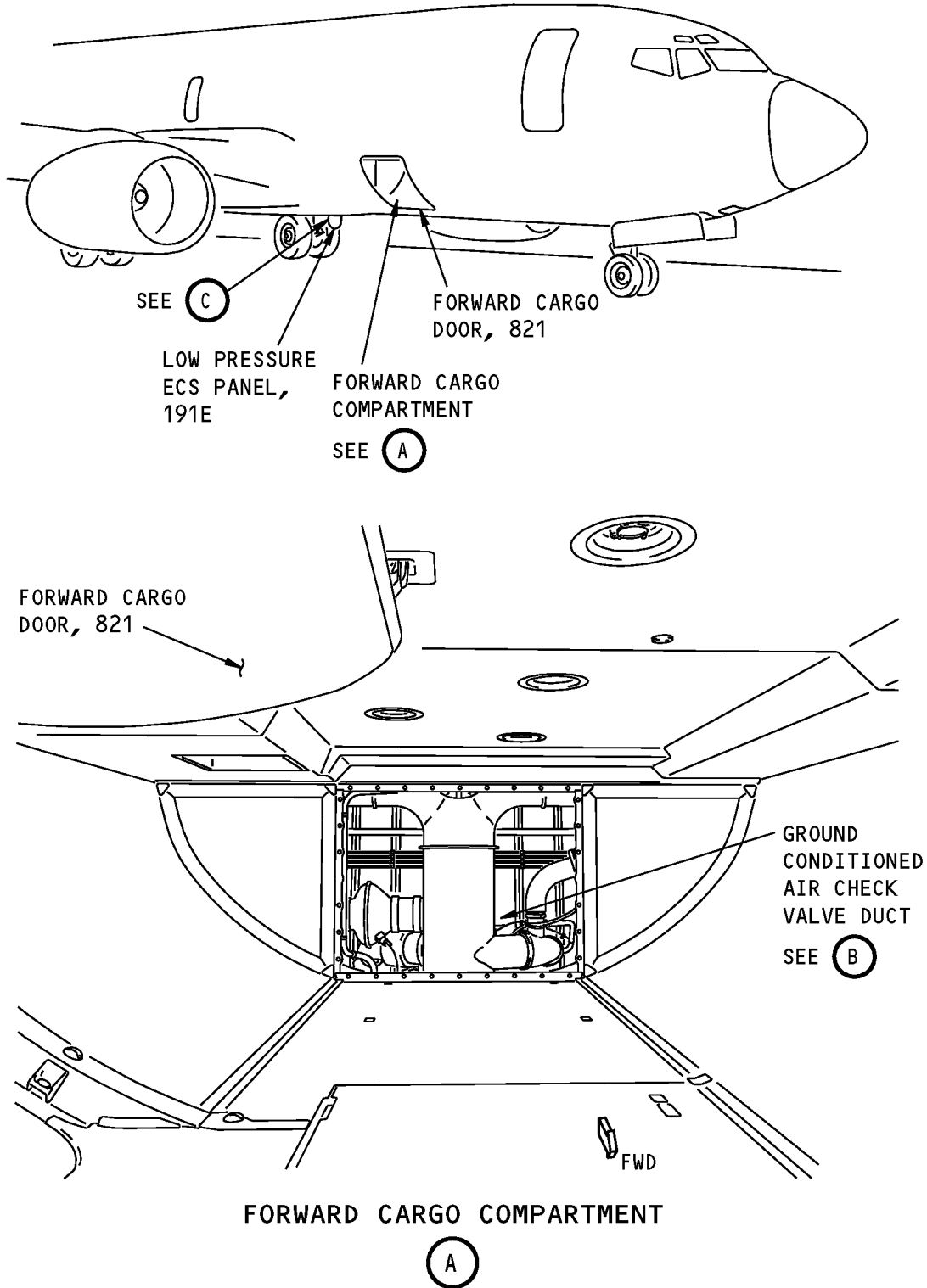
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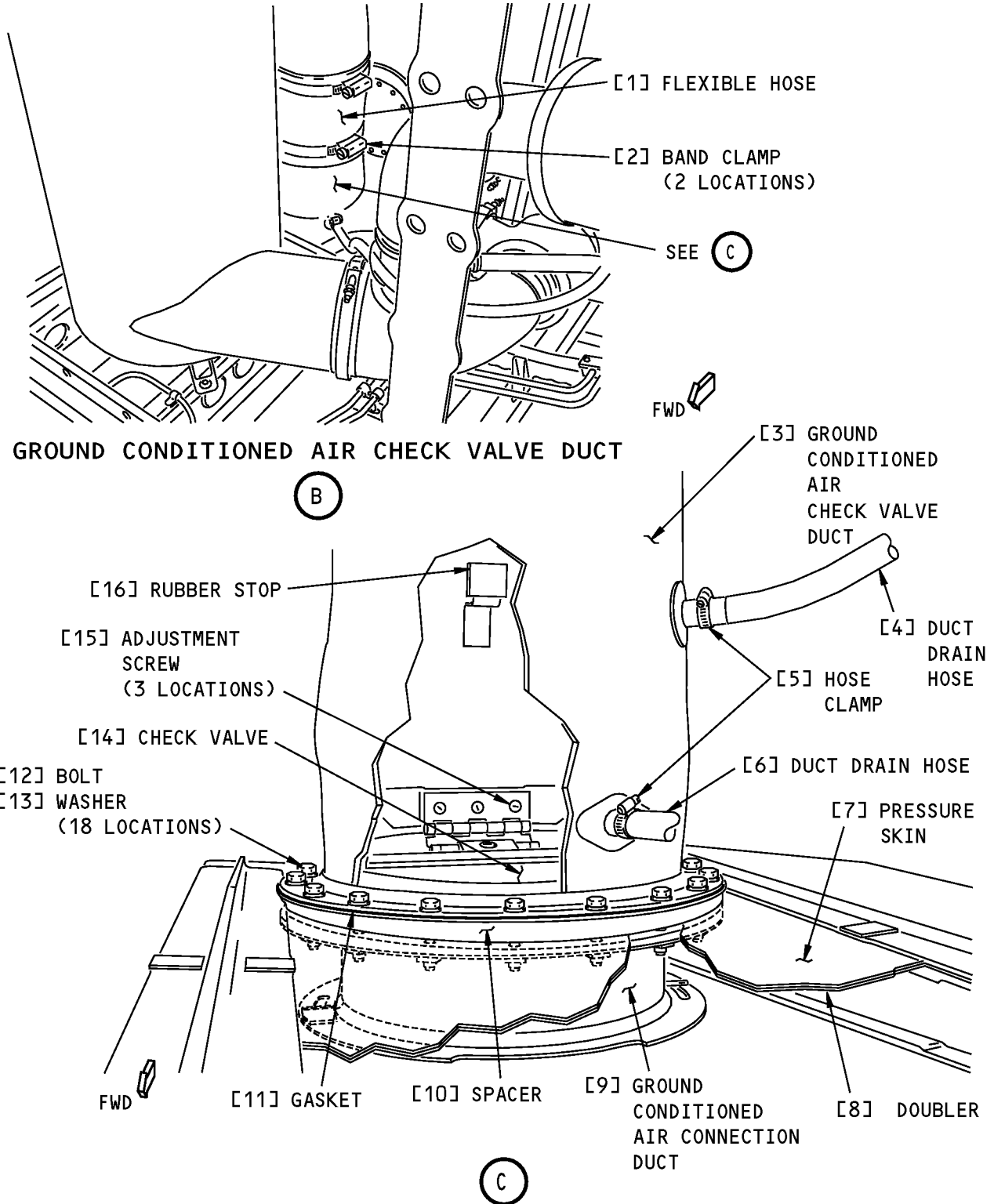
**Ground Conditioned Air Connection Duct and Check Valve Duct Installation  
Figure 401 (Sheet 1 of 2)/21-21-01-990-801-001**

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**Ground Conditioned Air Connection Duct and Check Valve Duct Installation**  
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TASK 21-21-01-400-801-001

#### 3. Ground Conditioned Air Connection Duct Installation

##### A. References

Reference	Title
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	BMS 5-95

##### 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

##### D. Access Panels

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

##### E. Preparation for the Installation

SUBTASK 21-21-01-010-005-001

(1) Open this access panel:

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

SUBTASK 21-21-01-140-001-001

(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 21-21-01-390-001-001

(3) Apply a layer of the sealant, A00247 to the faying surface between the doubler [8] on the airplane skin and the air connection duct [9]. To apply the sealant, A00247, do this task: Non-Removable Faying (Mated) Surface Seal Application, TASK 51-31-00-390-801.

##### F. Ground Conditioned Air Connection Duct Installation

SUBTASK 21-21-01-420-001-001

(1) Put the air connection duct [9] in its position:

(a) Make sure the air connection duct [9] is installed in the same position as when it was removed.

SUBTASK 21-21-01-420-002-001

(2) Install the bolts [12] and the washers [13].

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-21-01-410-002-001

- (1) Close this access panel:

Table with 2 columns: Number, Name/Location. Row 1: 191E, Low Pressure ECS Panel - Forward

SUBTASK 21-21-01-410-003-001

- (2) 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.

END OF TASK

TASK 21-21-01-000-802-001

4. Ground Conditioned Air Check Valve Duct Removal

A. References

Table with 2 columns: Reference, Title. Rows: 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

Table with 2 columns: Zone, Area. Rows: 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. Preparation for the Removal

SUBTASK 21-21-01-860-003-001

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

SUBTASK 21-21-01-860-004-001

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

SUBTASK 21-21-01-010-006-001

- (3) Open the forward cargo compartment door.

SUBTASK 21-21-01-010-007-001

- (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.

D. Ground Conditioned Air Check Valve Duct Removal

SUBTASK 21-21-01-020-002-001

- (1) Remove the check valve duct [3] as follows:
(a) Loosen the hose clamps [5] and disconnect the duct drain hoses [4] and [6] from the check valve duct [3].
(b) Remove the band clamps [2].
(c) Disconnect the flexible hose [1] from the check valve duct [3].
(d) Remove the bolts [12] and the washers [13].

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(e) Remove the check valve duct [3].

END OF TASK

TASK 21-21-01-400-802-001

5. Ground Conditioned Air Check Valve Duct Installation

A. General

(1) A hinge on the check valve duct 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 check valve to close. Before you install the check valve duct, 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
3	Check valve duct	21-21-01-10-035	HAP 101-999
11	Gasket	21-21-01-10-025	HAP 101-999

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

F. Preparation for the Installation

SUBTASK 21-21-01-710-001-001

- (1) Do this check of the check valve duct [3]:
  - (a) Put the lower flange of the check valve duct [3] on a straight edge.
  - (b) Put the edge of the check valve [14] which does not have the hinge on the straight edge.
  - (c) Make sure there is a small clearance between the edge of the check valve [14] and the straight edge below the hinge.
  - (d) If there is no clearance, adjust the hinge as follows:
    - 1) Loosen the adjustment screws [15].
    - 2) Move the hinge up as necessary.

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- 3) Tighten the adjustment screws [15].
- (e) Push down on the check valve [14] at the hinge.
- (f) Make sure that the clearance in the above step closes without too much downward force.
- (g) Release the pressure on the check valve [14].
- (h) Make sure that there is clearance again between the edge of the check valve [14] and the straight edge.
- (i) If too much force is necessary to remove the clearance when you push down on the check valve [14], adjust the hinge as follows:
  - 1) Loosen the adjustment screws [15].
  - 2) Move the hinge down as necessary.
  - 3) Tighten the adjustment screws [15].
- (j) Do this check again to make sure the check valve [14] operates correctly.

### G. Check Valve Duct Installation

SUBTASK 21-21-01-210-002-001

- (1) Examine the gasket [11] for damage or deterioration.
  - (a) Install a new gasket [11] if there is damage or deterioration.

SUBTASK 21-21-01-420-003-001

- (2) Install the check valve duct [3] as follows:
  - (a) Put the check valve duct [3] in its position.
  - (b) Install the washers [13] and the bolts [12].
  - (c) Connect the flexible hose [1] to the check valve duct [3].
  - (d) Put the band clamps [2] over the joints.
  - (e) Tighten the band clamps [2].
  - (f) Connect the duct drain hoses [4] and [6] to the check valve duct [3] and tighten the hose clamps [5].

### H. Check Valve Duct Installation Test

SUBTASK 21-21-01-860-005-001

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

SUBTASK 21-21-01-860-006-001

- (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.

SUBTASK 21-21-01-790-001-001

- (3) Make sure that there are no leaks.

SUBTASK 21-21-01-010-008-001

- (4) Open this access panel:

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

SUBTASK 21-21-01-710-002-001

- (5) Make sure air flows out the drain hole.

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### I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-21-01-860-007-001

- (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 21-21-01-710-003-001

- (2) Make sure the check valve [14] is not completely closed.

SUBTASK 21-21-01-410-004-001

- (3) Close this access panel:

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

SUBTASK 21-21-01-410-005-001

- (4) 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 21-21-01-860-008-001

- (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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## AIRCRAFT MAINTENANCE MANUAL

### 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.

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:

<u>Number</u>	<u>Name/Location</u>
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

<u>Reference</u>	<u>Title</u>
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

<u>Zone</u>	<u>Area</u>
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

<u>Number</u>	<u>Name/Location</u>
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.

SUBTASK 21-21-01-860-010-002

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

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SUBTASK 21-21-01-010-009-002

(3) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
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:

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

————— **END OF TASK** —————

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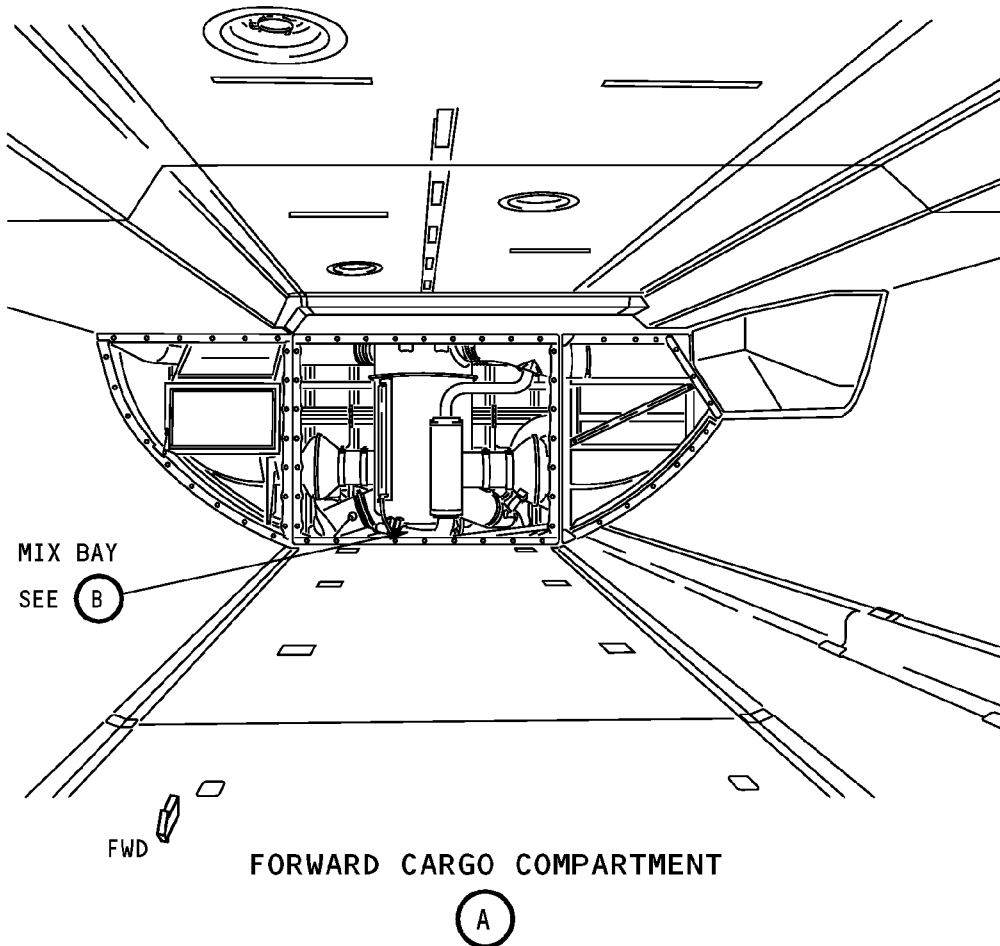
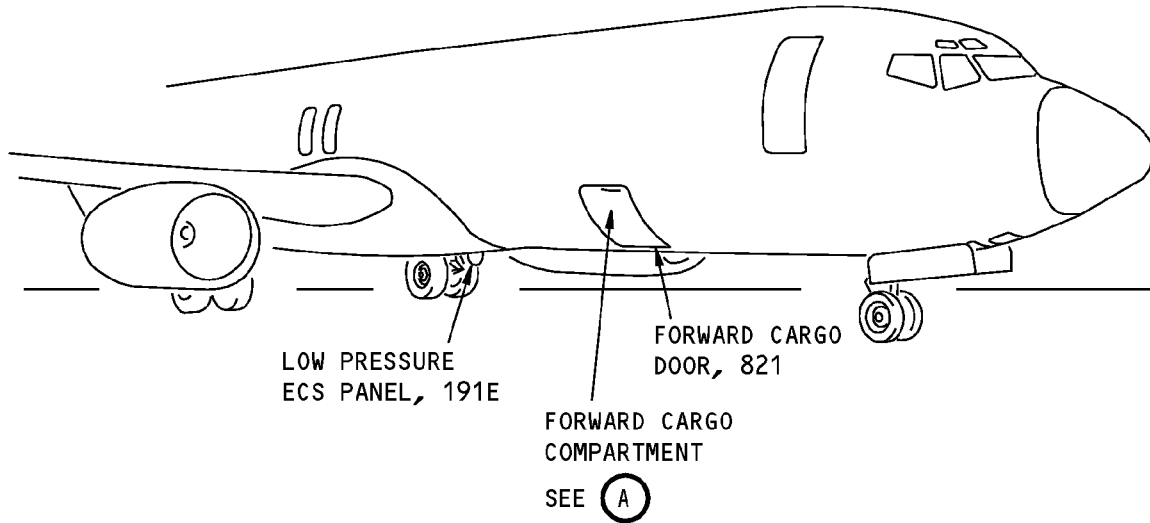
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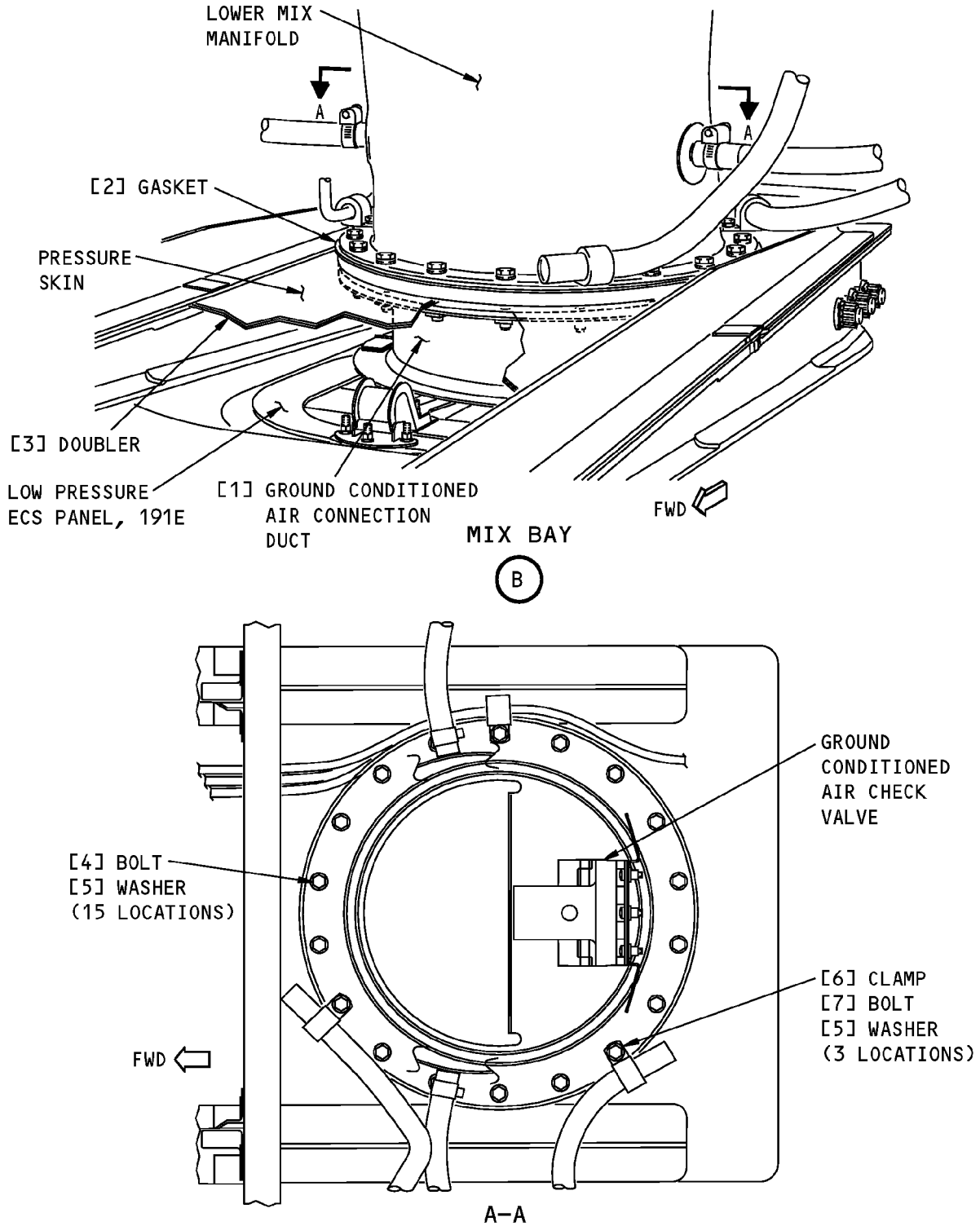
**Ground Conditioned Air Connection Duct Installation  
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TASK 21-21-01-400-803-002

#### 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	BMS 5-95

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Air connection duct	21-21-01-01-560	HAP 001-013, 015-026, 028-054

##### 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.

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G. Ground Conditioned Air Connection Duct Installation

SUBTASK 21-21-01-420-004-002

(1) Install the air connection duct [1] in its position:

- (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:

Table with 2 columns: Number, Name/Location. Row 1: 821, Forward Cargo Door

SUBTASK 21-21-01-410-008-002

(3) Close this access panel:

Table with 2 columns: Number, Name/Location. Row 1: 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

Table with 2 columns: Reference, Title. Rows: 21-00-00-800-802, 24-22-00-860-811, 25-52-17-000-801

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#### 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

#### 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:

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- (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].

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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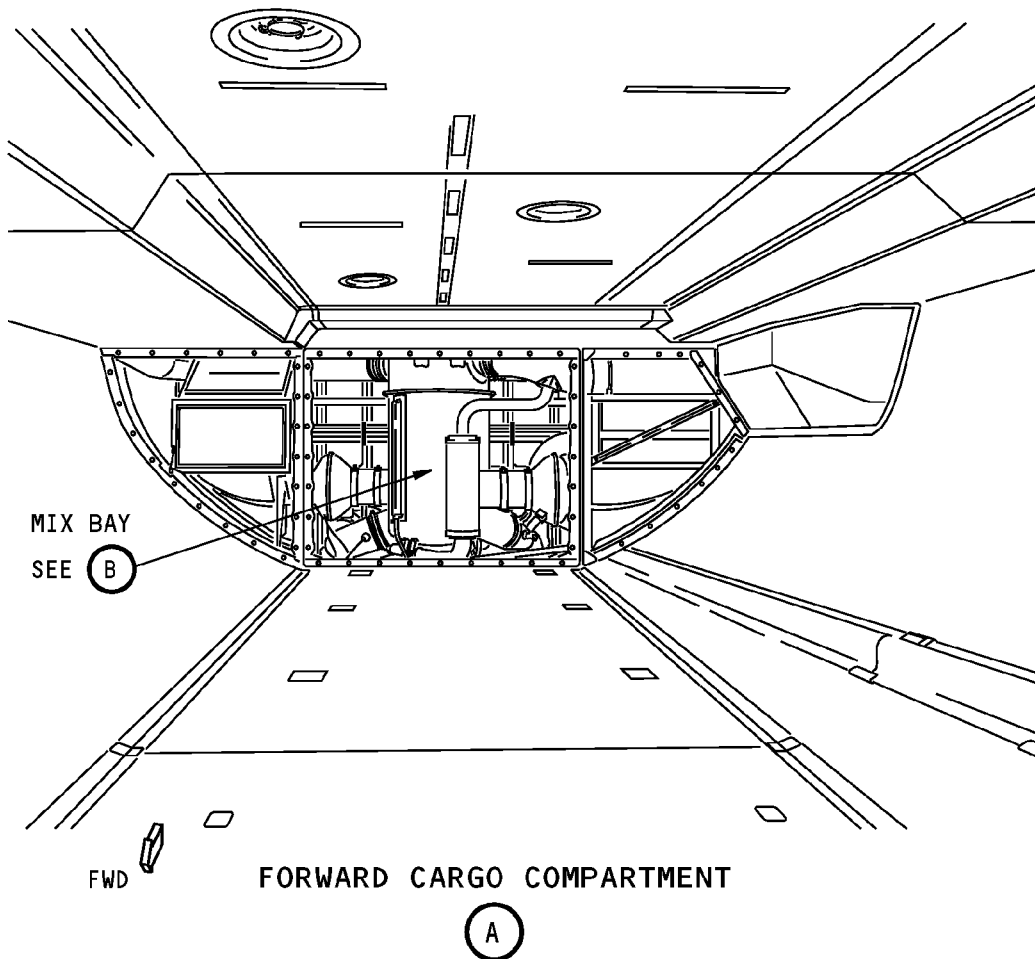
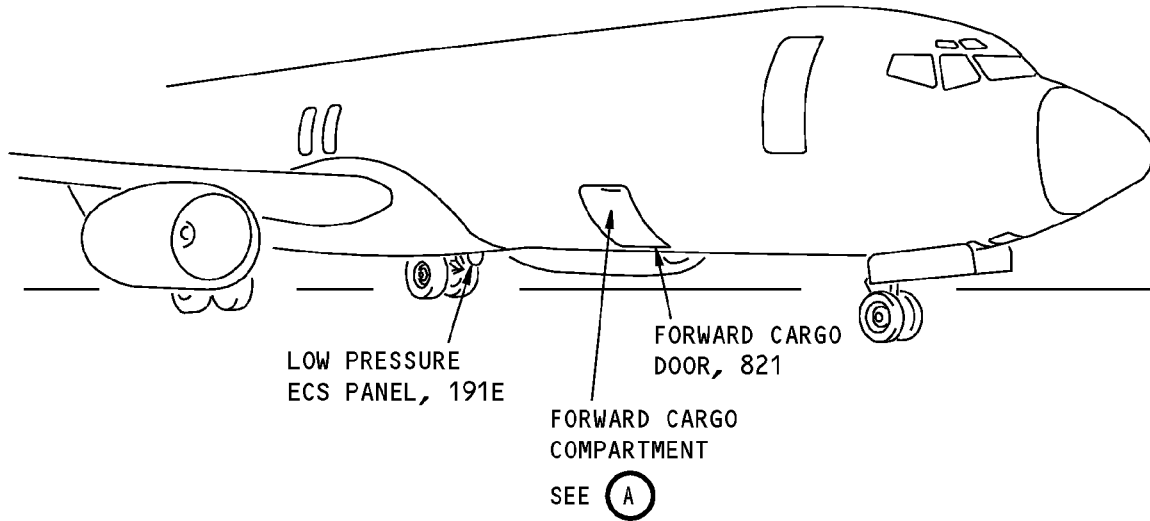
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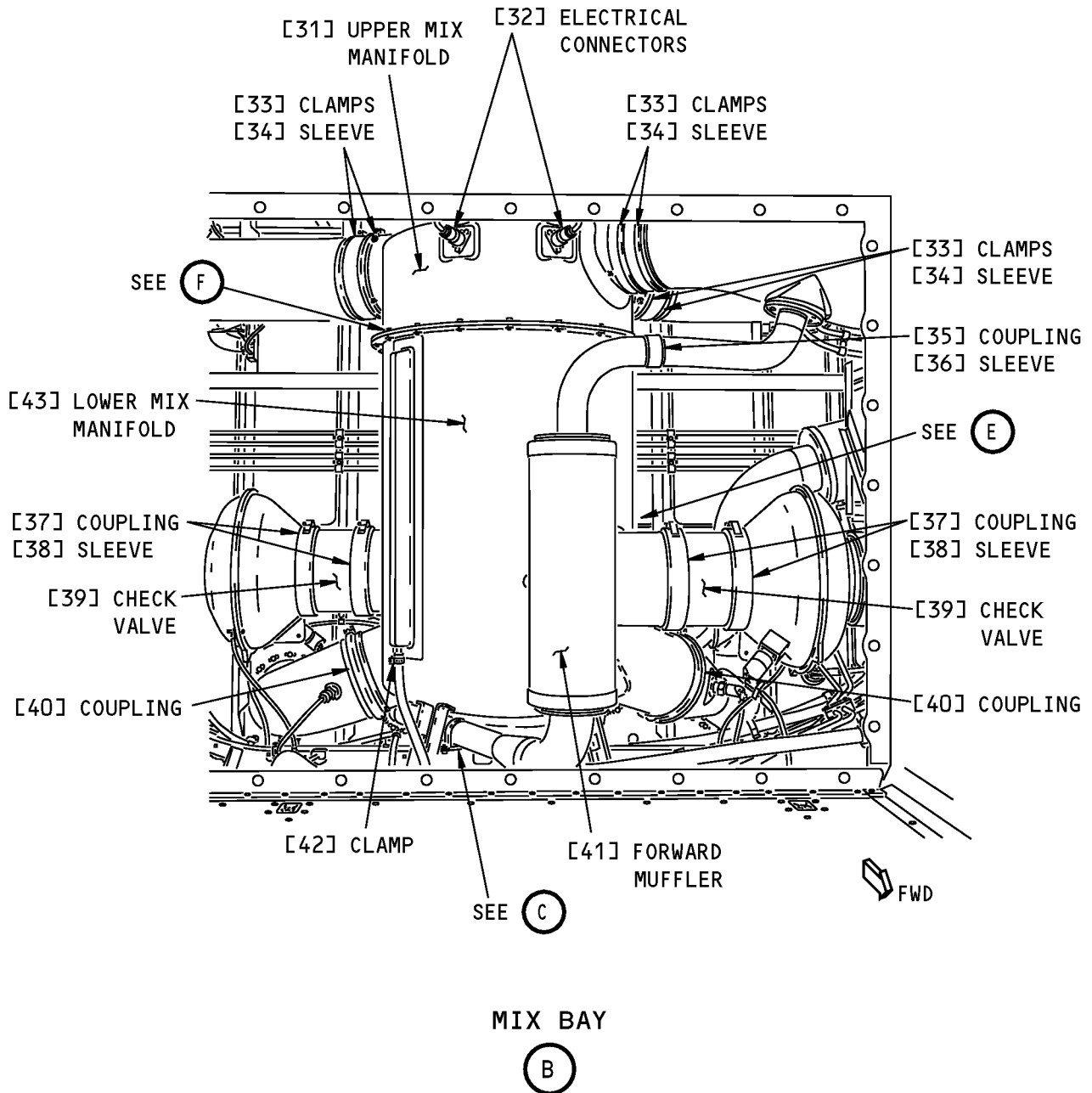


**Ground Conditioned Air Check Valve Installation  
Figure 402 (Sheet 1 of 5)/21-21-01-990-803-002**

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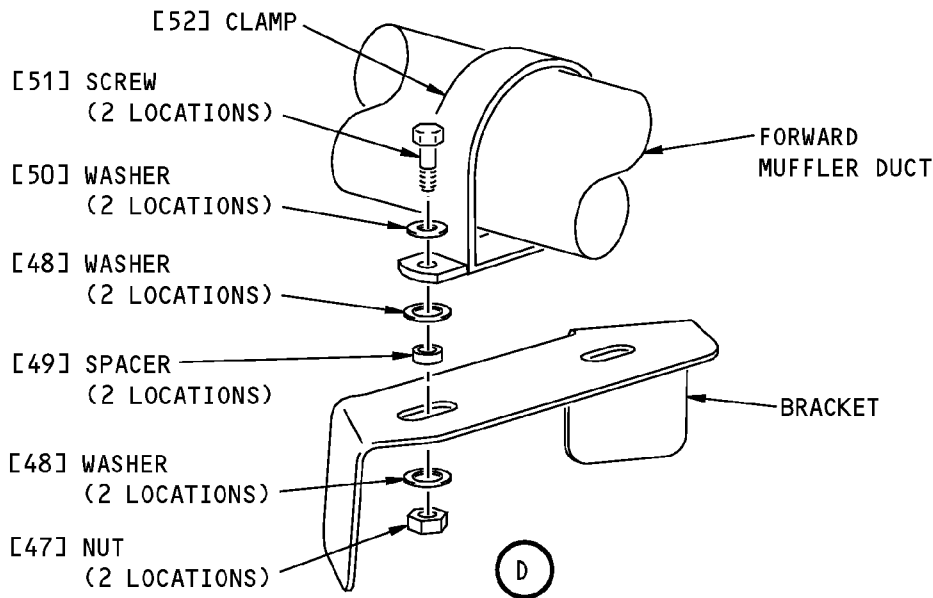
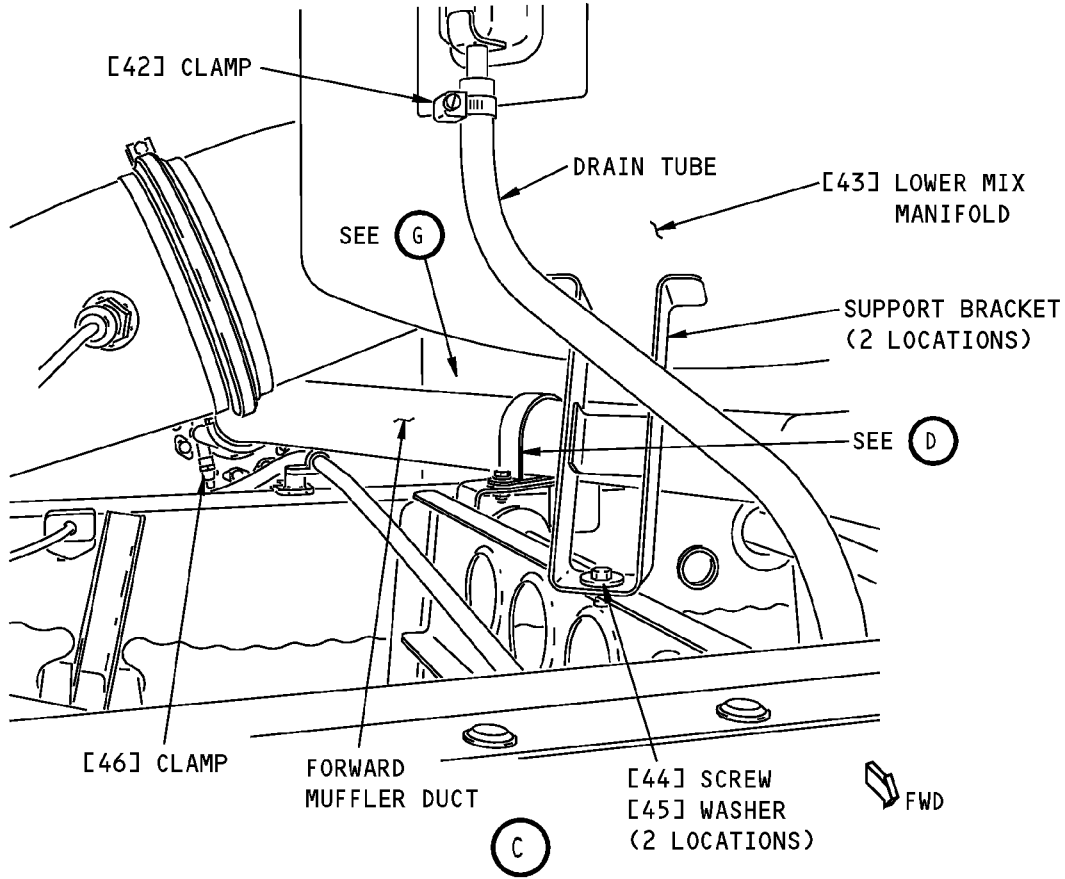
**Ground Conditioned Air Check Valve Installation  
Figure 402 (Sheet 2 of 5)/21-21-01-990-803-002**

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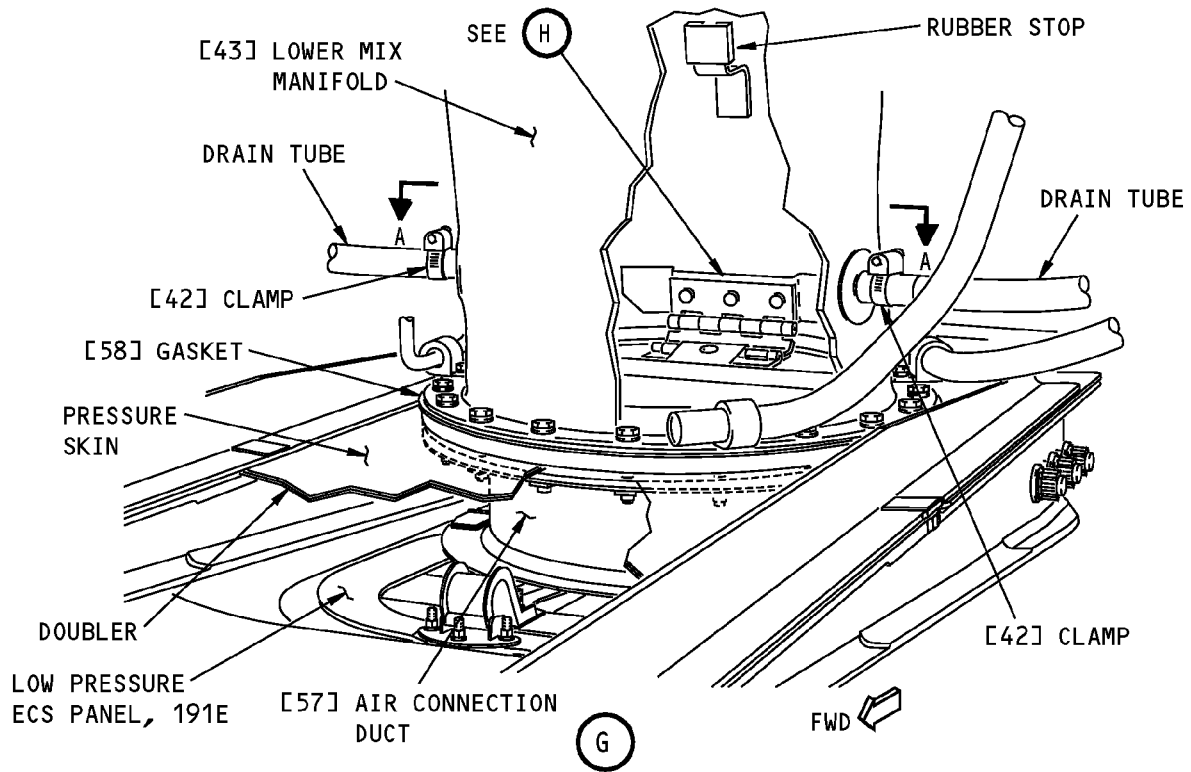
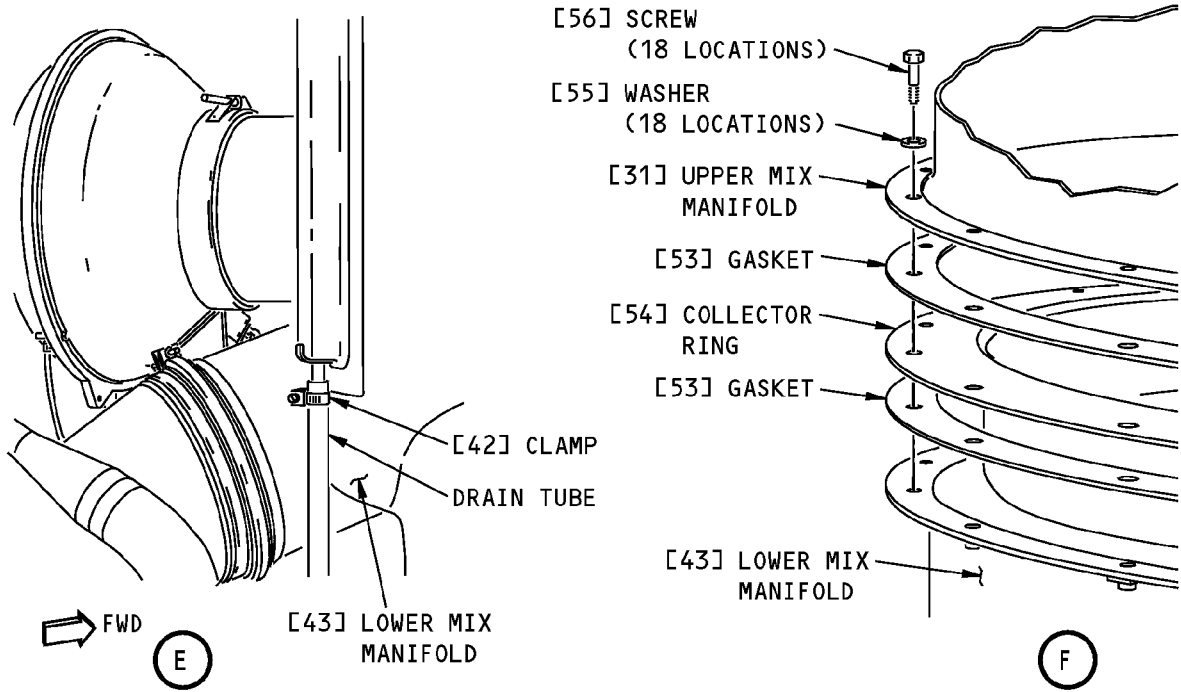
**Ground Conditioned Air Check Valve Installation  
Figure 402 (Sheet 3 of 5)/21-21-01-990-803-002**

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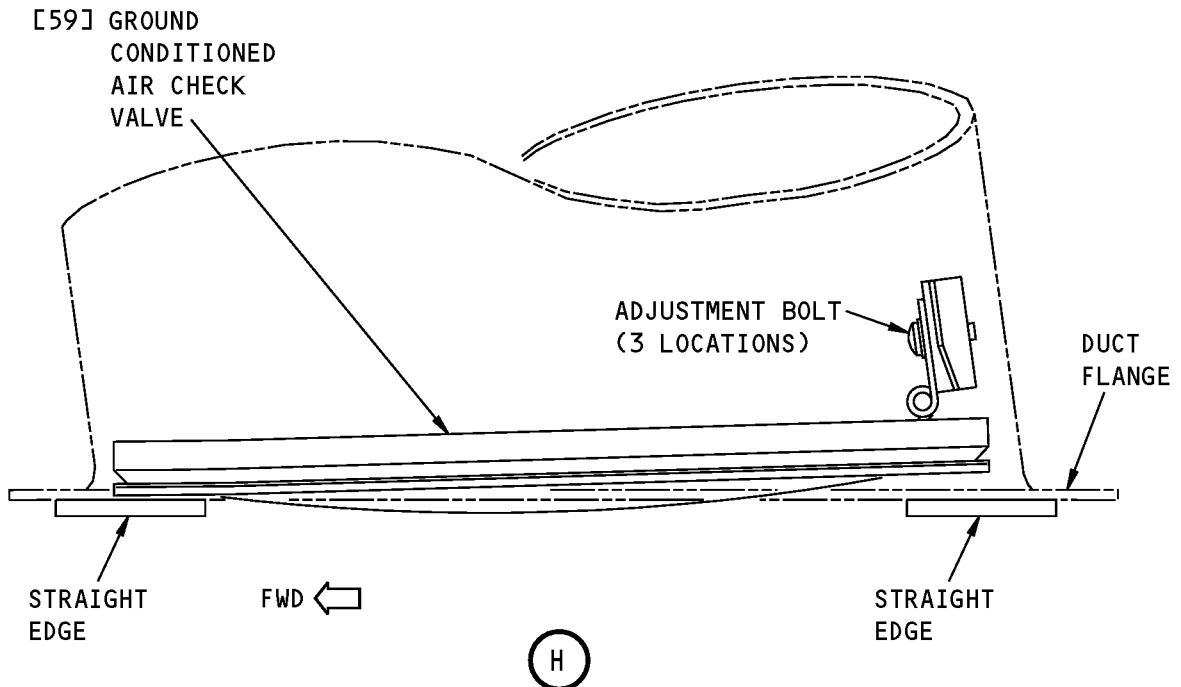
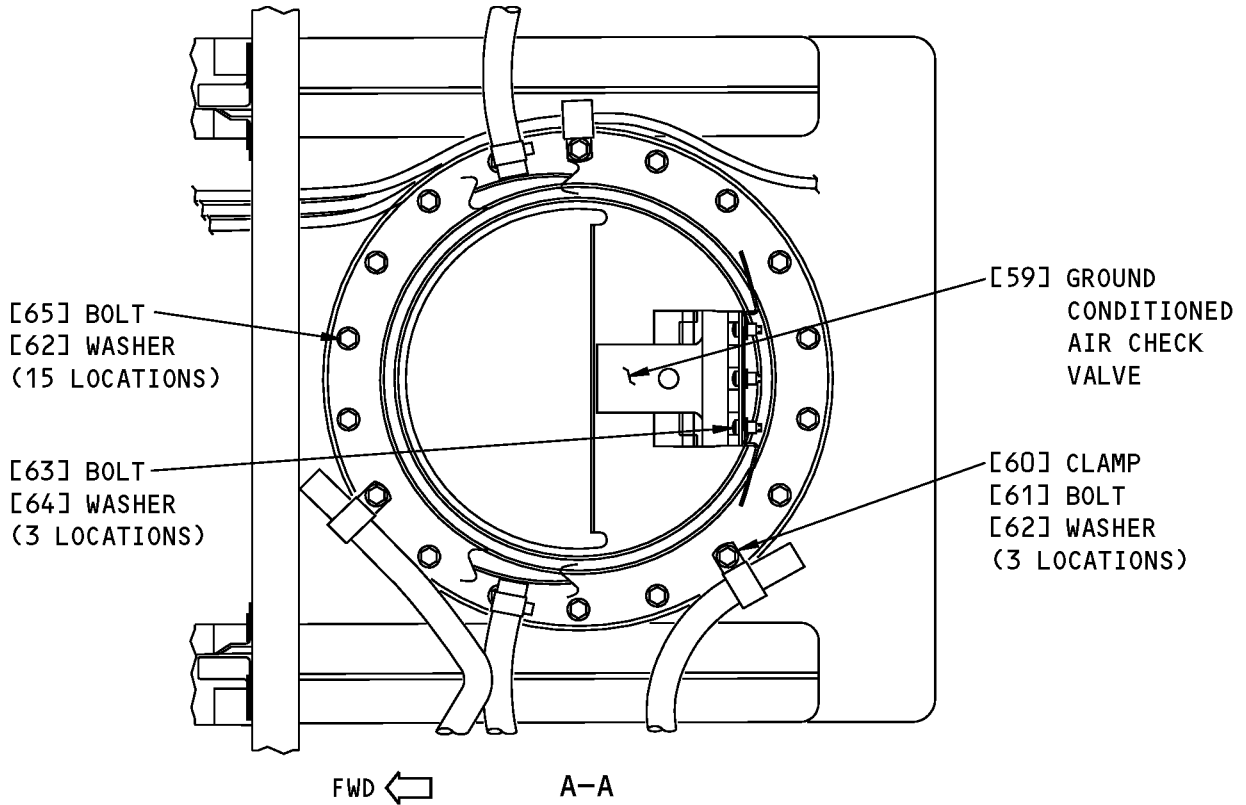
**Ground Conditioned Air Check Valve Installation**  
**Figure 402 (Sheet 4 of 5)/21-21-01-990-803-002**

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**Ground Conditioned Air Check Valve Installation**  
**Figure 402 (Sheet 5 of 5)/21-21-01-990-803-002**

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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	HAP 001-013, 015-026, 028-054
58	Gasket	21-21-01-01-550	HAP 001-013, 015-026, 028-054
59	Check valve	21-21-01-01-430	HAP 001-013, 015-026, 028-054

### 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].

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### 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.
  - (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.

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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]:
- (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].

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### 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.

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:

<u>Number</u>	<u>Name/Location</u>
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:

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

SUBTASK 21-21-01-410-011-002

(5) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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** —————

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## MIX CHAMBER - REMOVAL/INSTALLATION

### 1. General

A. This procedure has these tasks:

- (1) A removal of the mix chamber.
- (2) An installation of the mix chamber.

B. The mix chamber is installed behind the liner at the aft end of the forward cargo compartment.

#### **TASK 21-21-02-000-801**

### 2. Mix Chamber 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
121	Forward Cargo Compartment - Left
125	Air Conditioning Distribution Bay - Left
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 21-21-02-860-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	1	C01015	AIR CONDITIONING RECIRC FAN CONT
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

SUBTASK 21-21-02-860-002

(2) Make sure the L PACK and R PACK switches on the P5-10 Air Conditioning Panel are in the OFF position.

SUBTASK 21-21-02-010-001

(3) Open the forward cargo door.

SUBTASK 21-21-02-010-002

(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 Check Valve Removal

SUBTASK 21-21-02-020-001

(1) Do these steps to remove the mix chamber:

- (a) Remove the clamp [1].
- (b) Remove the clamp [4].
- (c) Remove the clamp [5].
- (d) Remove the coupling [2].

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- (e) Remove the strap [9].
- (f) Remove the mix chamber [3].

SUBTASK 21-21-02-020-002

- (2) Remove the clamp [8].

SUBTASK 21-21-02-020-003

- (3) Remove the flex duct [6] from the mix chamber [3].

————— **END OF TASK** —————

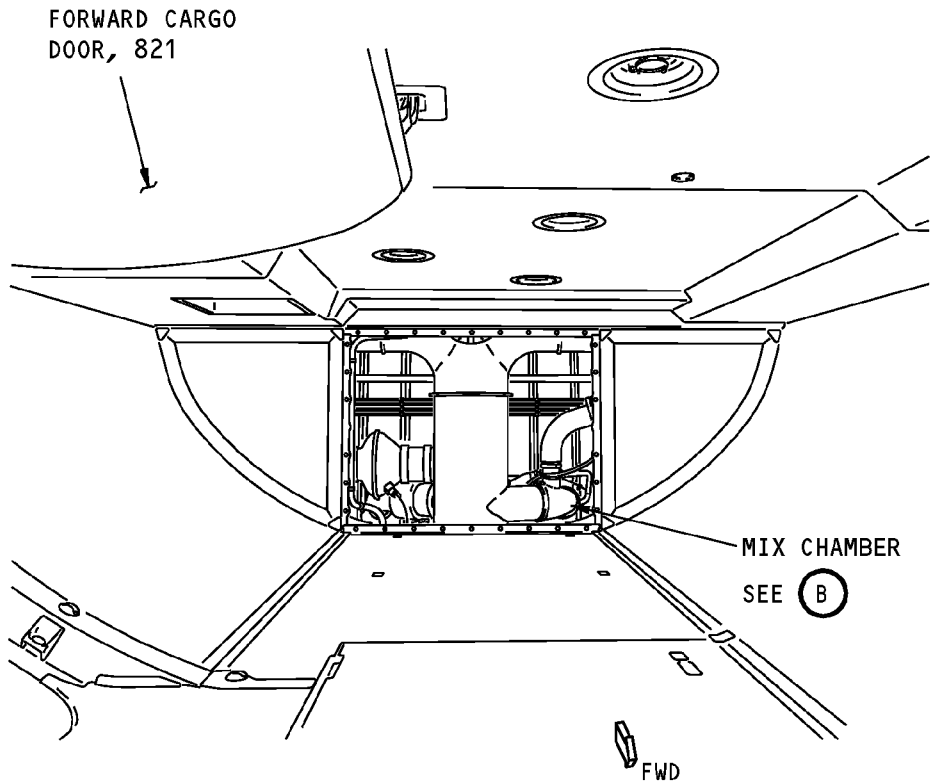
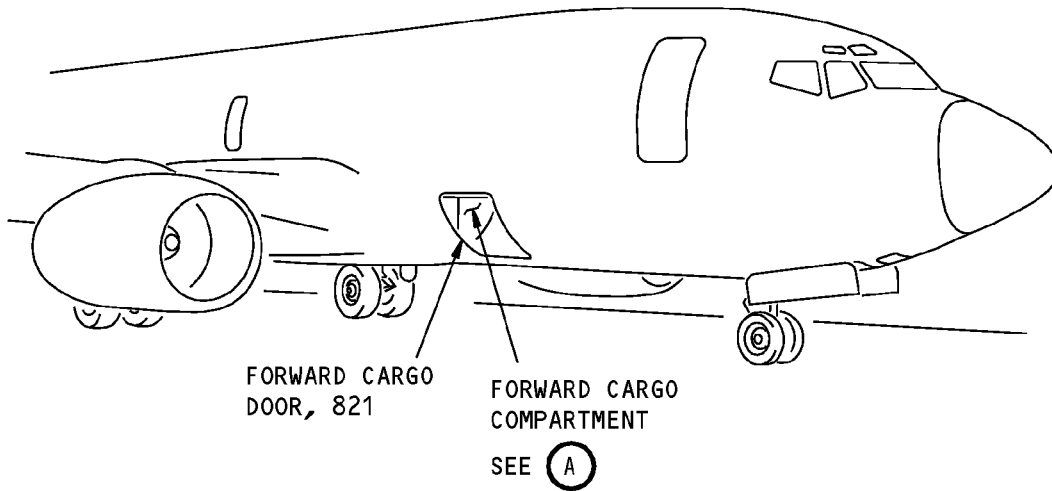
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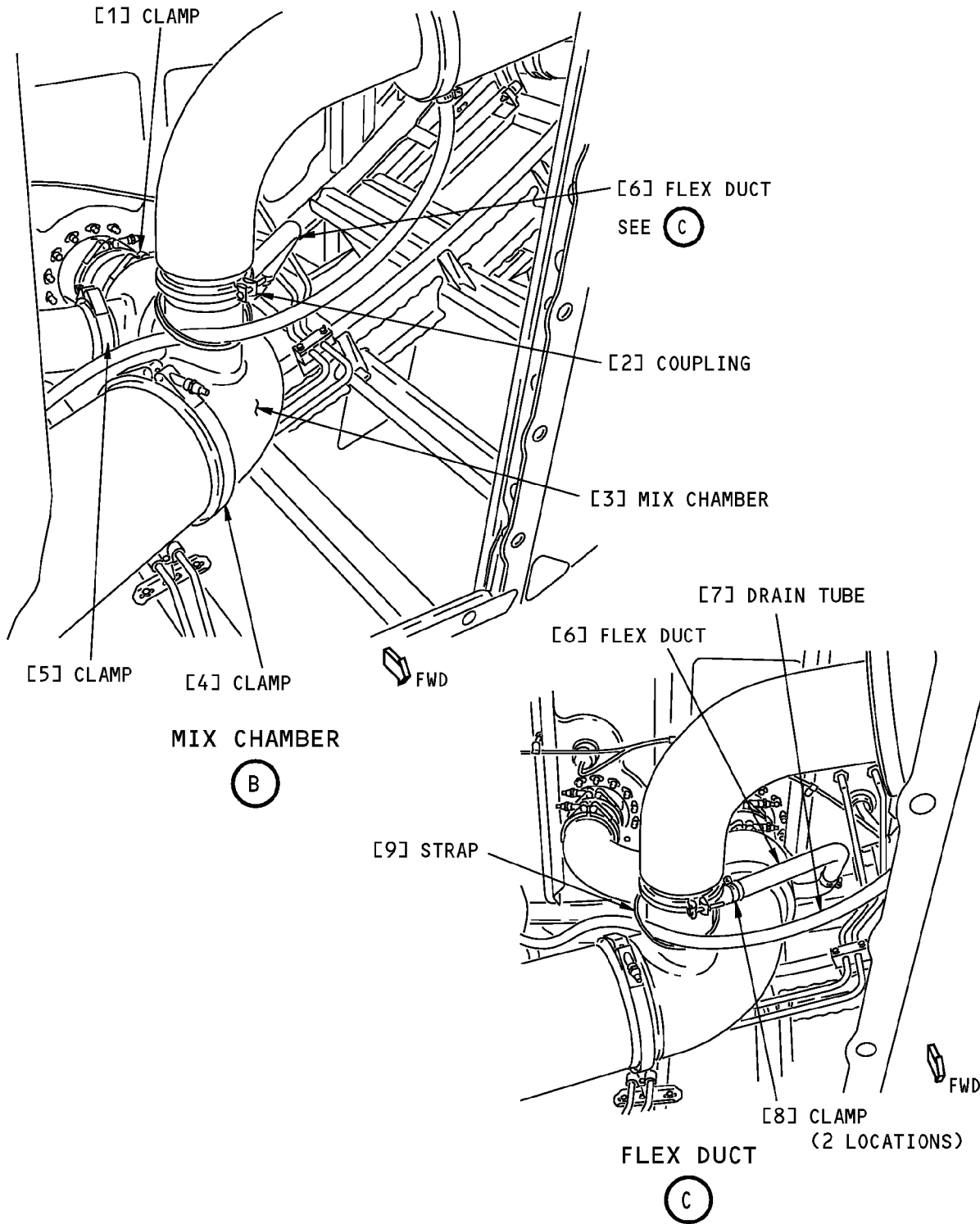
**FORWARD CARGO COMPARTMENT**

(A)

**Mix Chamber Installation  
Figure 401 (Sheet 1 of 2)/21-21-02-990-801**

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**Mix Chamber Installation  
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#### TASK 21-21-02-400-801

#### 3. Mix Chamber 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
3	Mix chamber	21-21-51-05-075	HAP 101

##### C. Location Zones

Zone	Area
121	Forward Cargo Compartment - Left
125	Air Conditioning Distribution Bay - Left
212	Flight Compartment - Right

##### D. Mix Chamber Installation

SUBTASK 21-21-02-420-001

(1) Put the flex duct [6] in its position on the mix chamber [3].

SUBTASK 21-21-02-420-002

(2) Install the clamp [8].

SUBTASK 21-21-02-420-003

(3) Do these steps to install the mix chamber [3]:

- (a) Put the mix chamber [3] in its position.
- (b) Install the clamp [5].
- (c) Install the clamp [1].
- (d) Install the coupling [2].
- (e) Install the clamp [4].
- (f) Install the strap [9] to attach the drain tube [7] to the top of the mix chamber [3].

NOTE: Make sure you do not collapse the drain tube.

##### E. Mix Chamber Leakage Test

SUBTASK 21-21-02-860-003

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

SUBTASK 21-21-02-860-004

(2) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	1	C01015	AIR CONDITIONING RECIRC FAN CONT
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

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SUBTASK 21-21-02-860-005

- (3) Make sure the L PACK and R PACK switches on the P5-10 Air Conditioning Panel are in the OFF position.

SUBTASK 21-21-02-860-006

- (4) Put the RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

SUBTASK 21-21-02-790-001

- (5) Make sure there are no leaks around the mix chamber connections.
  - (a) If you find a leak you must repair it.

### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-21-02-410-001

- (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 21-21-02-010-003

- (2) Close the forward cargo door.

SUBTASK 21-21-02-860-007

- (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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## AIRCRAFT MAINTENANCE MANUAL

### 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)

B. Location Zones

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

C. Prepare for the Removal

#### **HAP 001-013, 015-026, 028-054**

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.

#### **HAP 101-999**

SUBTASK 21-22-01-860-001

- (2) Make sure the RECIRC FAN switch, on the P5-10 air conditioning panel, is set to the OFF position.

#### **HAP ALL**

SUBTASK 21-22-01-860-002

- (3) 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

- (4) 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

- (5) To get access to the first officer's foot outlet valve, 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.

<b>EFFECTIVITY</b> <b>HAP ALL</b>	
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## AIRCRAFT MAINTENANCE MANUAL

### 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].

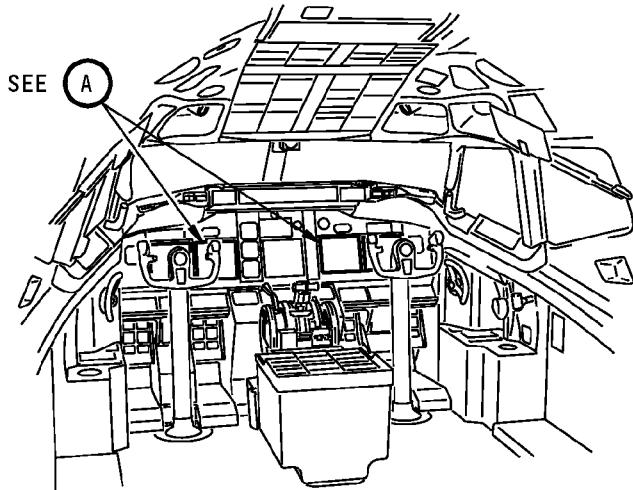
————— **END OF TASK** —————

EFFECTIVITY  
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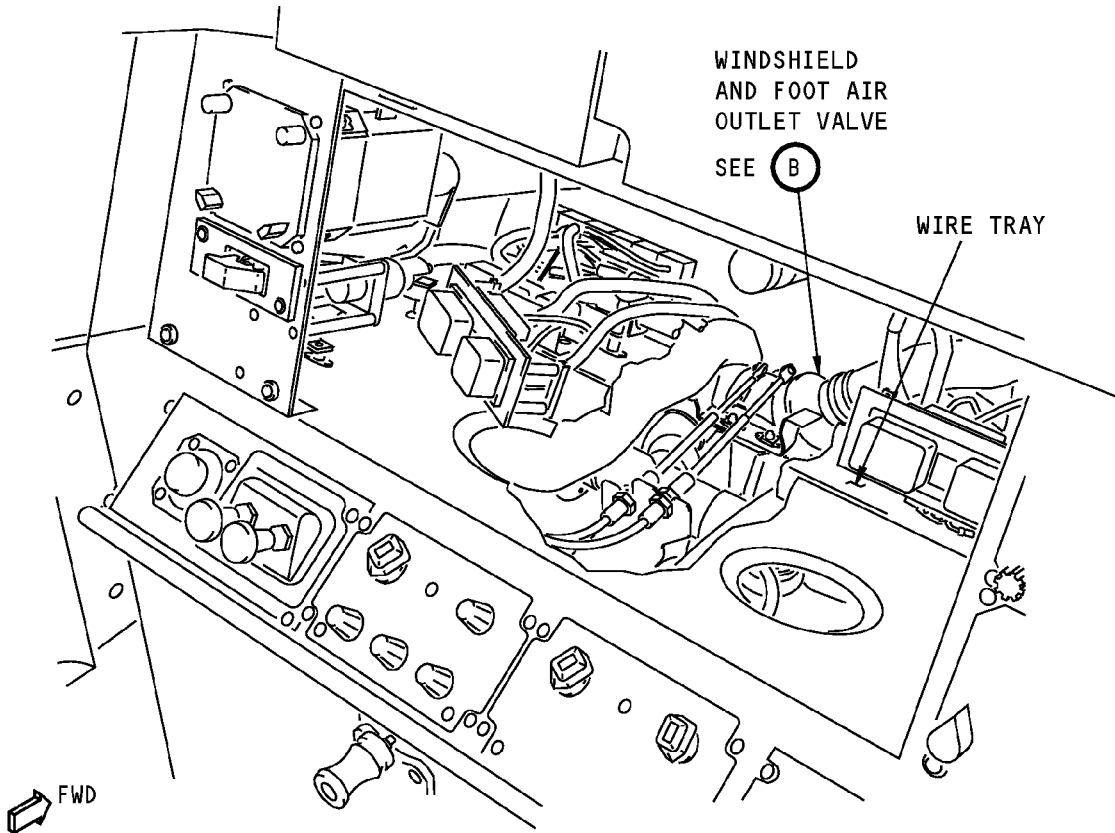
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**FLIGHT COMPARTMENT**



**(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)**

**NOTE:** LCD PANELS REMOVED



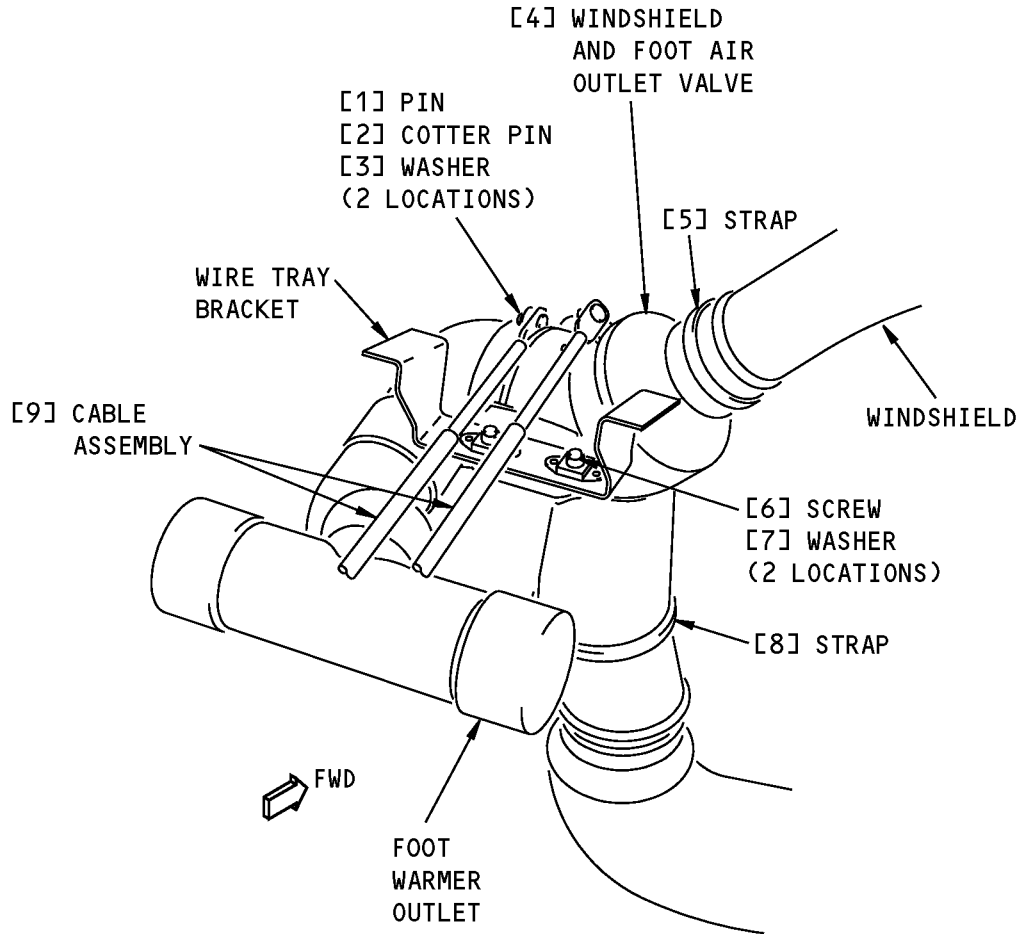
**Windshield and Foot Air Outlet Valve Installation  
Figure 401 (Sheet 1 of 2)/21-22-01-990-801**

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**WINDSHIELD AND FOOT AIR OUTLET VALVE**

**B**

**Windshield and Foot Air Outlet Valve Installation  
Figure 401 (Sheet 2 of 2)/21-22-01-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

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 (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)

##### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Cotter pin	21-22-02-01-010	HAP 001-013, 015-026, 028-030
		21-22-02-01A-010	HAP 031-046, 054, 101-104
4	Valve	53-42-00-17B-960	HAP 047-053, 105-999
		21-22-01-01-095	HAP 001-013, 015-026, 028-030
		21-22-01-01-100	HAP 001-013, 015-026, 028-030
		21-22-01-01-150	HAP 001-013, 015-026, 028-030
		21-22-01-01-155	HAP 001-013, 015-026, 028-030
		21-22-01-01A-095	HAP 031-046, 054, 101-104
		21-22-01-01A-100	HAP 031-046, 054, 101-104
		21-22-01-01A-150	HAP 031-038
		21-22-01-01A-155	HAP 031-038
		53-42-00-17B-900	HAP 047-053, 105-999
		53-42-00-17B-905	HAP 047-053, 105-999

##### 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].

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## AIRCRAFT MAINTENANCE MANUAL

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:
  - (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, TASK 21-22-02-820-801.

### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-22-01-410-002

- (1) 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.

### HAP 101-999

SUBTASK 21-22-01-860-008

- (2) Set the RECIRC FAN switch to the AUTO position.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-22-01-860-009

- (3) Set the L and R RECIRC FAN switches to the AUTO position.

### HAP ALL

SUBTASK 21-22-01-410-003

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

SUBTASK 21-22-01-860-004

- (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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# AIRCRAFT MAINTENANCE MANUAL

## 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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## AIRCRAFT MAINTENANCE MANUAL

### 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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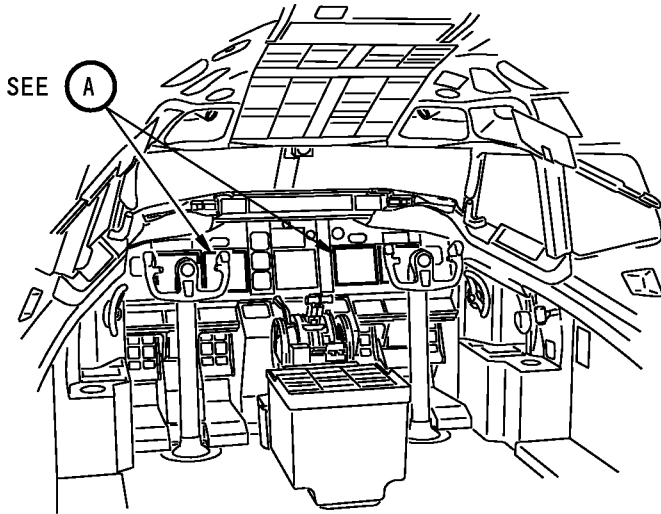
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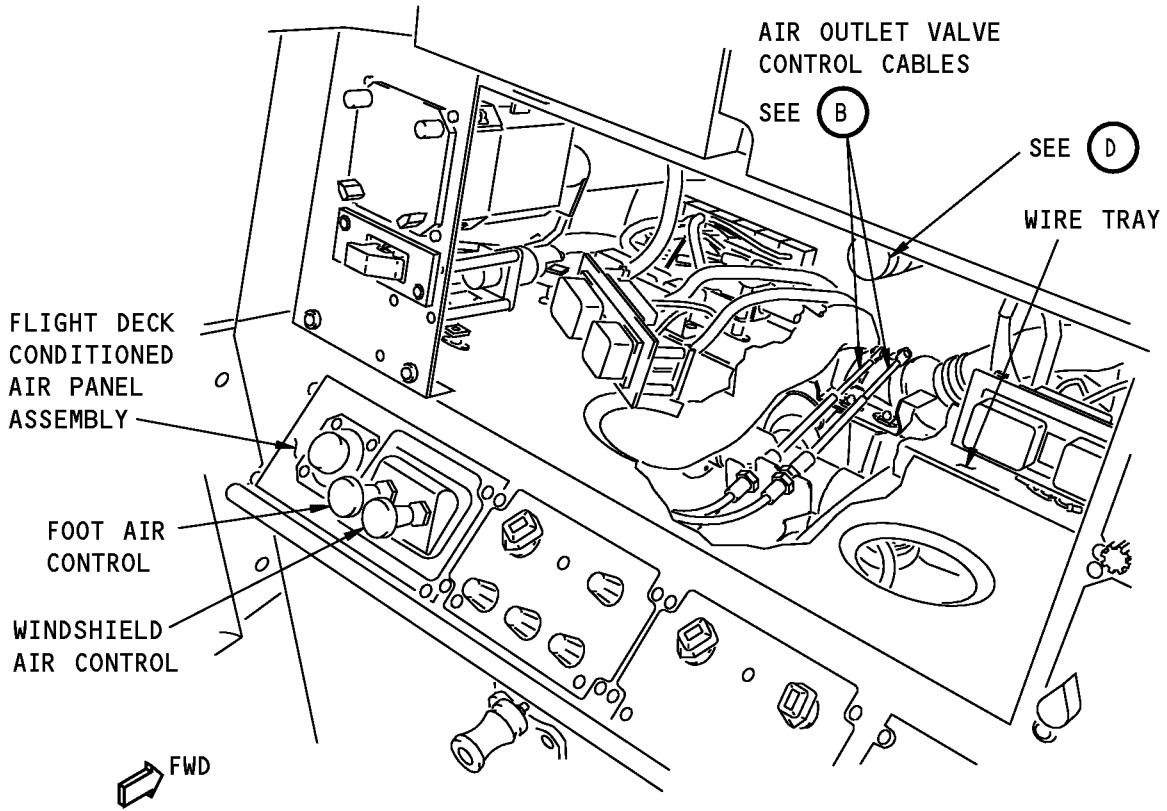
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**FLIGHT COMPARTMENT**



(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

**NOTE:** LCD PANELS REMOVED

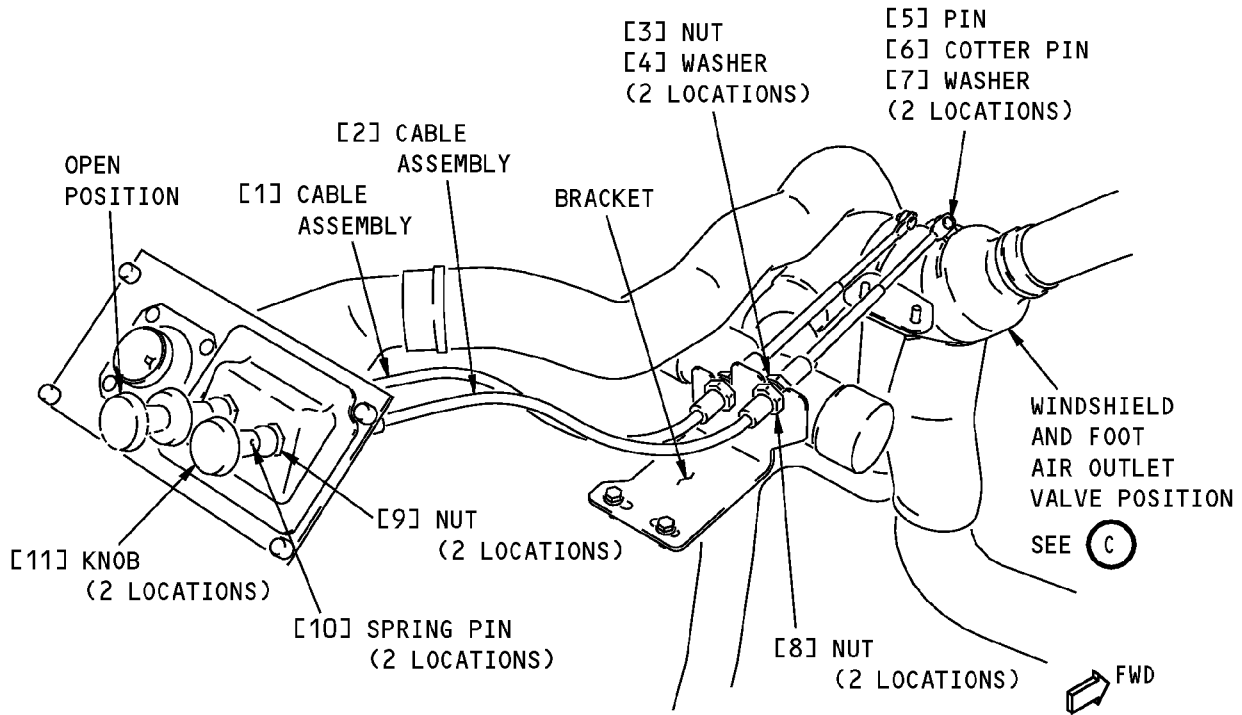


**Air Outlet Valve Control Cables Installation**  
**Figure 401 (Sheet 1 of 3)/21-22-02-990-801**

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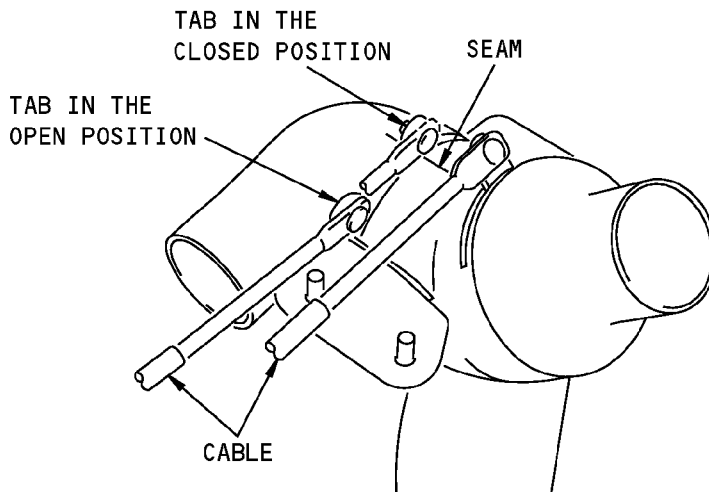
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**AIRCRAFT MAINTENANCE MANUAL**



**AIR OUTLET VALVE CONTROL CABLES**

(B)



**WINDSHIELD AND FOOT AIR OUTLET VALVE POSITION**

(C)

**Air Outlet Valve Control Cables Installation  
Figure 401 (Sheet 2 of 3)/21-22-02-990-801**

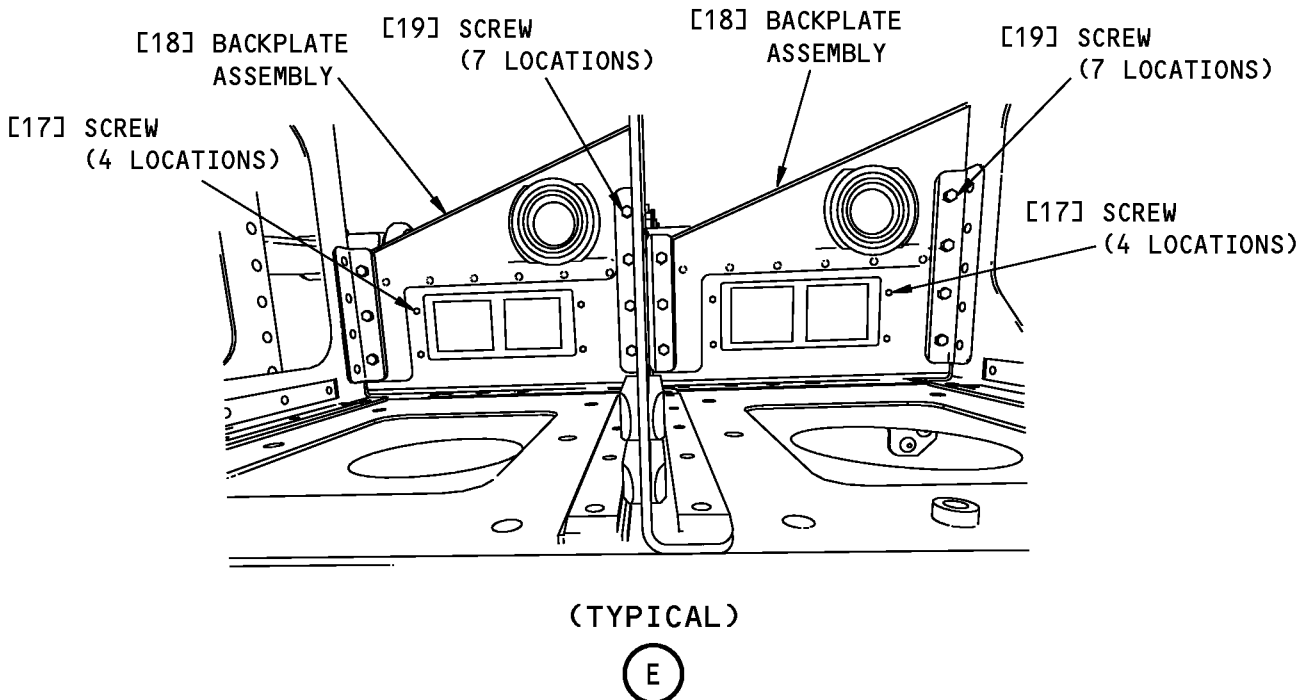
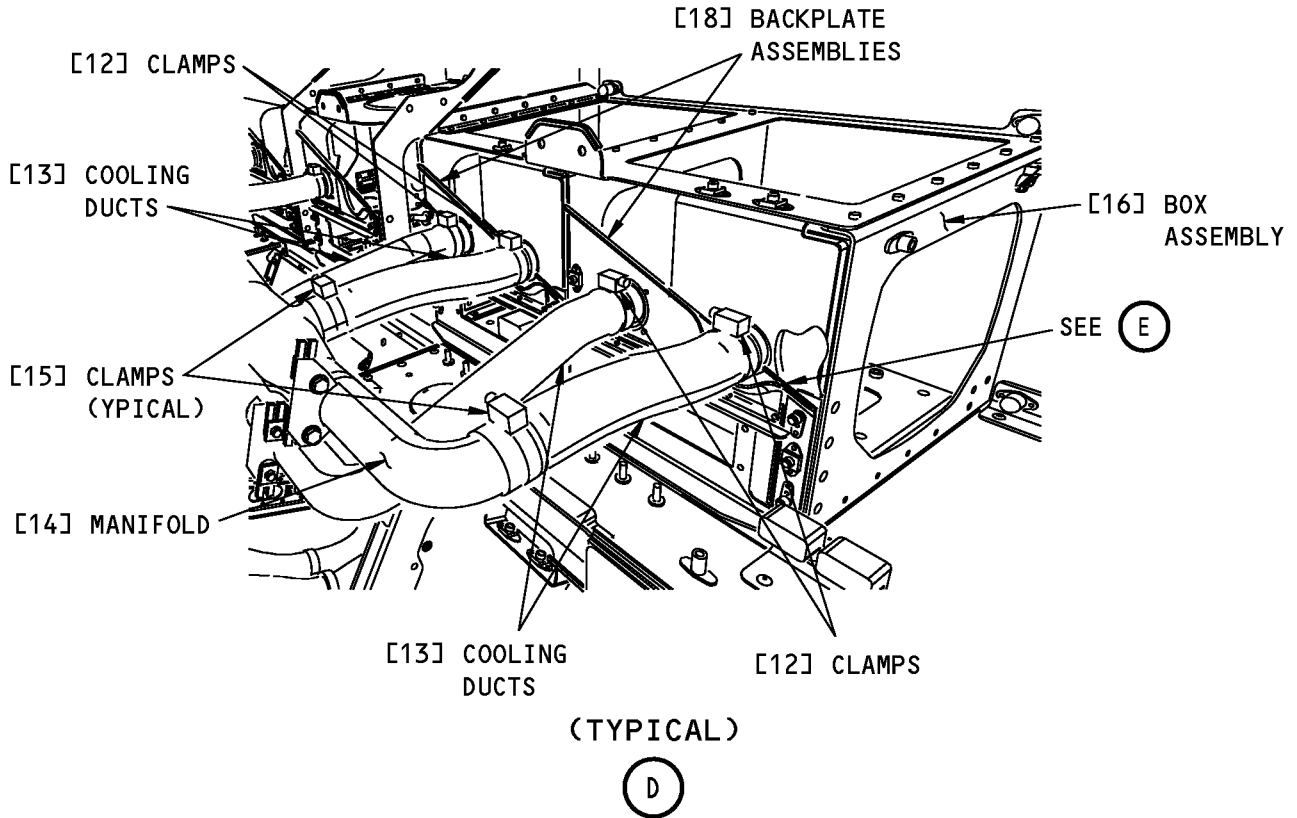
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**Air Outlet Valve Control Cables Installation**  
**Figure 401 (Sheet 3 of 3)/21-22-02-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

#### 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	21-22-02-01-030	HAP 001-013, 015-026, 028-030
		21-22-02-01A-030	HAP 031-046, 054, 101-104
		53-42-00-17B-630	HAP 047-053, 105-999
		53-42-00-17B-845	HAP 047-053, 105-999
2	Cable assembly	21-22-02-01-035	HAP 001-013, 015-026, 028-030
		21-22-02-01A-035	HAP 031-046, 054, 101-104
		53-42-00-17B-635	HAP 047-053, 105-999
		53-42-00-17B-850	HAP 047-053, 105-999
6	Cotter pin	21-22-02-01-010	HAP 001-013, 015-026, 028-030
		21-22-02-01A-010	HAP 031-046, 054, 101-104
		53-42-00-17B-960	HAP 047-053, 105-999

#### 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.

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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].

### 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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# AIRCRAFT MAINTENANCE MANUAL

## 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

(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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## AIRCRAFT MAINTENANCE MANUAL

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** —————

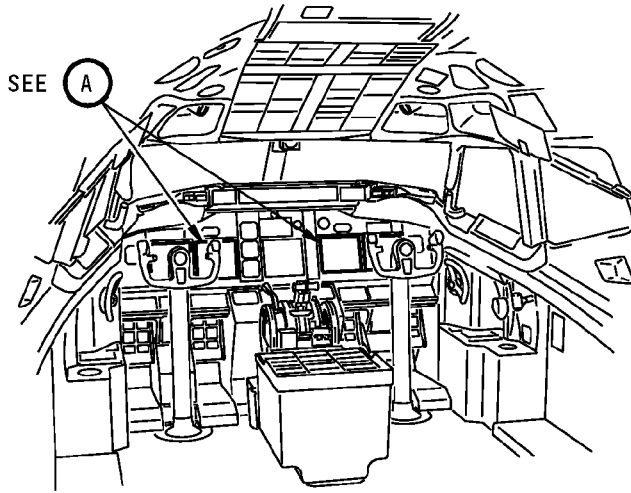
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HAP ALL

D633A101-HAP

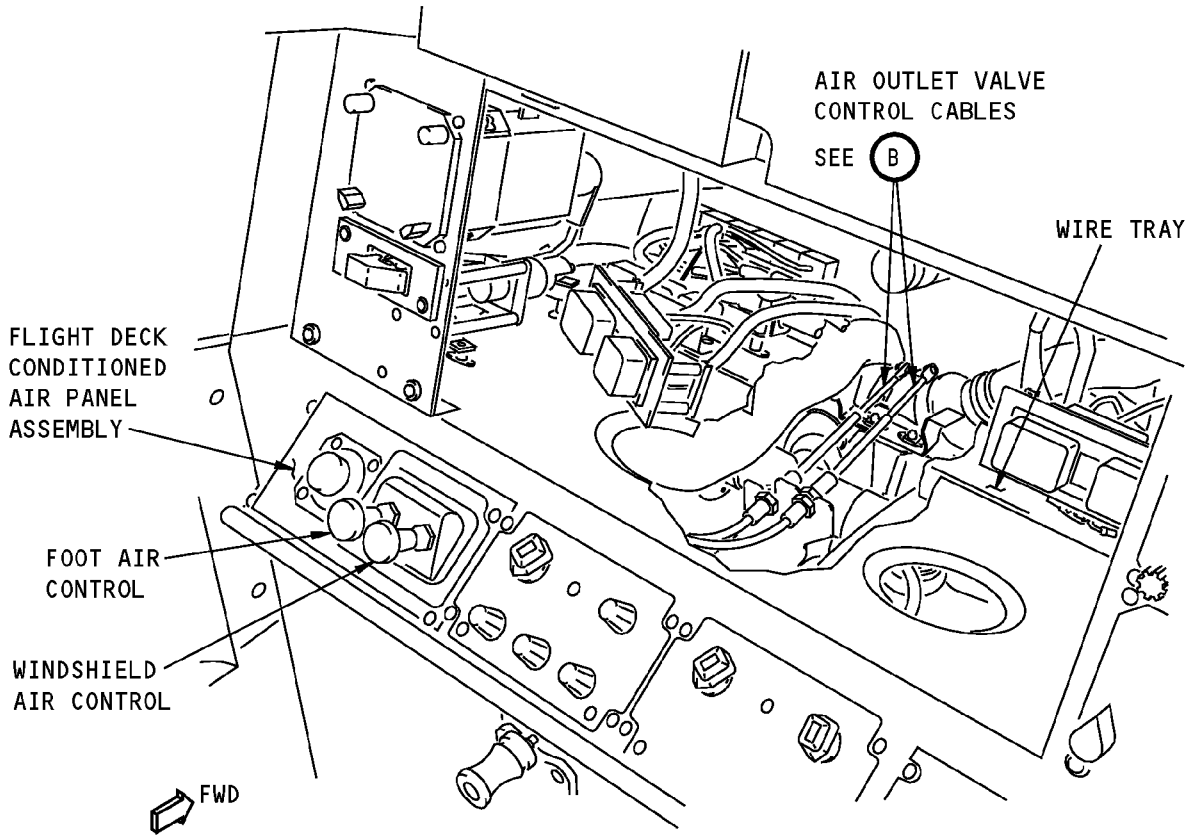
**21-22-02**

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**FLIGHT COMPARTMENT**



(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

**NOTE:** LCD PANELS REMOVED

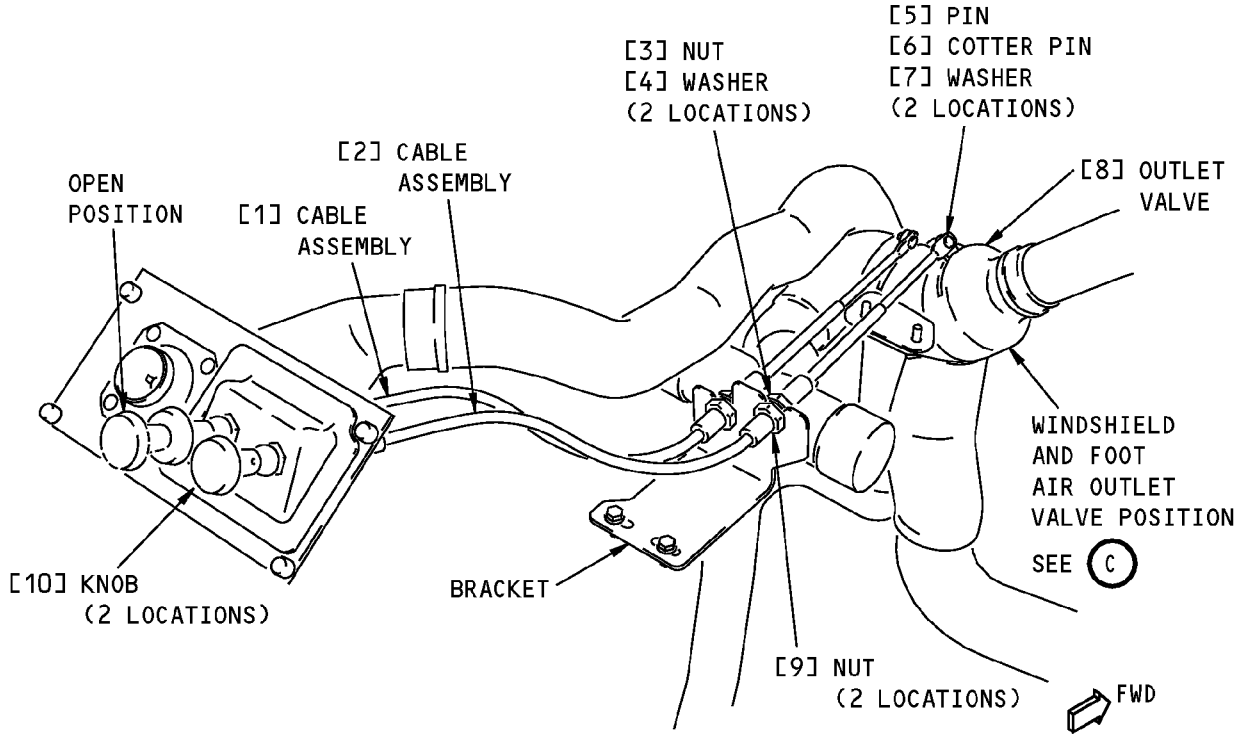
**A**

**Air Outlet Valve Control Cables Adjustment**  
**Figure 501 (Sheet 1 of 2)/21-22-02-990-802**

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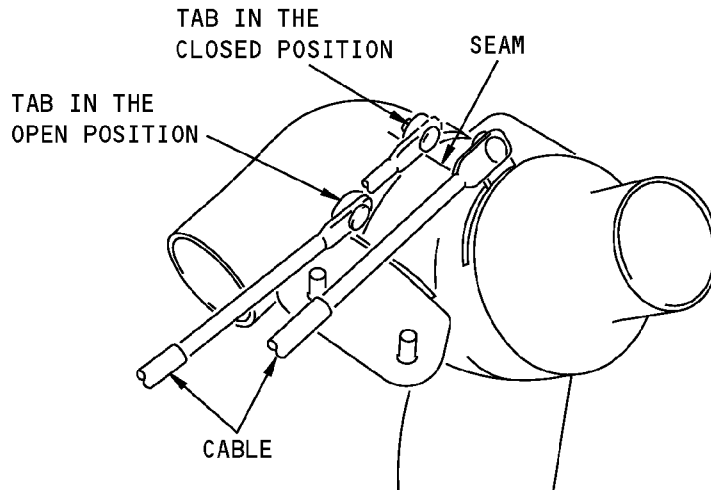
**21-22-02**

**AIRCRAFT MAINTENANCE MANUAL**



**AIR OUTLET VALVE CONTROL CABLES**

(B)



**WINDSHIELD AND FOOT AIR OUTLET VALVE POSITION**

(C)

**Air Outlet Valve Control Cables Adjustment  
Figure 501 (Sheet 2 of 2)/21-22-02-990-802**

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**AIRCRAFT MAINTENANCE MANUAL**

**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.

**HAP 101-999**

SUBTASK 21-22-05-860-002

- (2) Make sure that the RECIRC FAN switch is set to OFF.

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-22-05-860-004

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

**HAP ALL**

SUBTASK 21-22-05-010-001

- (4) Open the forward cargo compartment door.

SUBTASK 21-22-05-010-002

- (5) 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

- (6) 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.

<p>EFFECTIVITY</p> <p>HAP ALL</p>
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## AIRCRAFT MAINTENANCE MANUAL

### D. Flight Deck Air Distribution System Muffler/Duct Assembly Removal (Figure 401)

#### HAP 101-999

SUBTASK 21-22-05-020-001

- (1) Remove the muffler/duct assembly [3] as follows:
  - (a) Disconnect the drain tube [4] from the muffler/duct assembly.
  - (b) Remove the coupling [5] that attaches the muffler/duct assembly [3] to the left pack duct to the mix manifold.
  - (c) Remove the tape [2] that connects the forward end of the muffler/duct assembly [3] to the forward mating duct.
  - (d) Remove the straps [1] that connect the muffler/duct assembly to the plastic mounting plates at two locations.
  - (e) Remove the muffler/duct assembly [3] from the mix bay.

#### HAP 001-013, 015-026, 028-054

SUBTASK 21-22-05-020-003

- (2) 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.
  - (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.

#### HAP ALL

SUBTASK 21-22-05-400-001

- (3) Put covers over the open ducts to prevent the entry of unwanted materials.

————— END OF TASK —————

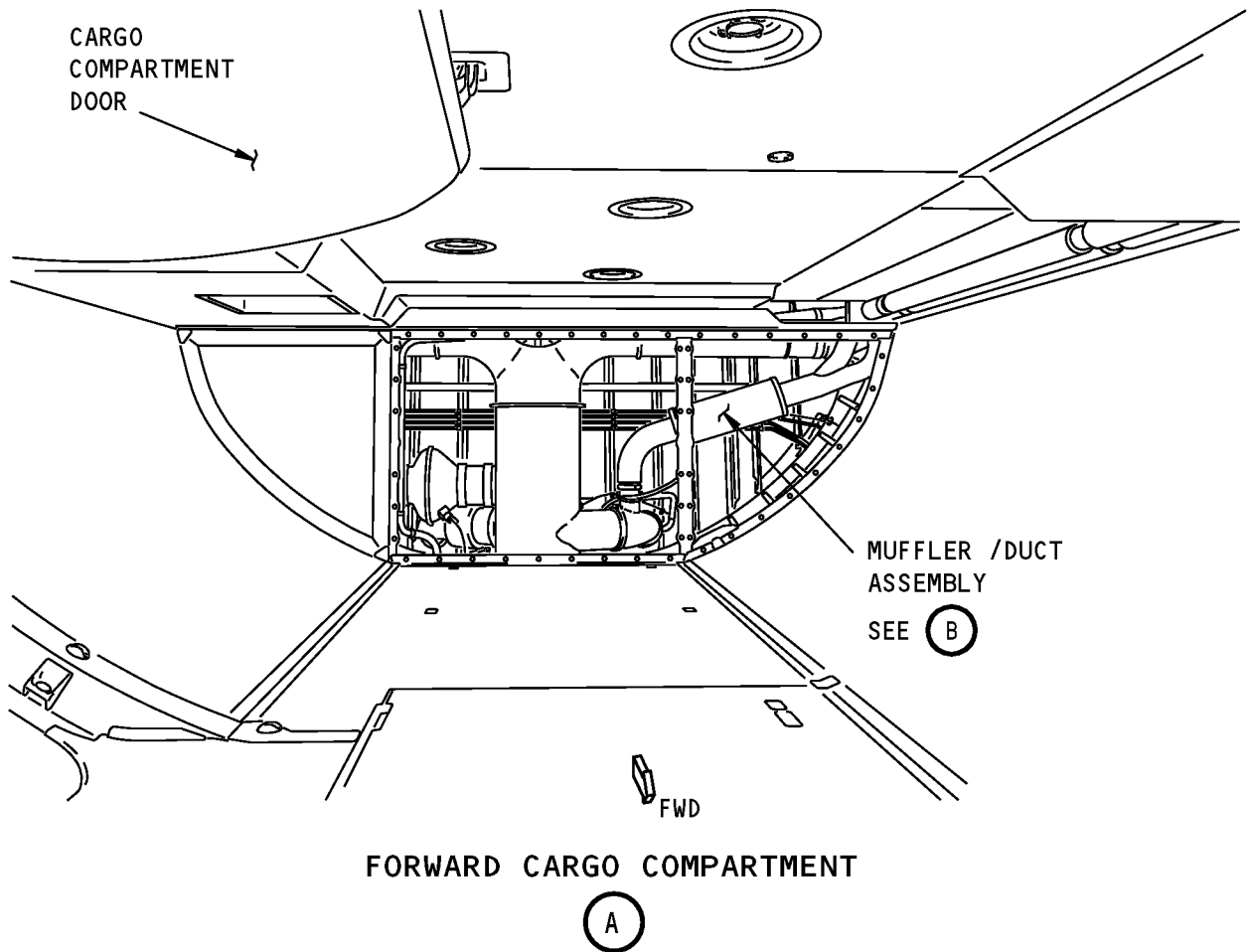
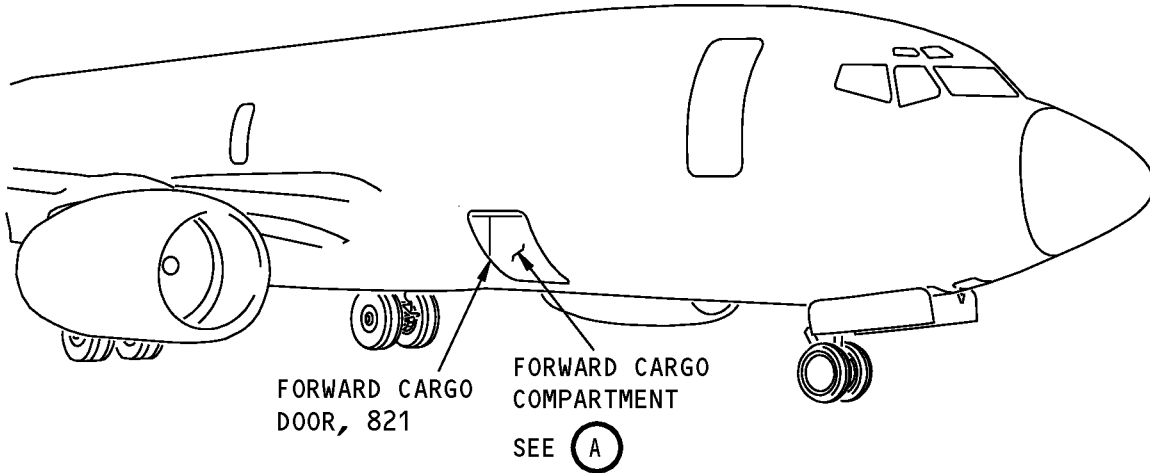
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HAP ALL

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AIRCRAFT MAINTENANCE MANUAL**



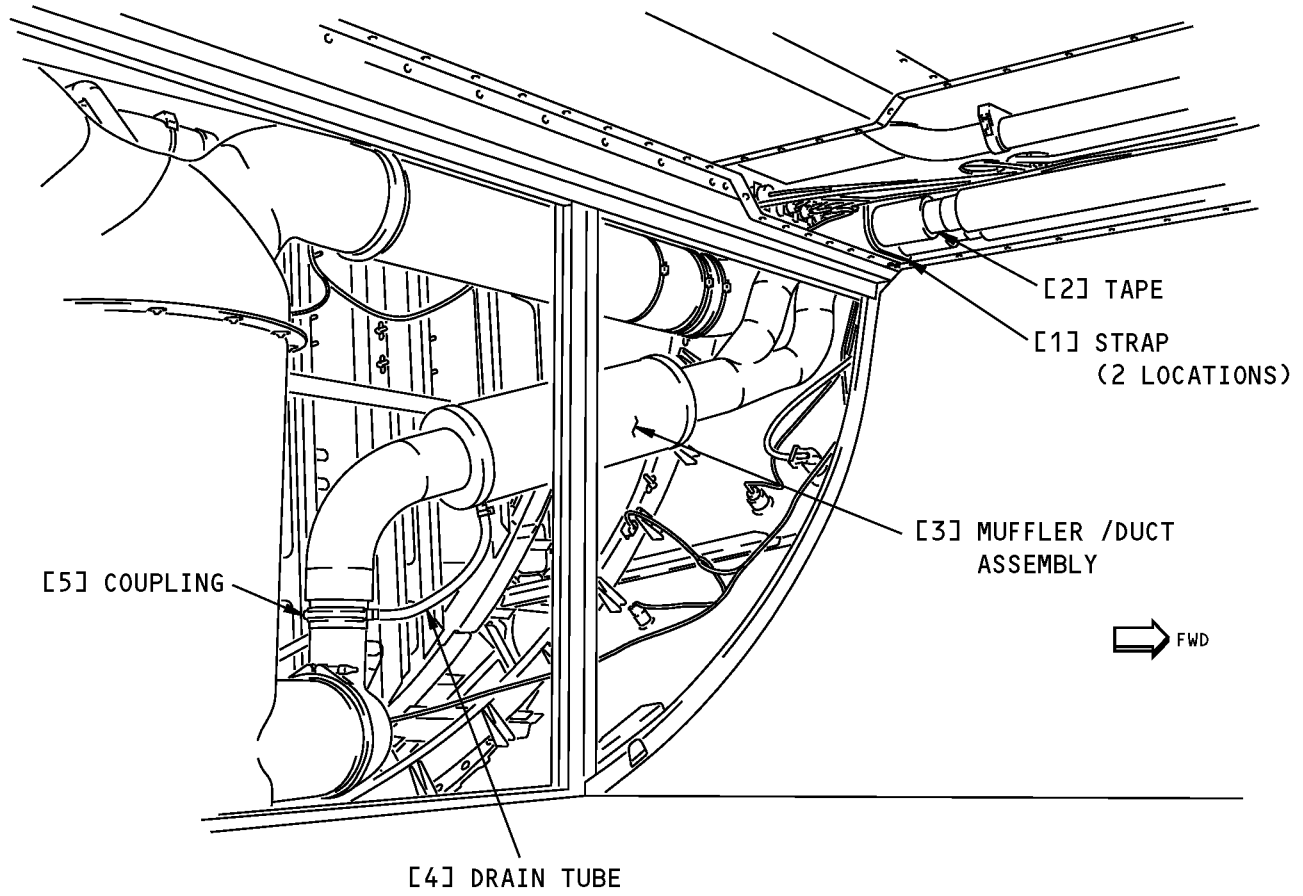
**Flight Deck Air Distribution System Muffler/Duct Assembly Installation  
Figure 401 (Sheet 1 of 5)/21-22-05-990-801**

EFFECTIVITY
HAP 101-999

**21-22-05**

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**MUFFLER/DUCT ASSEMBLY**

**B**

**Flight Deck Air Distribution System Muffler/Duct Assembly Installation  
Figure 401 (Sheet 2 of 5)/21-22-05-990-801**

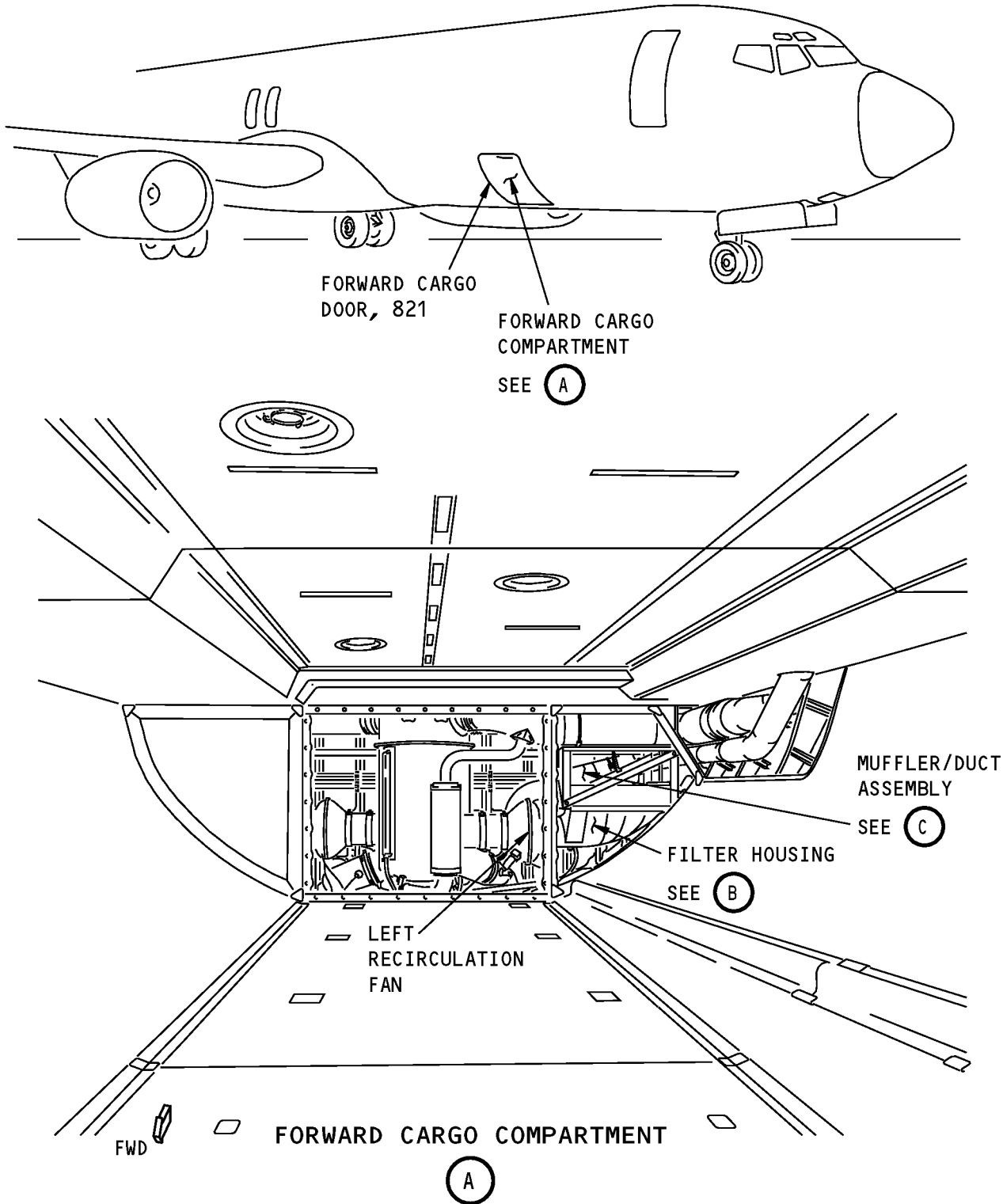
EFFECTIVITY  
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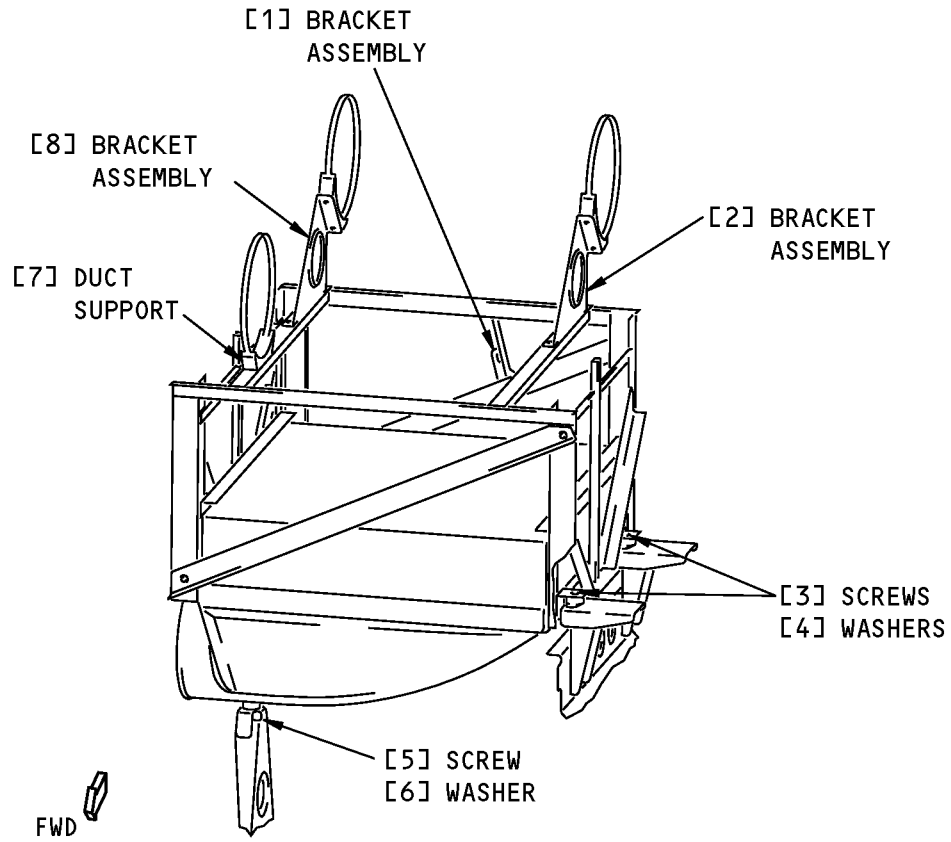
**Flight Deck Air Distribution System Muffler/Duct Assembly Installation  
Figure 401 (Sheet 3 of 5)/21-22-05-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**FILTER HOUSING  
(DUCTS NOT SHOWN)**

**(B)**

**Flight Deck Air Distribution System Muffler/Duct Assembly Installation  
Figure 401 (Sheet 4 of 5)/21-22-05-990-801**

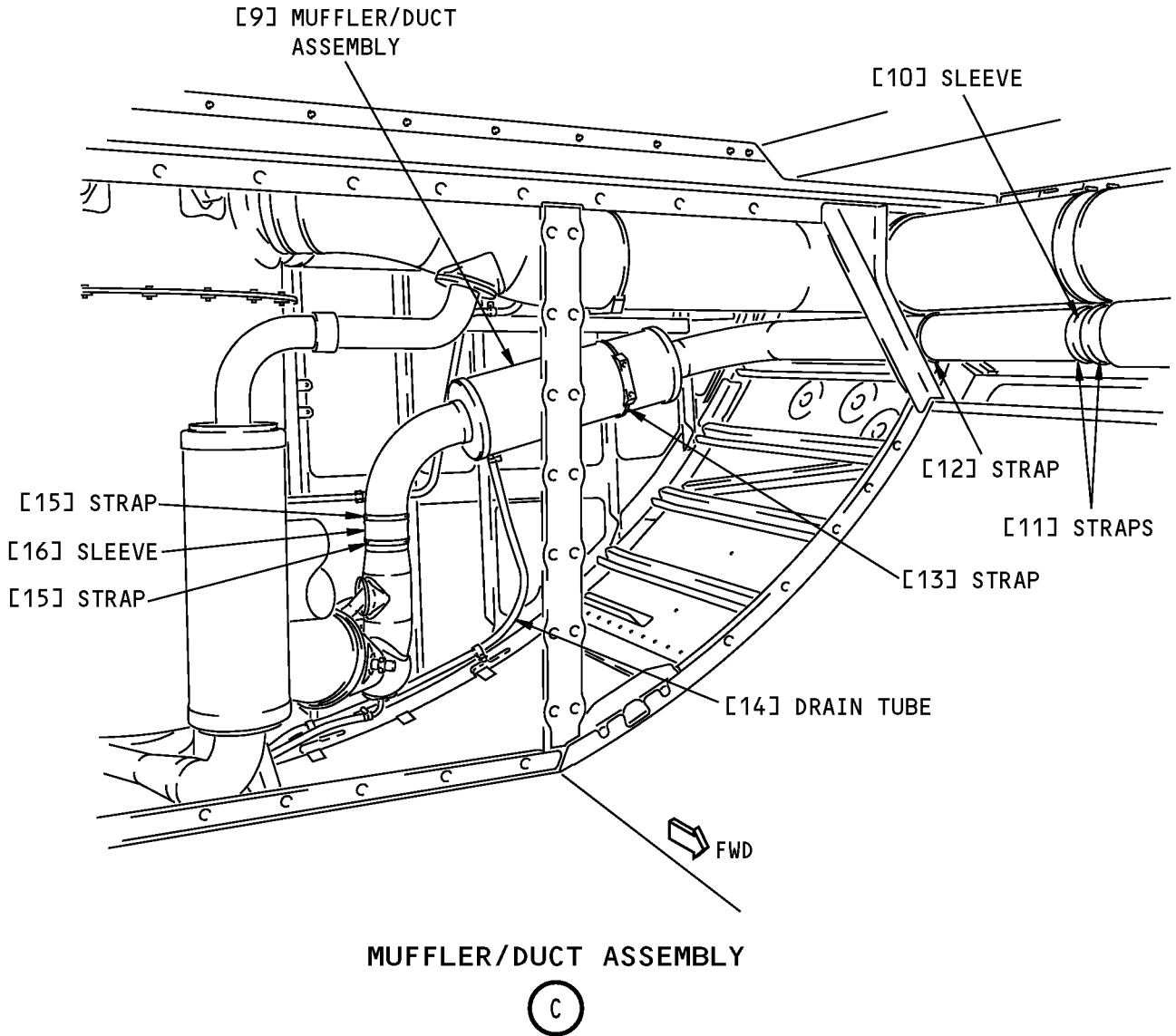
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**Flight Deck Air Distribution System Muffler/Duct Assembly Installation  
Figure 401 (Sheet 5 of 5)/21-22-05-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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AIRCRAFT MAINTENANCE MANUAL

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 #: GS4H, Supplier: 06383, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER)

C. Consumable Materials

Reference	Description	Specification
B00094	Solvent - Toluene	A-A-59107
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
G50344	Tape - Fiberglass, Permacel P212-HD	

D. Location Zones

Zone	Area
121	Forward Cargo Compartment - Left
125	Air Conditioning Distribution Bay - Left

E. 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.

HAP 101-999

SUBTASK 21-22-05-020-005

(2) Install the muffler/duct assembly [3] as follows:

- (a) Clean the forward end of the muffler/duct assembly [3] and the mating duct with solvent, B00094.
- (b) Remove all traces of the solvent, B00094, from the ends of the ducts with cotton wiper, G00034.
- (c) Put the muffler/duct assembly [3] in its' position on the left side of the mix bay.
  - 1) Make sure that there is at least 1/2-inch of overlap between the forward end of the muffler/duct assembly [3] and the mating forward duct.

EFFECTIVITY
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## AIRCRAFT MAINTENANCE MANUAL

### HAP 101-999 (Continued)

- (d) Install the coupling [5] to attach the lower end of the muffler/duct assembly [3] to the left pack inlet duct to the mix manifold.
- (e) Install a 2-inch wide fiberglass tape, G50344 [2] that connects the forward end of the muffler/duct assembly [3] to the forward mating duct as follows:
  - 1) Apply 2 to 4 laps of the 2-inch wide fiberglass tape, G50344 to the center of the joint.
  - 2) Keep the fiberglass tape, G50344 tight and smooth as you apply it.
- (f) Install the straps [1] that attach the muffler/duct assembly [3] to the plastic mounting plates at two locations.
- (g) Attach the drain tube [4] to the muffler/duct assembly [3].

### HAP 001-013, 015-026, 028-054

SUBTASK 21-22-05-080-001

- (3) 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.
  - 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].

### HAP ALL

SUBTASK 21-22-05-420-001

- (4) 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

- (5) 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

- (6) Operate the flight deck air conditioning outlets to make sure that an adequate supply of conditioned air is available to the flight deck.

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HAP ALL

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### F. 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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HAP ALL

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# AIRCRAFT MAINTENANCE MANUAL

## 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].
  - (b) Remove the clamp [4] as follows:

EFFECTIVITY
HAP 001-013, 015-026, 028-054

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## AIRCRAFT MAINTENANCE MANUAL

- 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] 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** —————

EFFECTIVITY

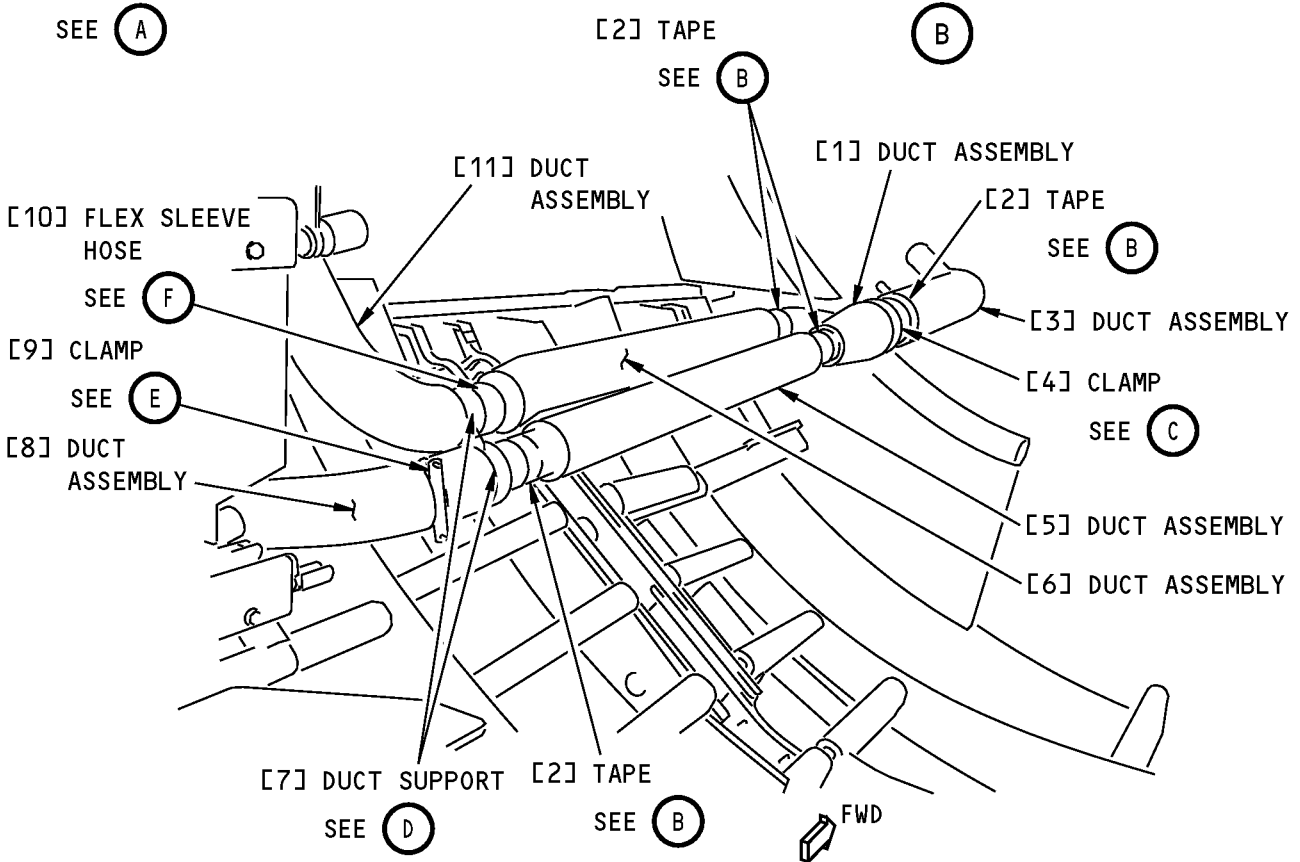
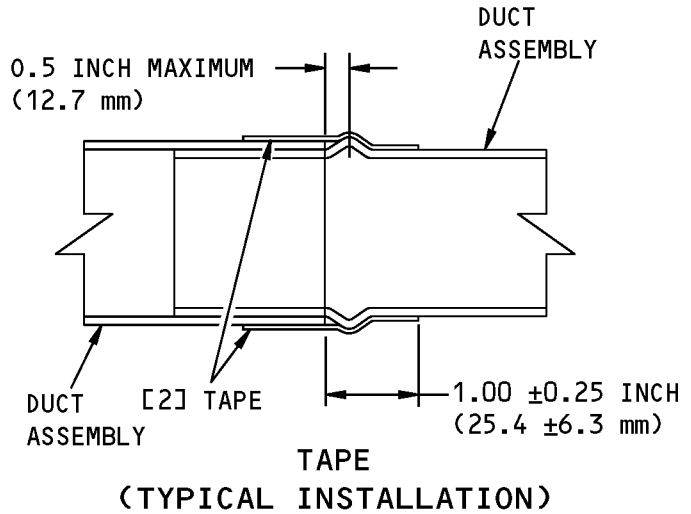
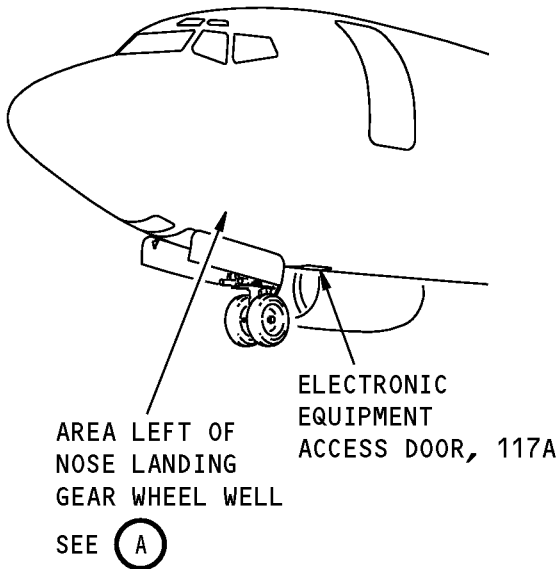
HAP 001-013, 015-026, 028-054

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AREA LEFT OF NOSE LANDING GEAR WHEEL WELL (VIEW THROUGH ACCESS DOOR, 117A)

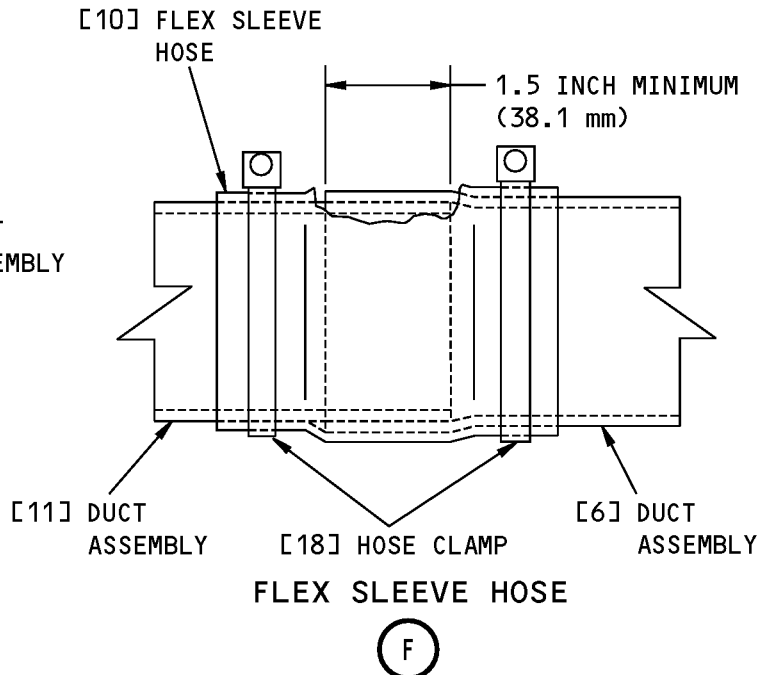
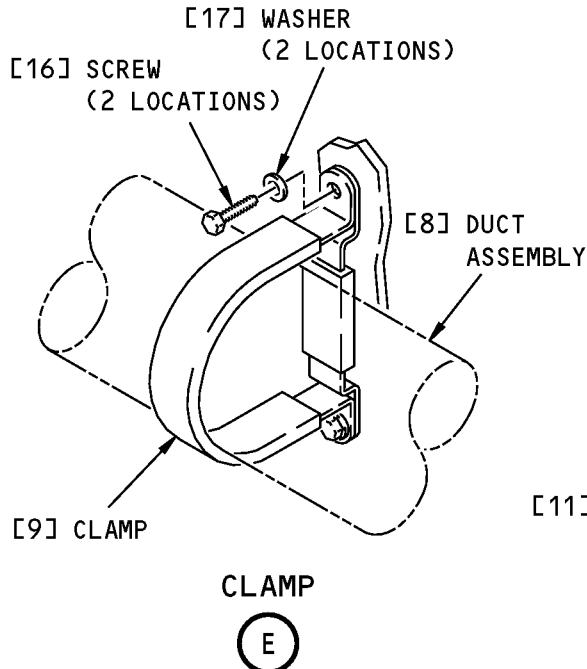
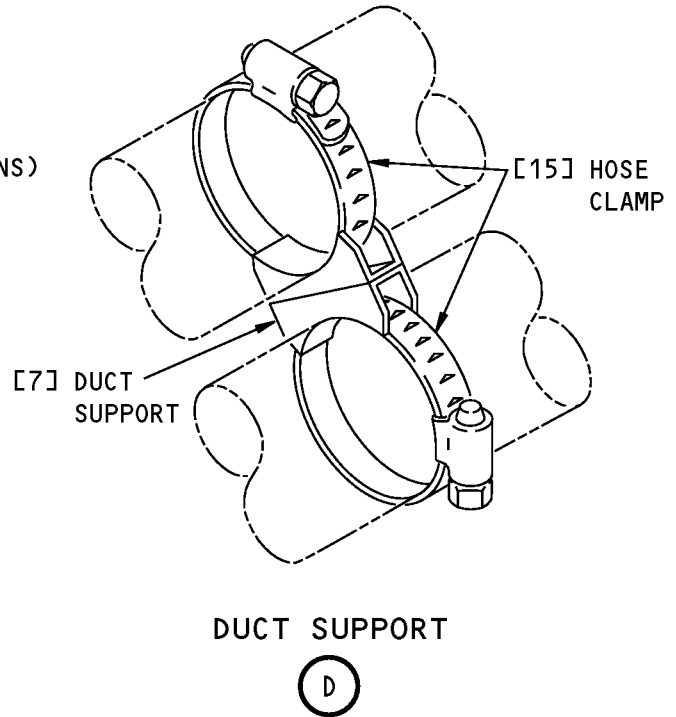
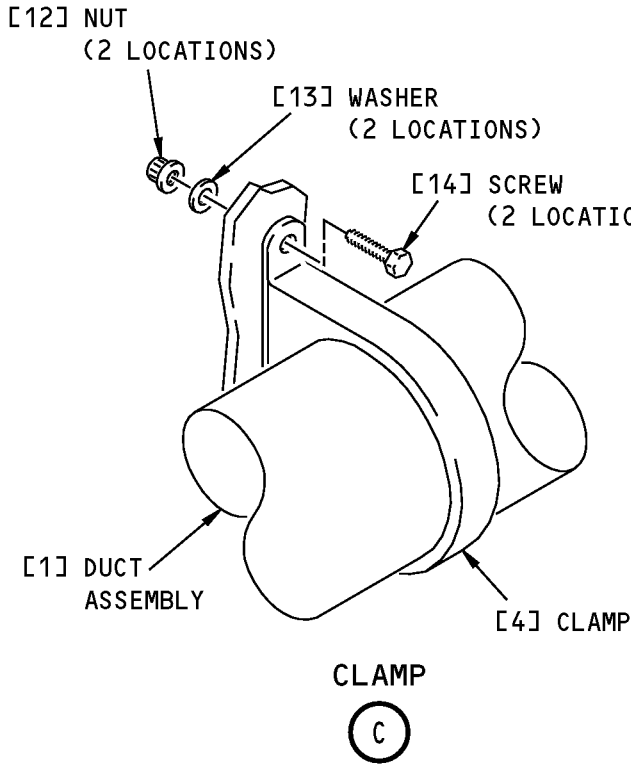
(A)

**Flight Deck Duct Assembly Screen Cleaning**  
Figure 701 (Sheet 1 of 2)/21-22-07-990-802

EFFECTIVITY
HAP 001-013, 015-026, 028-054

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**AIRCRAFT MAINTENANCE MANUAL**



**Flight Deck Duct Assembly Screen Cleaning  
Figure 701 (Sheet 2 of 2)/21-22-07-990-802**

<b>EFFECTIVITY</b> HAP 001-013, 015-026, 028-054
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### AIRCRAFT MAINTENANCE MANUAL

#### 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. Consumable Materials

Reference	Description	Specification
B00083	Solvent - Aliphatic Naphtha (For Acrylic Plastics)	TT-N-95 Type II, ASTM D-3735 Type III
B00130	Alcohol - Isopropyl	TT-I-735
G50262	Wiper - Cleaning	BMS15-5

##### C. Location Zones

Zone	Area
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left

<b>EFFECTIVITY</b> <b>HAP 001-013, 015-026, 028-054</b>
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## AIRCRAFT MAINTENANCE MANUAL

### D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

### E. 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) Position the hose clamps [18] 0.35 (± 0.1) inch from the ends of the flex sleeve hose [10].
  - 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:
  - 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.

EFFECTIVITY

HAP 001-013, 015-026, 028-054

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## AIRCRAFT MAINTENANCE MANUAL

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.

### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-22-07-410-002

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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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HAP 001-013, 015-026, 028-054

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# AIRCRAFT MAINTENANCE MANUAL

## 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) Loosen the clamp that holds the hose to the gasper.

SUBTASK 21-22-09-020-001

- (2) Remove the hose from the gasper.

SUBTASK 21-22-09-030-002

- (3) Remove the screws that attach the gasper to the panel.

SUBTASK 21-22-09-020-002

- (4) Remove the gasper.

————— **END OF TASK** —————

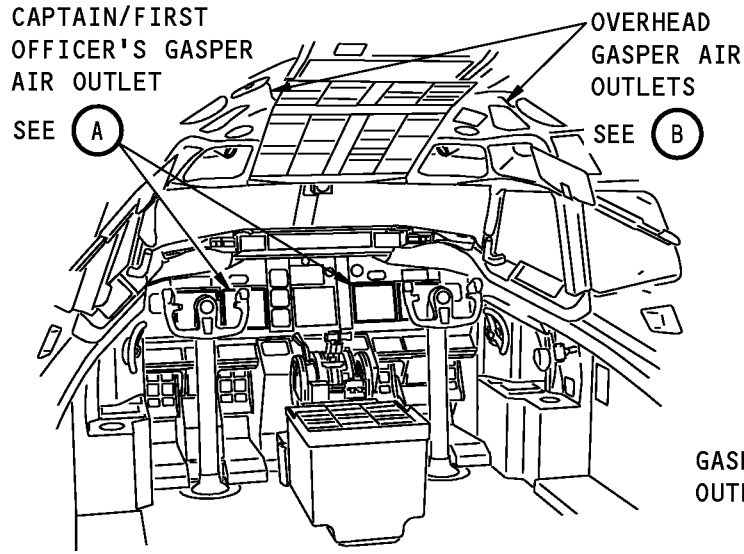
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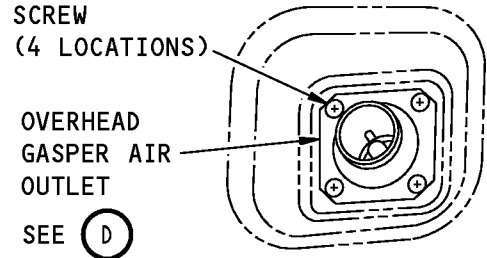
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**AIRCRAFT MAINTENANCE MANUAL**

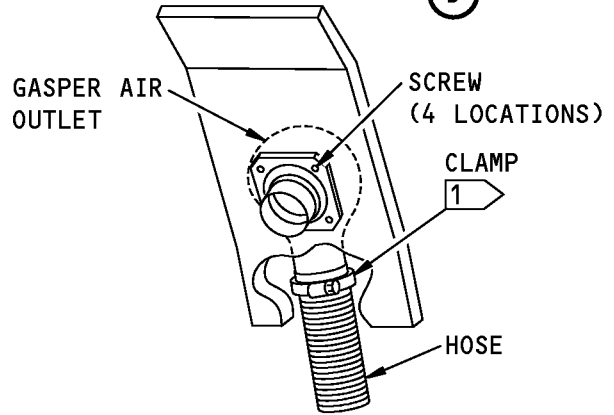


**FLIGHT COMPARTMENT**



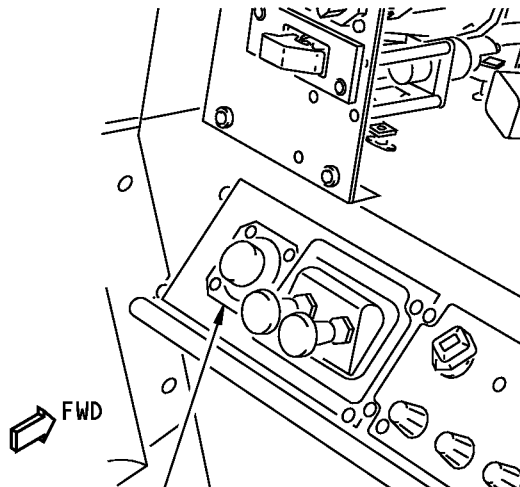
**OVERHEAD GASPER AIR OUTLET**

(B)



**CAPTAIN/FIRST OFFICER'S GASPER AIR OUTLET**

(C)

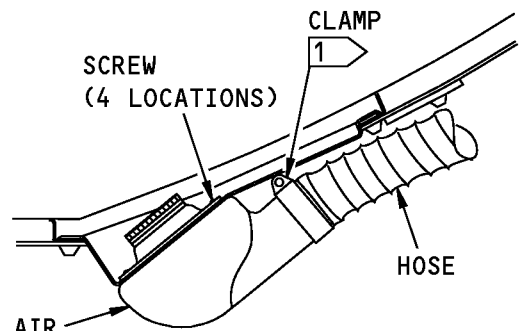


CAPTAIN/FIRST OFFICER'S GASPER AIR OUTLET (LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

SEE (C)

**CAPTAIN/FIRST OFFICER'S GASPER AIR OUTLET**

(A)



**OVERHEAD GASPER AIR OUTLET**

(D)

1 POSITION HEAD OF CLAMP TOWARDS THE PANEL

1733995 S0000302397\_V1

**Gasper Air Outlet Installation**  
**Figure 401/21-22-09-990-801**

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## AIRCRAFT MAINTENANCE MANUAL

**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. Location Zones

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

#### C. 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 21-22-09-420-002

(3) Put the clamp on the hose and connect the hose to the gasper.

SUBTASK 21-22-09-400-002

(4) Position the head of the hose clamp towards the panel assembly to prevent contact with wiring or wire bundles.

SUBTASK 21-22-09-430-001

(5) Tighten the hose clamp.

#### D. 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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# AIRCRAFT MAINTENANCE MANUAL

## 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 is the preferred foam insulation material that meets the flame propagation requirement.
- E. If BMS8-300 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.

#### **TASK 21-23-01-000-801**

### 2. Overhead Distribution Duct Removal

(Figure 201)

#### A. References

Reference	Title
25-21-45-000-801	Sculptured Ceiling Panel Removal (P/B 401)

#### B. Consumable Materials

Reference	Description	Specification
G50344	Tape - Fiberglass, Permacel P212-HD	
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. Prepare for the Removal

##### **HAP 101-999**

SUBTASK 21-23-01-860-004

- (1) Make sure these switches, on the P5-10 air conditioning panel, are set to the OFF position:
  - (a) L PACK

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## AIRCRAFT MAINTENANCE MANUAL

### HAP 101-999 (Continued)

- (b) R PACK
- (c) RECIRC FAN

#### HAP 001-013, 015-026, 028-054

SUBTASK 21-23-01-860-007

- (2) Make sure these switches, on the P5-10 air conditioning panel, are set to the OFF position:
- (a) L PACK
  - (b) R PACK
  - (c) L RECIRC FAN
  - (d) R RECIRC FAN

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SUBTASK 21-23-01-010-001

- (3) Remove the sculptured ceiling panel in the passenger compartment to get access to the duct. To remove the panel, do this task: Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

#### E. Overhead Distribution Duct Removal

SUBTASK 21-23-01-020-001

- (1) Disconnect the muffler assemblies [10] between the distribution duct [1] and the plenum/nozzle assembly [13] as follows:
- (a) Loosen the clamps [11] that hold the muffler assemblies [10] to the distribution duct [1].
  - (b) Remove the ends of the muffler assemblies [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.

SUBTASK 21-23-01-030-001

- (2) Remove the plastic straps adjustable plastic strap, 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 fiberglass tape, G50344 [3] that connects the diffuser/hose assemblies [2] to the distribution duct [1].

SUBTASK 21-23-01-020-003

- (4) Remove the straps [4] that hold the distribution duct [1] to the bracket assemblies [9].

SUBTASK 21-23-01-020-004

- (5) Loosen the clamps [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 fiberglass tape, G50344 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.

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SUBTASK 21-23-01-020-006

(8) Remove the distribution duct.

————— **END OF TASK** —————

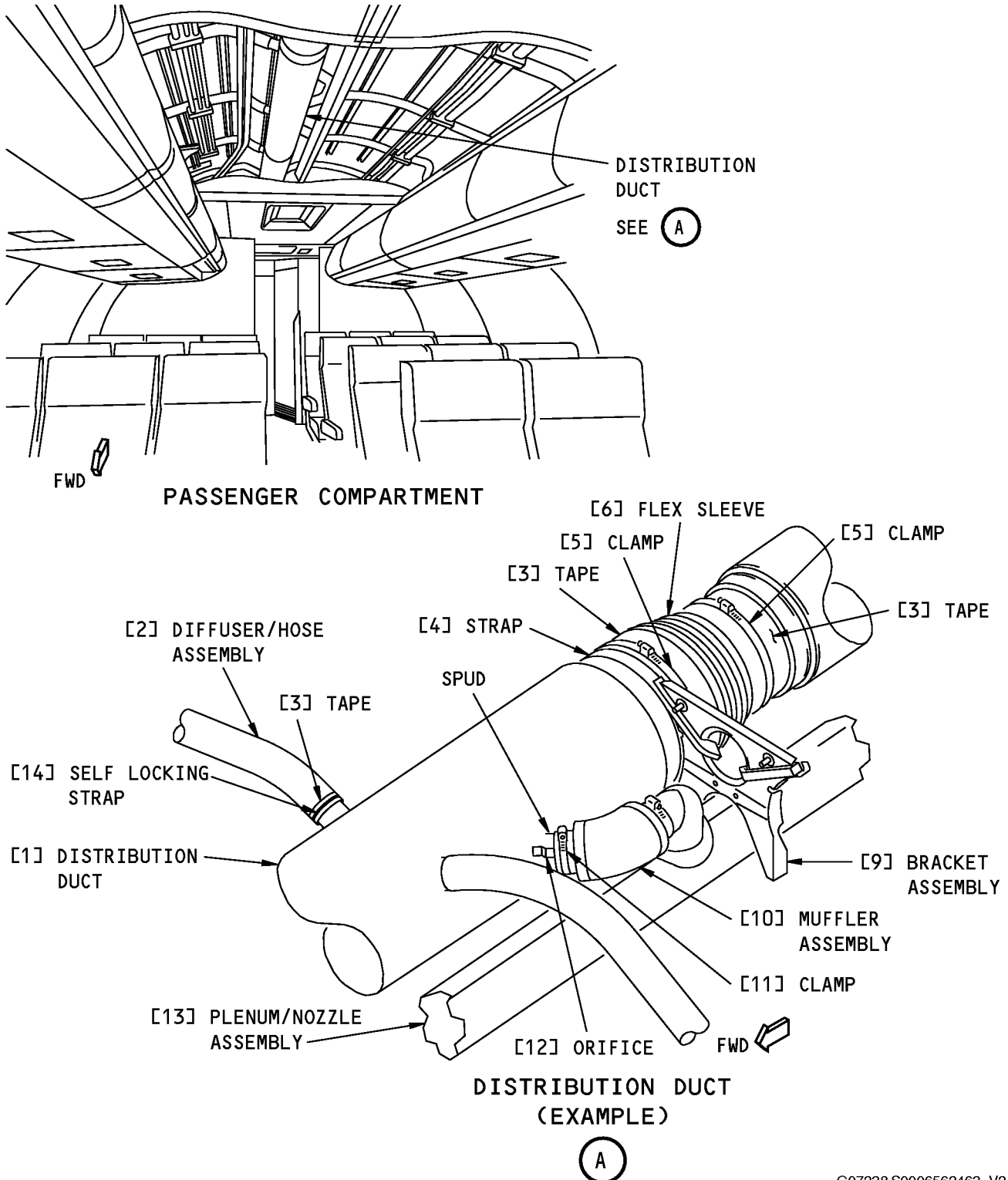
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**Passenger Cabin Overhead Air Distribution Duct Installation**  
**Figure 201/21-23-01-990-801**

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## TASK 21-23-01-400-801

### 3. Overhead Distribution Duct Installation

(Figure 201)

#### A. References

Reference	Title
25-21-45-400-801	Sculptured Ceiling Panel Installation (P/B 401)
36-00-00-860-801	Supply Pressure to the Pneumatic System (Selection) (P/B 201)

#### B. Consumable Materials

Reference	Description	Specification
B00068	Alcohol - Ethyl (Denatured)	AMS 3002F (MIL-E-51454, Type II)
B00143	Solvent - Trichlorotrifluorethane (Freon)	MIL-C-81302
G50344	Tape - Fiberglass, Permacel P212-HD	
G50625	Strap - Plastic, Adjustable, Self-locking, 14.40 inches (365.76 mm) Long	BACCS38K3

#### 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  $1.63 \pm 0.13$  inches ( $41.4 \pm 3.3$  mm).
- (b) Install 2-inch wide fiberglass 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 fiberglass 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]  $0.38 \pm 0.13$  inches ( $9.65 \pm 3.3$  mm) from the ends of the flex sleeves [6].

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 muffler assemblies [10] between the distribution duct and the plenum/nozzle assembly [13] as follows:

- (a) Move the ends of the muffler assemblies [10] over the spuds on the distribution duct with the orifices [12] in position.
- (b) Position and tighten the clamps [11] to hold the muffler assemblies [10] to the distribution duct.

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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 fiberglass 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 straps [4] 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) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.
  - (b) Put the L and R PACK switches, on the P5-10 air conditioning panel, to the AUTO position.
  - (c) Make sure that there is not excessive leakage of air at the connections on the distribution duct that was replaced.

### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-23-01-410-001

- (1) Install the sculptured ceiling panel in the passenger compartment. To install the sculptured ceiling panel, do this task: Sculptured Ceiling Panel Installation, TASK 25-21-45-400-801.

————— 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.

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- (4) Melamine foam, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement.
- (5) Air conditioning ducts with polyimide foam, G02470 must be wrapped with tape, G50327 to meet the flammability/flame propagation requirements. Wrap the tape, G50327 across 100% of the brown hypalon insulation surface on the polyimide foam, 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. References

Reference	Title
25-21-45-000-801	Sculptured Ceiling Panel Removal (P/B 401)
25-21-45-400-801	Sculptured Ceiling Panel Installation (P/B 401)

#### 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 IV Grade 1

#### D. 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

#### E. Insulation Repair for Overhead Distribution Duct

SUBTASK 21-23-01-010-002

- (1) Remove the sculptured ceiling panel in the passenger compartment to get access to the distribution duct. To remove the panel.

**NOTE:** Do this task: Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

SUBTASK 21-23-01-020-009

- (2) Remove all loose tape from the ends or seams of the insulation blanket on the distribution duct.

SUBTASK 21-23-01-420-006

- (3) 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 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 on the insulation at the ends of the duct so that the tape extends one inch beyond the end of the insulation blanket.

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- (c) Apply circumferential wraps of one-inch wide tape, G50327 along the length of the duct to secure the insulation blanket to the duct.

SUBTASK 21-23-01-410-002

- (4) Install the sculptured ceiling panel in the passenger compartment. To install the panel, do this task: Sculptured Ceiling Panel Installation, TASK 25-21-45-400-801.

END OF TASK

TASK 21-23-01-300-802

5. Insulation Replacement/Repair - Overhead Distribution Duct Sidewall Risers Interface Segment

Figure 202

A. References

Table with 2 columns: Reference, Title. Rows include tasks like 'Supply Conditioned Air to the Airplane (P/B 201)' and 'Remove Conditioned Air from the Airplane (P/B 201)'.

B. Consumable Materials

Table with 3 columns: Reference, Description, Specification. Rows include materials like 'Solvent - Final Cleaning Of Composites Prior To Non-Structural Bonding' and 'Tape - Advanced Insulation Blanket'.

C. Location Zones

Table with 2 columns: Zone, Area. Row: 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.

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.

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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 applicable sculptured ceiling panel to get access to the duct segment of the overhead distribution system that connects to the sidewall risers as follows:
  - (a) Do this task: Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

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:

**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, G02470 insulation into four sections to the approximate size necessary to 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 the tape, G50327 on the foam insulation as shown on Figure 202and in accordance with these guidelines:

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- (a) One-inch wide or 2-inch wide advanced insulation blanket tape, G50327 must cover 100% of the brown colored "Hypalon" insulation surface.
- (b) Cut the tape, G50327 tape 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.
- (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 the sculptured ceiling panels that were removed for access to the overhead distribution system duct segment. To install ceiling panels, do this task: Sculptured Ceiling Panel Installation, TASK 25-21-45-400-801.

————— END OF TASK —————

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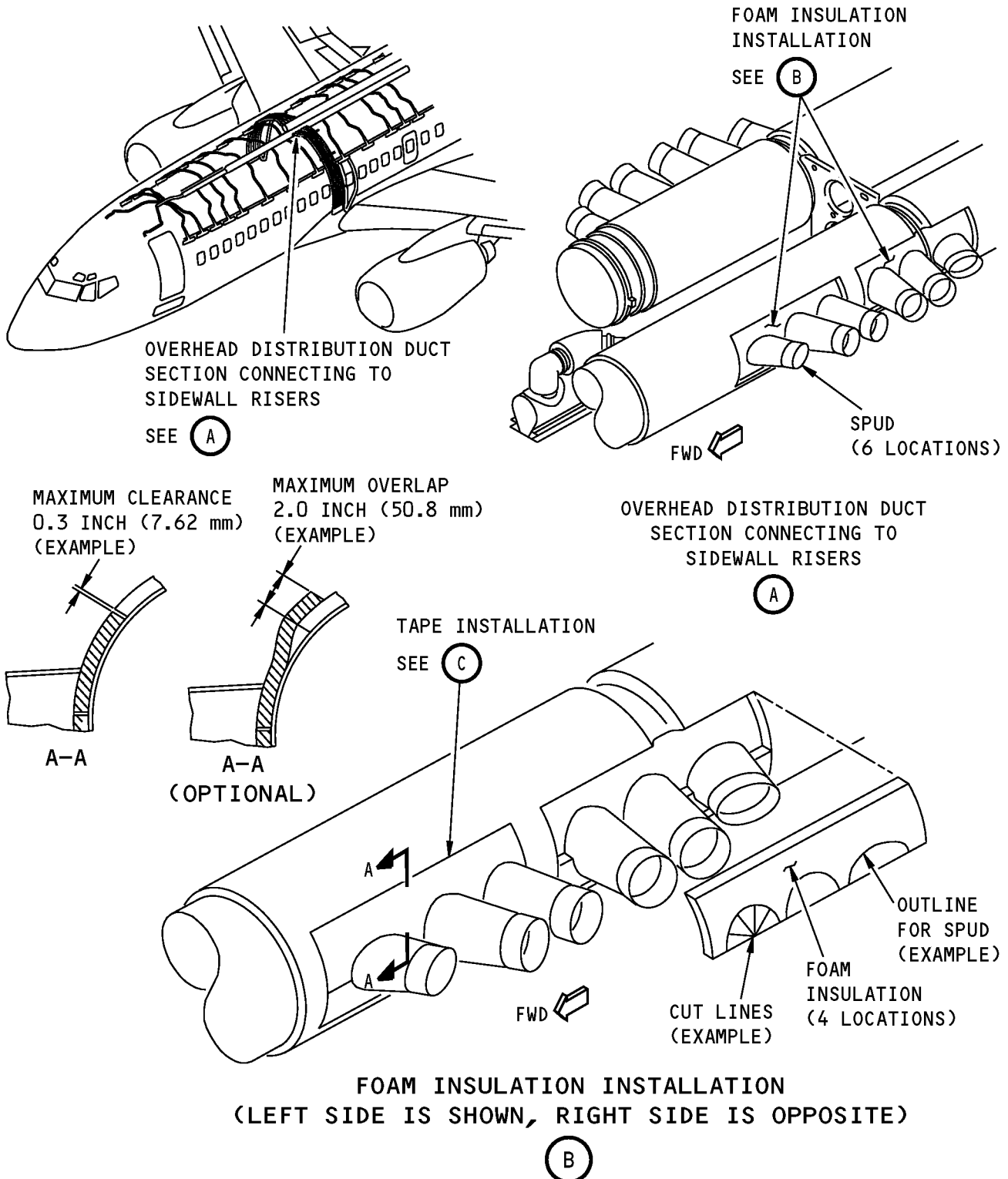
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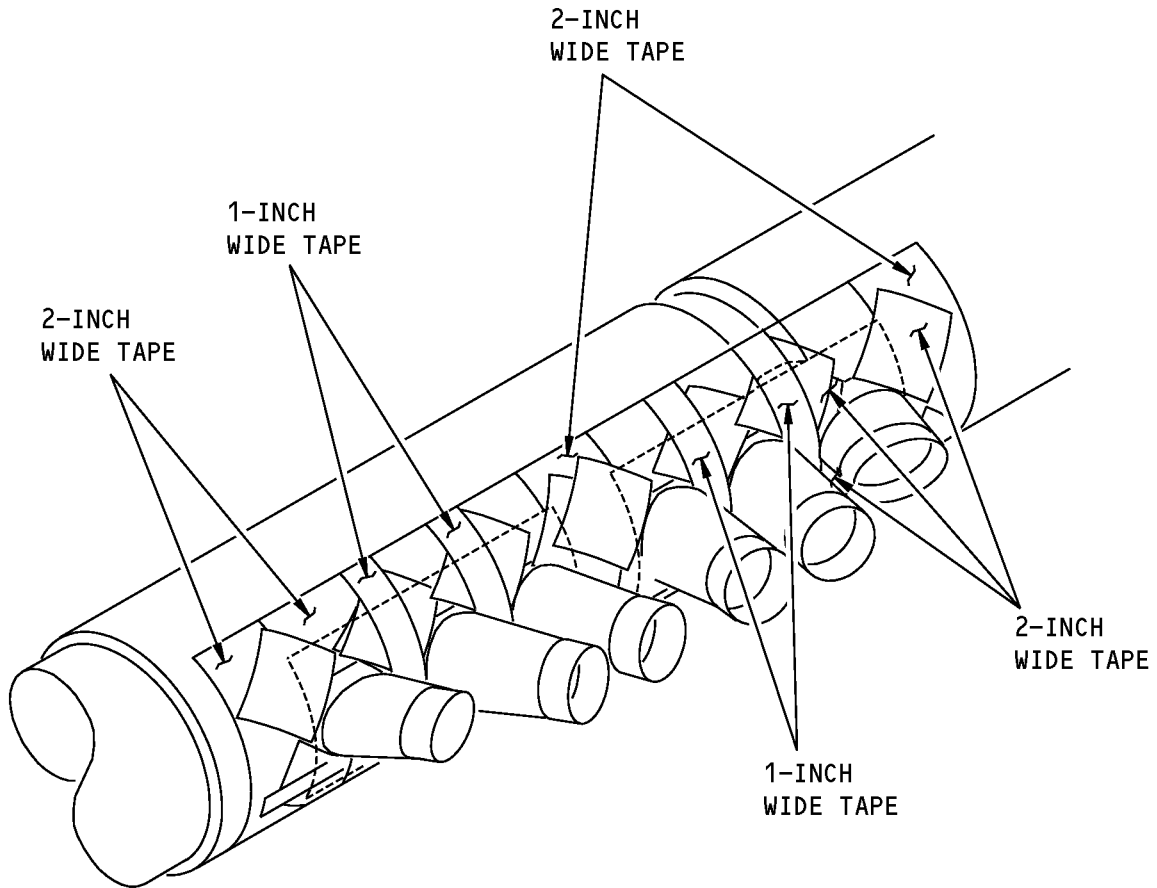
**Insulation Repair/Replacement - Overhead Distribution Sidewall Risers Connecting Section**  
**Figure 202 (Sheet 1 of 2)/21-23-01-990-802**

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**TAPE INSTALLATION  
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)  
(TYPICAL)**

**C**

**Insulation Repair/Replacement - Overhead Distribution Sidewall Risers Connecting Section  
Figure 202 (Sheet 2 of 2)/21-23-01-990-802**

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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.
- C. This procedure incorporates the intent of 737-SL-21-058B.

### **TASK 21-23-02-212-801**

### 2. Inspection of the Sidewall Riser Ducts/Transition Duct

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)
25-21-46-000-801	Sidewall Panel Removal (P/B 401)

#### B. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

#### C. Inspection of Sidewall Riser Ducts/Transition Duct Connection

SUBTASK 21-23-02-010-001

- (1) If not already done, remove the passenger cabin sidewall panels that are adjacent to the forward wing-to-body fairing (TASK 25-21-46-000-801).

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.

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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 : Repair of the Sidewall Riser Ducts/Transition Duct,  
TASK 21-23-02-360-801.

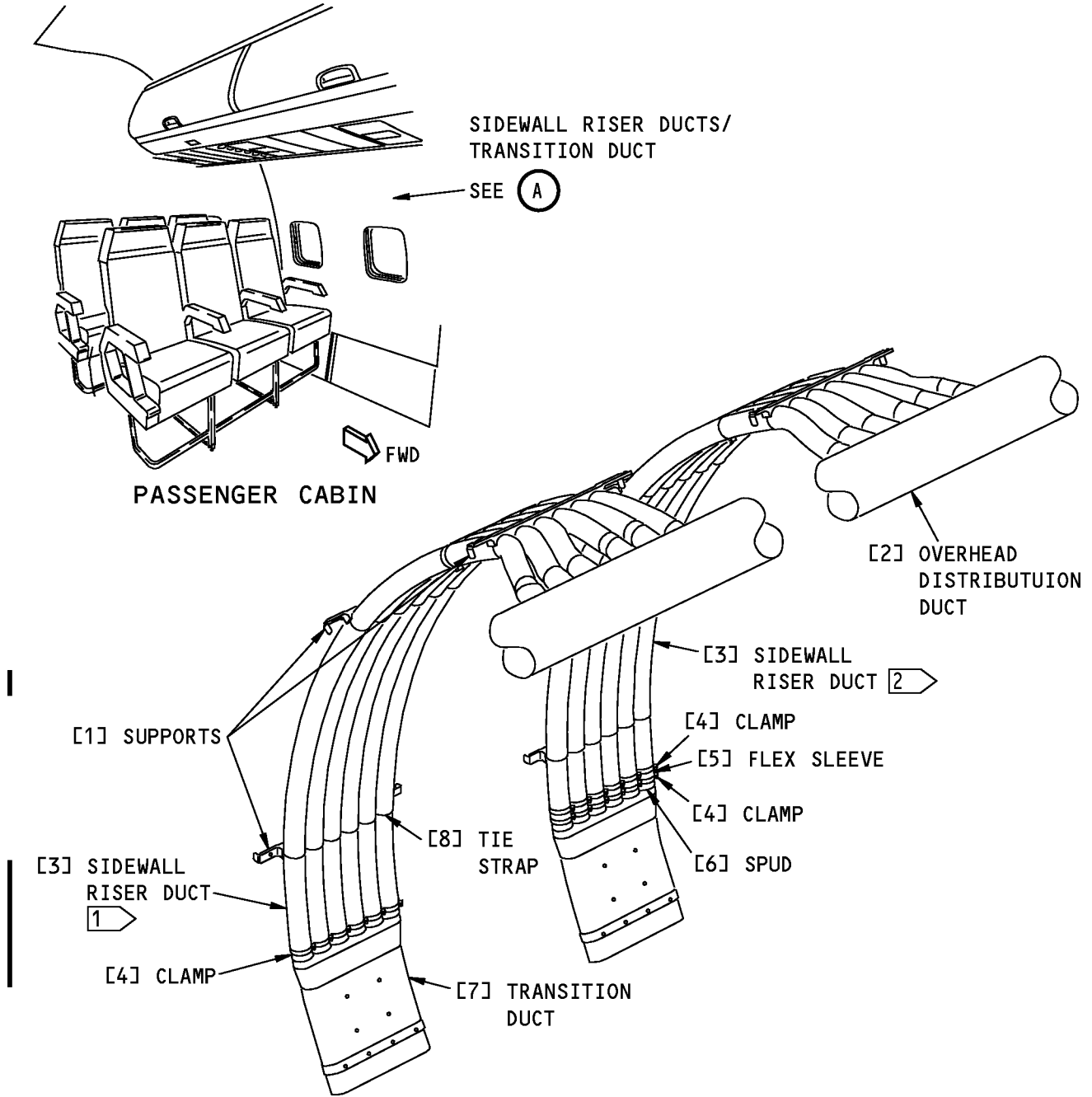
————— **END OF TASK** —————

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**SIDEWALL RISER DUCTS/TRANSITION DUCT (TYPICAL)  
(SIDEWALL PANELS REMOVED)**

- 1 RISER DUCTS SHOWN WITHOUT FLEX SLEEVES
- 2 RISER DUCTS SHOWN WITH FLEX SLEEVES

(A)

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**Sidewall Riser Ducts/Transition Duct Installation  
Figure 201/21-23-02-990-801**

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TASK 21-23-02-360-801

3. Repair of the Sidewall Riser Ducts/Transition Duct

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)
25-21-46-400-801	Sidewall Panel Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - Aliphatic Naphtha (For Acrylic Plastics)	TT-N-95 Type II, 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, 27.5 inches long	BACS38K6
G50262	Wiper - Cleaning	BMS15-5

C. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

D. Repair of the Sidewall Riser Ducts/Transition Duct Connection

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.

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- 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.
- (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.

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### 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.

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 21-23-02-410-001

- (1) Install the passenger cabin sidewall panels that were removed for this repair. Do this task: Sidewall Panel Installation, TASK 25-21-46-400-801.

————— **END OF TASK** —————

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## AIRCRAFT MAINTENANCE MANUAL

### RETURN AIR GRILLS (DECOMPRESSION VENTS) - MAINTENANCE PRACTICES

#### 1. General

A. This procedure has these tasks:

- (1) Return air grill removal.
- (2) Return air grill installation.
- (3) Return air grill baffle removal.
- (4) Return air grill baffle installation.
- (5) Return air grill and baffle cleaning.
- (6) Return air grill baffle inspection.

B. The return air grills, which are also called decompression vents, are installed near the floor, in the passenger compartment sidewall. The return air grills permits the air in the passenger cabin to flow into the lower fuselage areas. This will prevent damage to the airplane if a decompression condition occurs. The return air grill will be called the grill throughout this procedure.

#### **TASK 21-23-03-000-801**

#### 2. Return Air Grill Removal

Figure 201

A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-22-00-000-801	Passenger Seat Removal (P/B 401)

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) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.  
(if necessary).

SUBTASK 21-23-03-000-001

- (2) Remove the passenger seats if necessary to gain access to the panels, (TASK 25-22-00-000-801)

E. Procedure

SUBTASK 21-23-03-020-001

- (1) Do the steps that follow to remove the return air grill [1] with latch assembly:
  - (a) Insert awl punch, STD-726 in the release hole in top edge of latch face.
  - (b) Push the handle of awl punch, STD-726 up to release latch.
  - (c) Move the assembly to clear the adjacent return air grill [1] for unobstructed removal.
  - (d) Pull the lower edge of the return air grill [1] down until clear of the window panel.
  - (e) Remove the return air grill [1].

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SUBTASK 21-23-03-020-005

- (2) Do the steps that follow to remove the return air grill [2] with clip assembly:
- (a) Move the return air grill [2] up until the clip disengages from the crease beam.
  - (b) Move inboard until the return air grill [2] clears the crease beam then lower to clear the window panel.
  - (c) Remove the return air grill [2].

————— **END OF TASK** —————

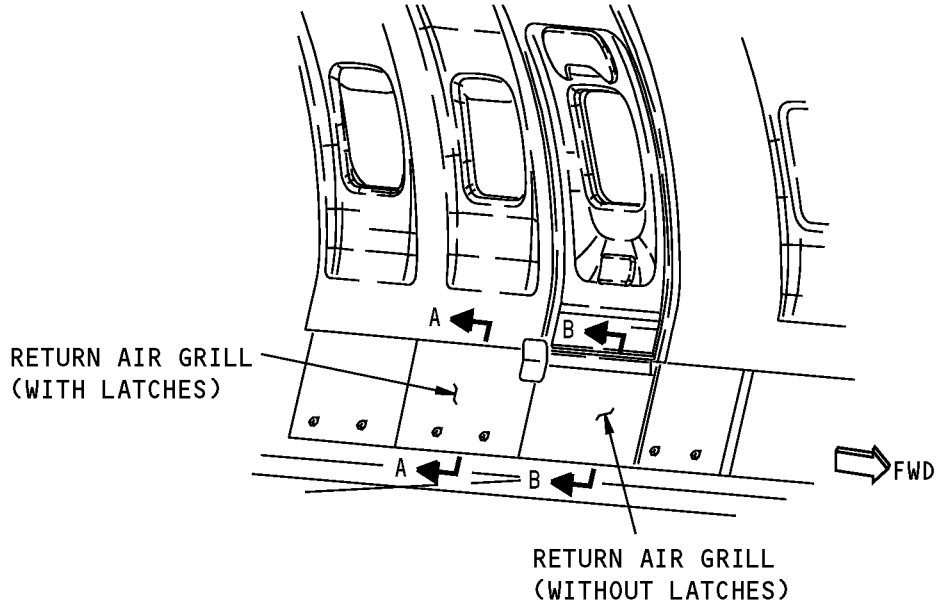
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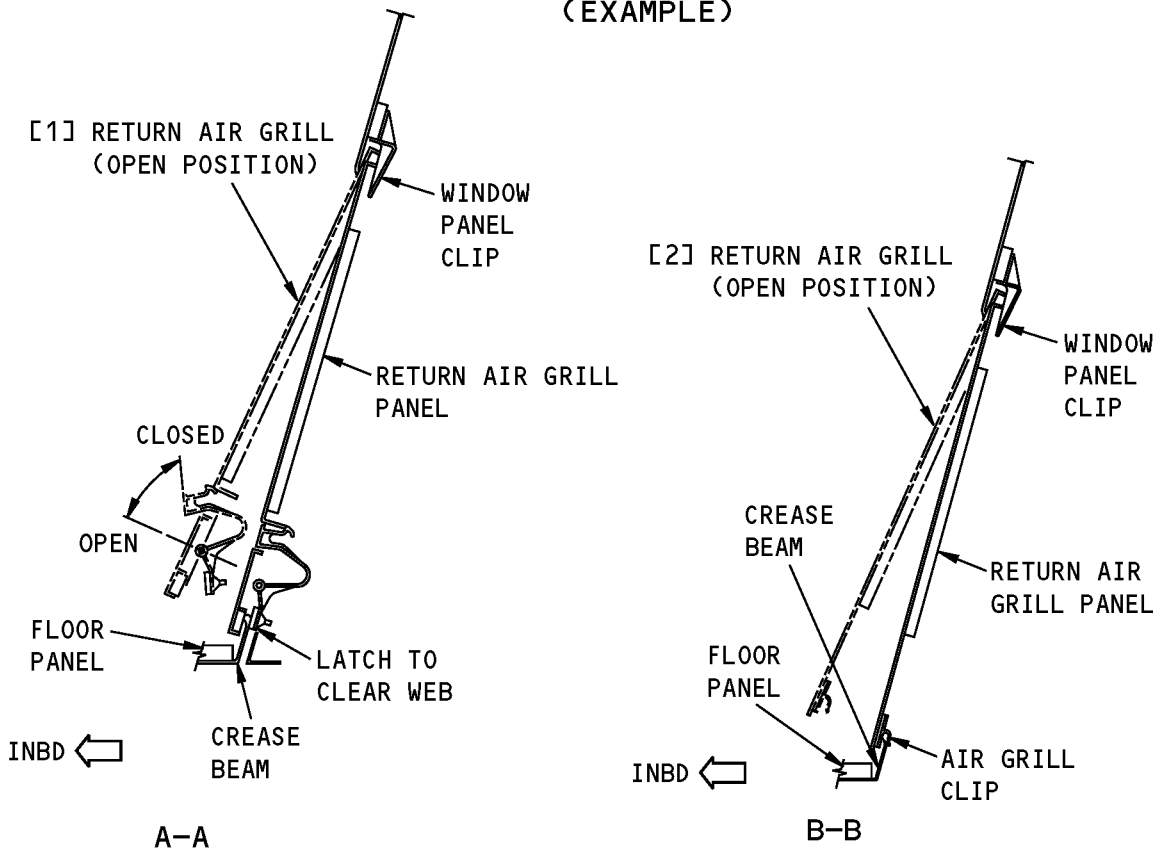
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**PASSENGER COMPARTMENT  
(EXAMPLE)**



**Return Air Grill Installation  
Figure 201/21-23-03-990-803**

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**TASK 21-23-03-000-802**

### 3. Return Air Grill 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 grill [1]:
  - (a) To remove the return air grill and baffle assembly, do this task: (Return Air Grill 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 grill [1].
  - (c) Slide the baffle [3] over the tabs on the return air grill [1].
  - (d) Remove the baffle [3].

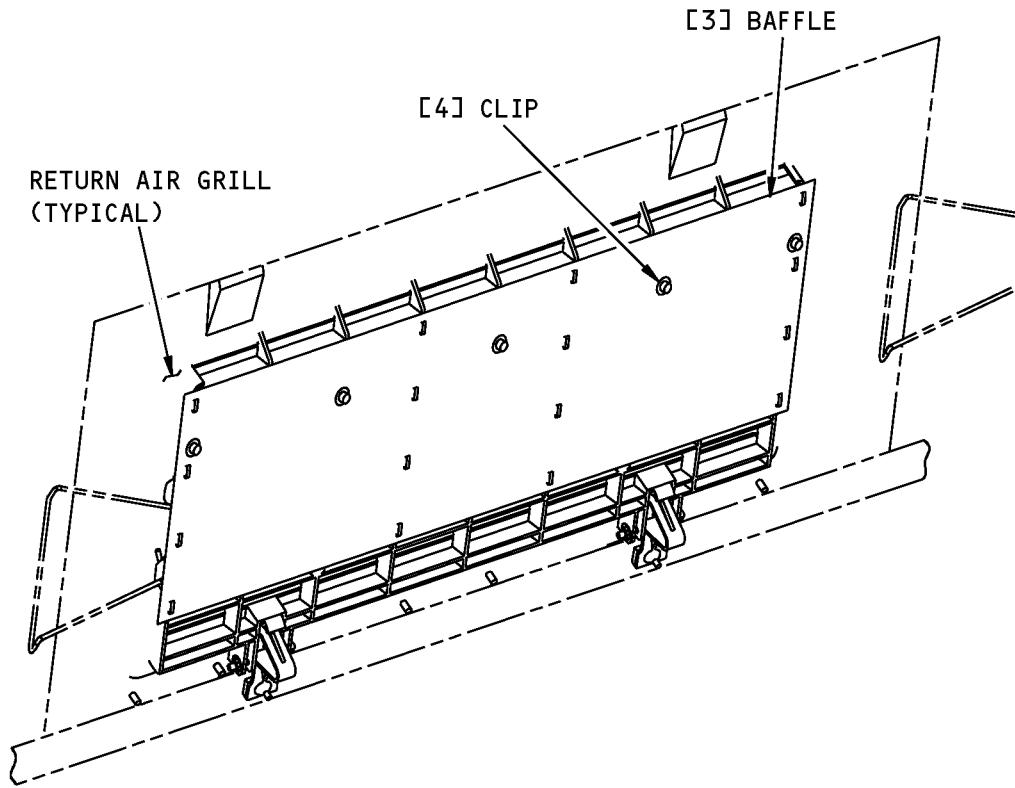
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**Return Air Grill Baffle Installation  
Figure 202/21-23-03-990-801**

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## TASK 21-23-03-100-801

### 4. Return Air Grill 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

#### 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 grill and baffle assembly:
  - (a) To remove the return air grill and baffle assembly, do this task: (Return Air Grill 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 grill 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 grill and baffle assembly with a cotton wiper, G00034 that is moist with water.
  - (e) To install the return air grill and baffle assembly, do this task: (Return Air Grill Installation, TASK 21-23-03-400-802).

————— **END OF TASK** —————

## TASK 21-23-03-400-801

### 5. Return Air Grill 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 grill [1]:
  - (a) Slide the baffle [3] over the tabs on the return air grill [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 grill [1]

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- (c) To install the return air grill and baffle assembly, do this task: (Return Air Grill Installation, TASK 21-23-03-400-802).

————— END OF TASK —————

#### TASK 21-23-03-400-802

#### 6. Return Air Grill Installation

Figure 201

##### A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
25-22-00-400-802	Passenger Seat Installation (P/B 401)

##### B. Location Zones

Zone	Area
200	Upper Half of Fuselage

##### C. Procedure

SUBTASK 21-23-03-420-002

- (1) Do the steps that follow to install the return air grill [1] with latch assembly:
  - (a) Make sure that the latches are in the full open position on the return air grill [1].
  - (b) Move the top edge of the return air grill [1] into the window panel clip.
  - (c) Move the return air grill [1] outboard until the lower edge rests against the inner chord of the crease beam.
  - (d) Move the return air grill [1] to the adjacent return air grill to engage the retention clip (0.5 in. (1.27 cm) minimum overlap).
  - (e) Push the latch to the closed position.

SUBTASK 21-23-03-420-003

- (2) Do the steps that follow to install the return air grill [2] with clip assembly:
  - (a) Move the top of the return air grill [2] into the window panel clip as high as possible.
  - (b) Move the return air grill [2] outboard until it is above the crease beam and move the return air grill [2] down until the clip engages the crease beam.

##### D. 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 (TASK 25-22-00-400-802).

SUBTASK 21-23-03-860-001

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

SUBTASK 21-23-03-710-001

- (3) Do an operational check of the applicable electrical equipment.

————— END OF TASK —————

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## TASK 21-23-03-200-801

### 7. Return Air Grill Baffle Inspection

#### A. General

- (1) This task has instructions to inspect, remove, and install the baffles on the backside of the return air grills.
- (2) In the event of a rapid decompression of the airplane fuselage, the baffles are designed to detach from the backside of the return air grills to permit airflow movement from the main cabin to the lower lobe compartments. After a decompression event, it is necessary to inspect the baffles and reinstall them to the backside of the return air grills.

#### B. References

Reference	Title
25-22-00-000-801	Passenger Seat Removal (P/B 401)
25-22-00-400-802	Passenger Seat Installation (P/B 401)

#### 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 grill [1] Passenger Seat Removal, TASK 25-22-00-000-801.
- (2) Remove the return air grill [1] (Return Air Grill 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 grill [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 grill [1].

#### F. Baffle Removal

SUBTASK 21-23-03-020-004

- (1) To remove the baffle on the return air grill [1], do this task: (Return Air Grill 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 grill [1], do this task: (Return Air Grill Baffle Installation, TASK 21-23-03-400-801) .

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H. Put the airplane back to its usual condition

SUBTASK 21-23-03-420-005

- (1) Install the return air grill [1] (Return Air Grill Installation, TASK 21-23-03-400-802).
- (2) Install the passenger seats if you removed them for access (TASK 25-22-00-400-802).

————— **END OF TASK** —————

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**AIRCRAFT MAINTENANCE MANUAL**

**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**

(GRAPHIC 21-24-04-990-801)

A. References

Reference	Title
21-24-04-990-801	Figure: Gasper Air Outlets (PSU) Installation
25-23-61 P/B 201	PASSENGER SERVICE UNIT (PSU) - MAINTENANCE PRACTICES

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Prepare for the Removal

SUBTASK 21-24-04-010-001

- (1) Lower the applicable (PSU) (PASSENGER SERVICE UNIT (PSU) - MAINTENANCE PRACTICES, PAGEBLOCK 25-23-61/201).

D. Gasper Air Outlet Removal

SUBTASK 21-24-04-030-001

- (1) Remove and discard the strap from the air manifold.

SUBTASK 21-24-04-030-002

- (2) Disconnect the air manifold from the gasper.

SUBTASK 21-24-04-030-003

- (3) Hold the gasper while you remove the retainer nut.

SUBTASK 21-24-04-020-001

- (4) Remove the gasper from the (PSU) gasper panel.

**END OF TASK**

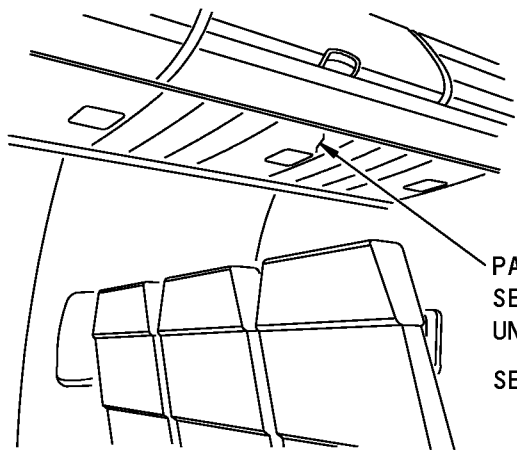
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**21-24-04**

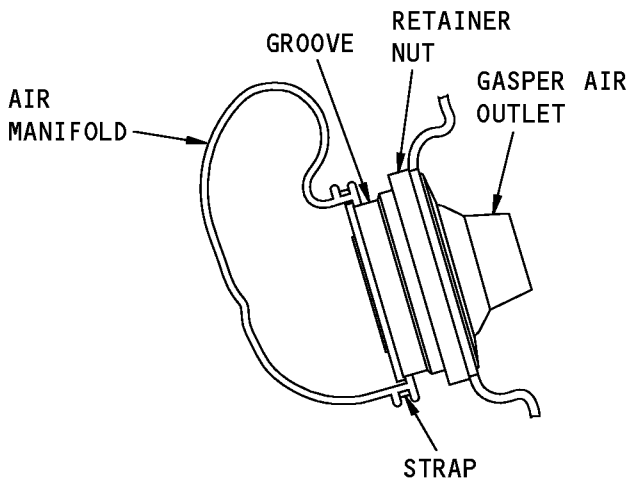
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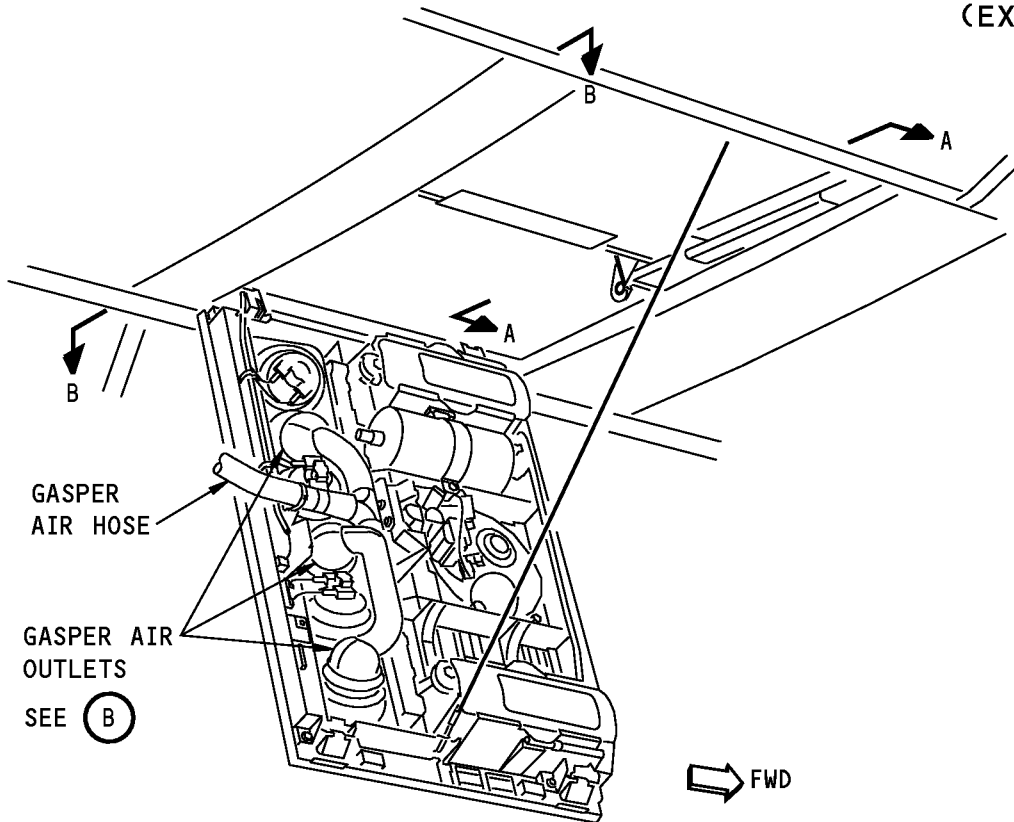


**PASSENGER COMPARTMENT**



**GASPER AIR OUTLET (EXAMPLE)**

**(B)**



**PASSENGER SERVICE UNIT (PSU) (EXAMPLE)**

**(A)**

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**Gasper Air Outlets (PSU) Installation  
Figure 401/21-24-04-990-801**

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**TASK 21-24-04-400-801**

**3. Gasper Air Outlet (PSU) Installation**

(Figure 401)

A. References

Reference	Title
25-23-61 P/B 201	PASSENGER SERVICE UNIT (PSU) - MAINTENANCE PRACTICES

B. Location Zones

Zone	Area
200	Upper Half of Fuselage

C. Gasper Air Outlet Installation

SUBTASK 21-24-04-420-001

(1) Put the gasper into the (PSU) gasper panel.

SUBTASK 21-24-04-430-001

(2) Install the retainer nut on the gasper and tighten.

SUBTASK 21-24-04-430-002

(3) Connect the air manifold to the gasper.

(a) Make sure the lip on the air manifold engages the groove in the gasper.

SUBTASK 21-24-04-420-002

(4) Install a new strap to the air manifold.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-24-04-410-001

(1) Install the applicable (PSU) gasper panel (PASSENGER SERVICE UNIT (PSU) - MAINTENANCE PRACTICES, PAGEBLOCK 25-23-61/201 ).

————— **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 ).

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### 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.

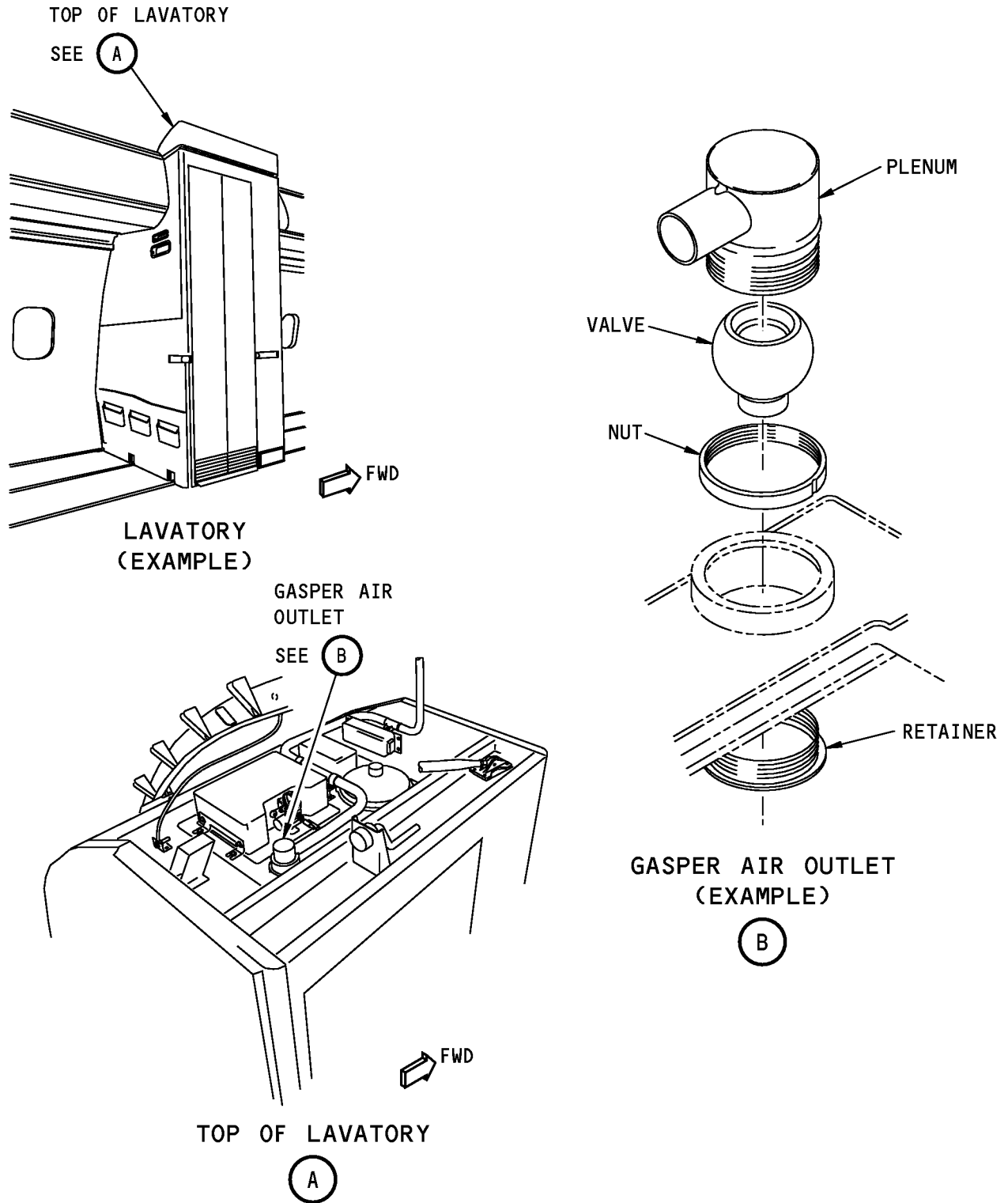
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**Gasper Air Outlet Installation**  
**Figure 402/21-24-04-990-802**

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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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# AIRCRAFT MAINTENANCE MANUAL

## RECIRCULATION SYSTEM - ADJUSTMENT/TEST

### 1. General

A. This procedure does an operational test of the recirculation system.

**TASK 21-25-00-710-801-001**

### 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 21-25-00-860-001-001

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

SUBTASK 21-25-00-860-045

(2) Make sure that the CAB/UTIL switch on the P5-13 electrical meters, battery and galley power panel is set at ON.

SUBTASK 21-25-00-860-002-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	1	C01015	AIR CONDITIONING RECIRC FAN CONT
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

SUBTASK 21-25-00-010-001-001

(4) Open the forward cargo door.

SUBTASK 21-25-00-010-002-001

(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 21-25-00-860-003-001

(1) Set these switches, on the P5-10 Air Conditioning Panel, to the OFF position:

- (a) L PACK
- (b) R PACK

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(c) RECIRC FAN

SUBTASK 21-25-00-210-001-001

(2) Make sure the recirculation fan is off.

NOTE: Put your hand on the fan to feel for vibration. If you do not feel vibration, the fan is off.

SUBTASK 21-25-00-910-001-001

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

SUBTASK 21-25-00-860-027-001

(4) Set the BLEED 1 switch to ON.

SUBTASK 21-25-00-210-002-001

(5) Set the RECIRC FAN switch 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 501/21-25-00-993-801-001

L PACK Switch Position	R PACK Switch Position	Fan Condition
OFF	OFF	ON
OFF	AUTO	ON
OFF	HIGH	ON
AUTO	OFF	ON
AUTO	AUTO	ON
AUTO	HIGH	OFF
HIGH	OFF	ON
HIGH	AUTO	OFF
HIGH	HIGH	OFF

E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-25-00-860-004-001

(1) Set the L PACK switch to the OFF position.

SUBTASK 21-25-00-860-005-001

(2) Set the R PACK switch to the OFF position.

SUBTASK 21-25-00-860-006-001

(3) Make sure the RECIRC FAN switch is in the AUTO position.

SUBTASK 21-25-00-410-001-001

(4) 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 21-25-00-410-002-001

(5) Close the forward cargo door.

SUBTASK 21-25-00-910-002-001

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

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SUBTASK 21-25-00-860-007-001

- (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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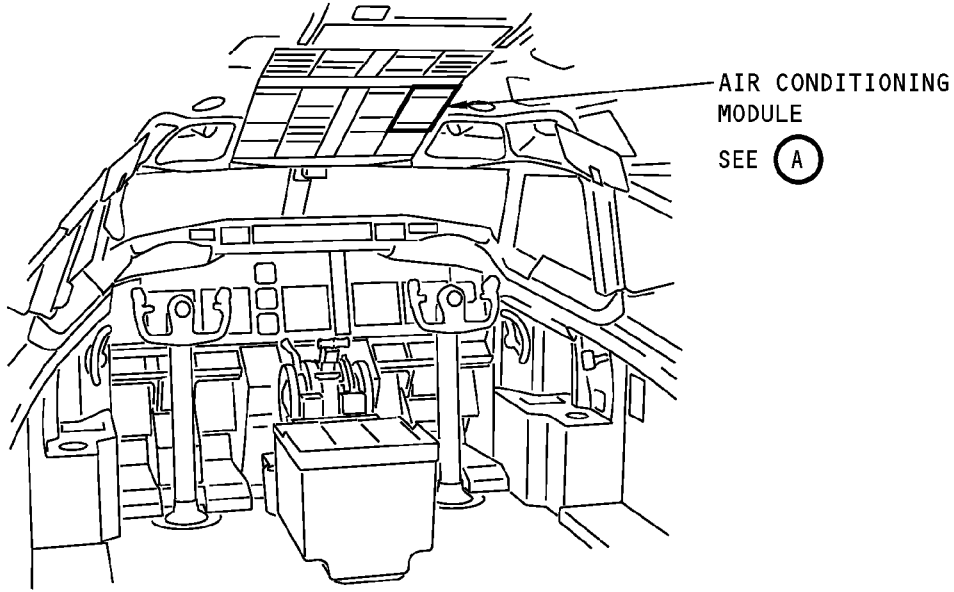
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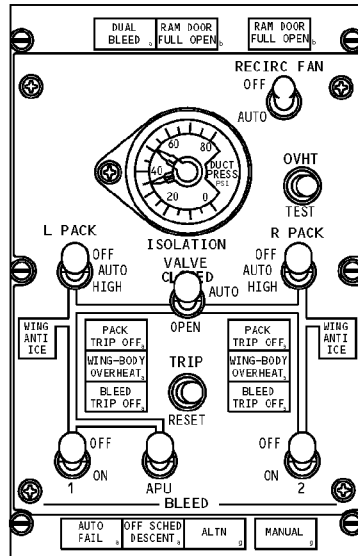
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FLIGHT COMPARTMENT



AIR CONDITIONING  
MODULE



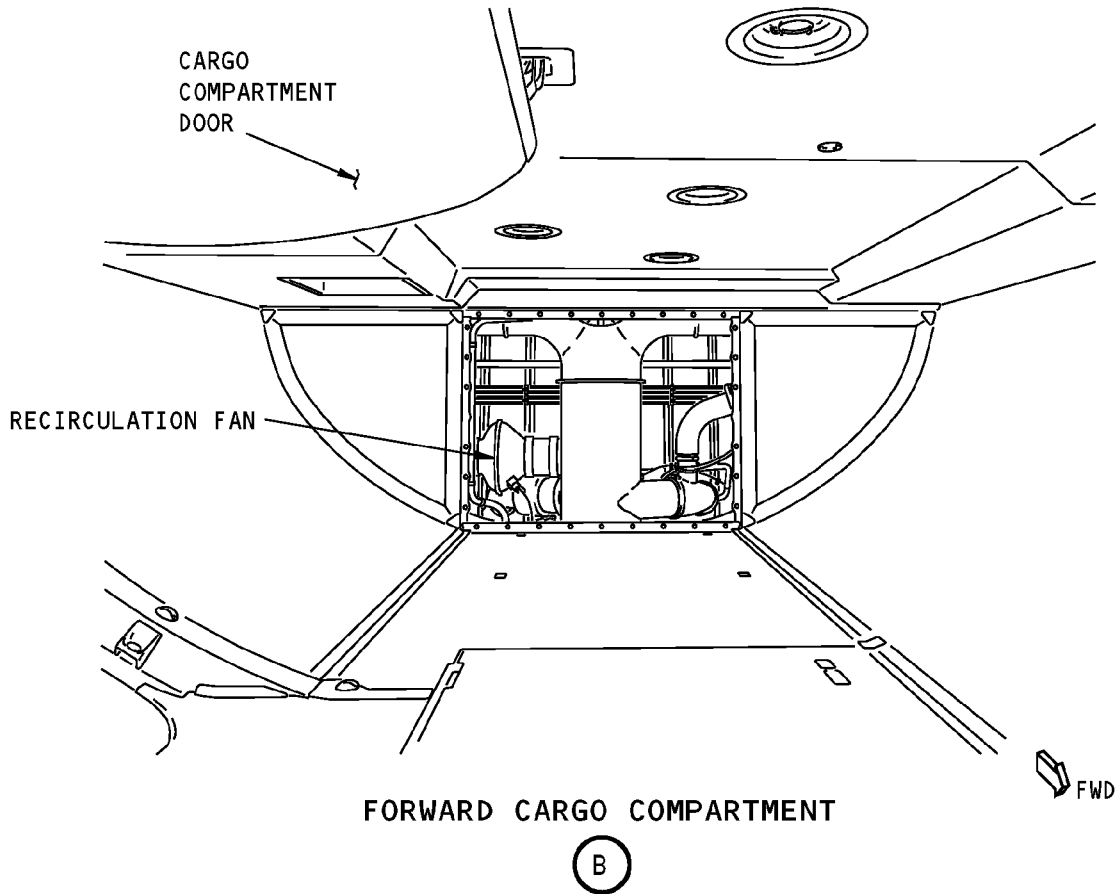
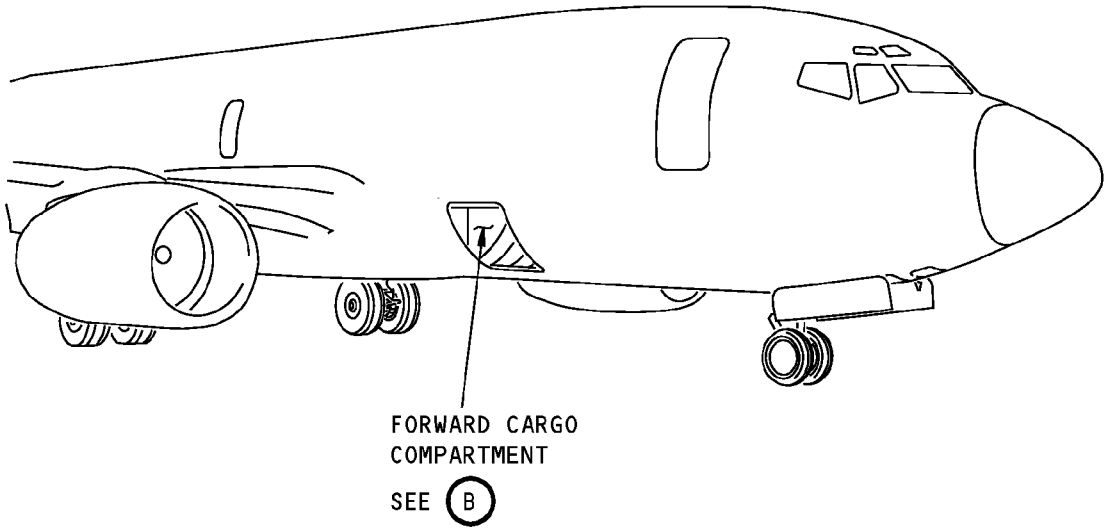
Recirculation System - Adjustment/Test  
Figure 501 (Sheet 1 of 2)/21-25-00-990-801-001

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**Recirculation System - Adjustment/Test  
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# AIRCRAFT MAINTENANCE MANUAL

## 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.

#### **HAP 031-054; HAP 001-013, 015-026, 028-030 POST SB 737-24-1147**

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.

#### **HAP 001-013, 015-026, 028-054**

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 RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT
E	2	C01023	AIR CONDITIONING RECIRC FAN RIGHT CONT
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

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HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

SUBTASK 21-25-00-010-003-002

- (4) Open the forward cargo door.

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.

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 HAP 001-013, 015-026, 028-054

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SUBTASK 21-25-00-860-012-002

- (2) Set the L and R RECIRC FAN switches to the AUTO position.

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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HAP 001-013, 015-026, 028-054

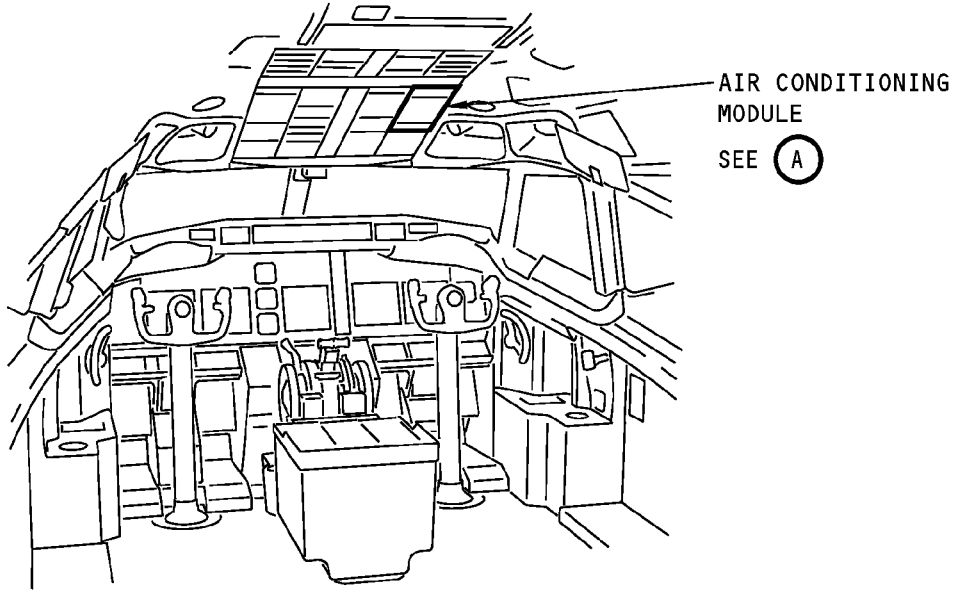
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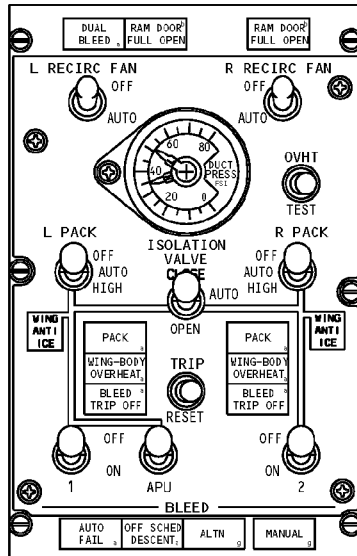
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FLIGHT COMPARTMENT



AIR CONDITIONING  
MODULE



Recirculation System Test  
Figure 501 (Sheet 1 of 2)/21-25-00-990-802-002

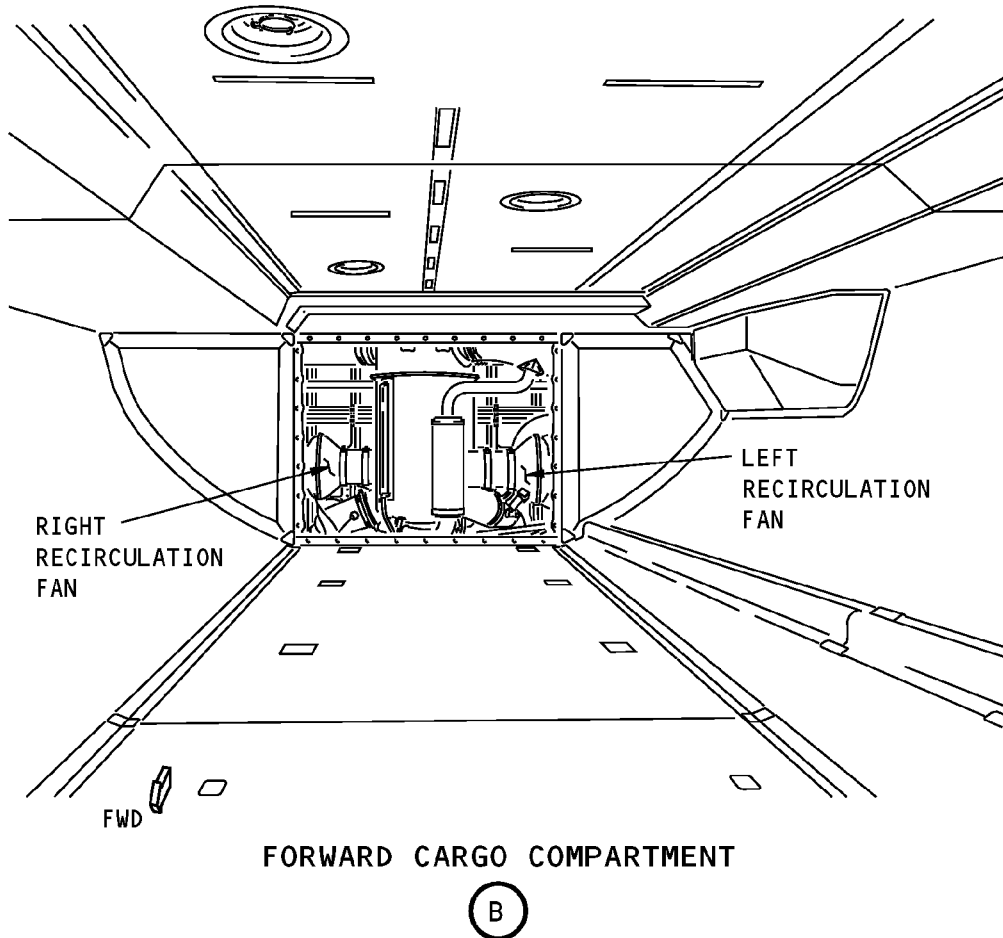
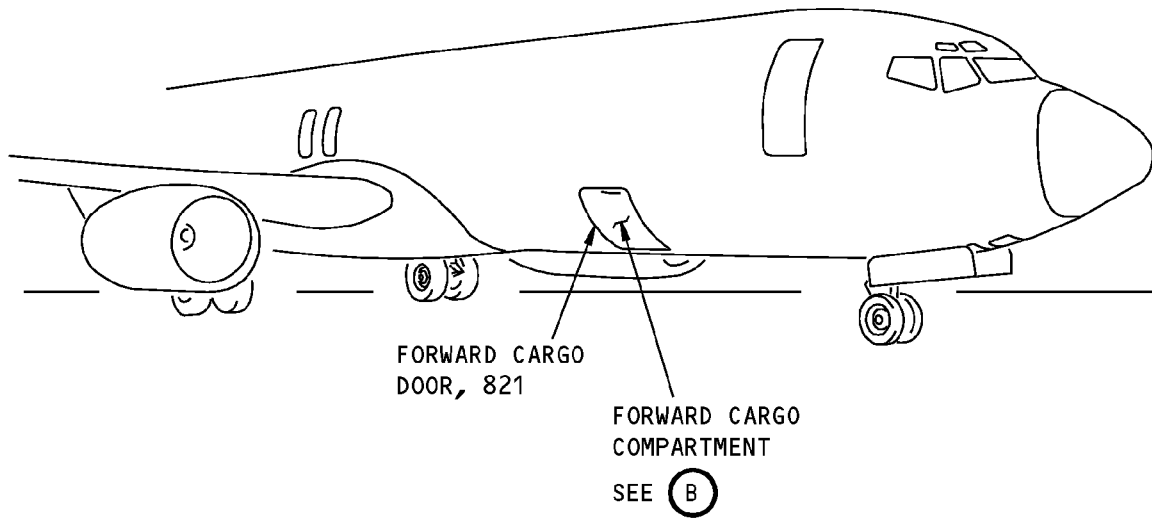
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**Recirculation System Test  
Figure 501 (Sheet 2 of 2)/21-25-00-990-802-002**

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# AIRCRAFT MAINTENANCE MANUAL

## 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.

### HAP 101-999

- C. There is one recirculation air filter installed behind the end wall liner at the aft end of the forward cargo compartment. The air filter is in a filter housing on the right side of the mix manifold bay.

### HAP 001-013, 015-026, 028-054

- D. 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.

### HAP ALL

#### TASK 21-25-01-000-801

### 2. Recirculation Air Filter Removal

(Figure 401 or Figure 402)

- A. General
  - (1) This procedure is a scheduled maintenance task.
- B. Equipment
  - (1) Plastic disposal bags - (38"x48", 1-2mil, 40-42 gal) commercially available
  - (2) Personal protective equipment & clothing (PPE/PPC) (disposable) - commercially available
    - (a) Particulate Respirator (NIOSH 42 CFR 84 Class N95, N99, N100) - 3M model 8210 (or equivalent)
    - (b) Safety Goggles - 3M model 1621 (or equivalent)
    - (c) Latex or Nitrile Gloves - Kimberly-Clark KleenGuard, SafeSkin, or ShieldMaster models (or equivalent)
    - (d) Coverall with hood - Dupont 'Tyvek' style S1428 or 01414 (or equivalent)

### C. References

Reference	Title
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)

### D. Location Zones

Zone	Area
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

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### AIRCRAFT MAINTENANCE MANUAL

#### E. Prepare for the Removal

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SUBTASK 21-25-01-860-004

- (1) Put the RECIRC FAN switch in the OFF position.

NOTE: The RECIRC FAN switch is on the pilot's overhead panel, P5.

##### HAP 001-013, 015-026, 028-054

SUBTASK 21-25-01-860-003

- (2) Put the L RECIRC FAN and the R RECIRC FAN switches, on the P5-10 panel, to the OFF position.

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SUBTASK 21-25-01-865-001

- (3) 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

##### HAP 001-013, 015-026, 028-054

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	AIR CONDITIONING RECIRC FAN RIGHT CONT
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##### HAP ALL

E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR
---	---	--------	---

SUBTASK 21-25-01-010-001

- (4) Open the forward cargo compartment door.

##### HAP 101-999

SUBTASK 21-25-01-010-002

- (5) Remove the aft right 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.

##### HAP 001-013, 015-026, 028-054

SUBTASK 21-25-01-010-006

- (6) 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.

##### HAP ALL

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.

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(WARNING PRECEDES)

(7) Put on the personal protective equipment before you touch the filter.

### F. Recirculation Air Filter Removal

#### HAP 001-013, 015-026, 028-054

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.

(c) Remove the recirculation air filter [3] from the filter housing [8].

**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 plastic disposal bag 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 plastic disposal bag and discard in accord with airline, local health, safety and regulatory procedures for disposal of material.

#### HAP 101-999

SUBTASK 21-25-01-020-013

(3) Remove the recirculation air filter as follows:

- (a) Release the quarter-turn fasteners [1] which attach the access panel [2] to the filter housing.

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HAP ALL

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## AIRCRAFT MAINTENANCE MANUAL

### HAP 101-999 (Continued)

(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 plastic disposal bag and discard in accord with airline, local health, safety and regulatory procedures for disposal of material.

#### HAP ALL

#### 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 plastic disposal bag, 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** —————

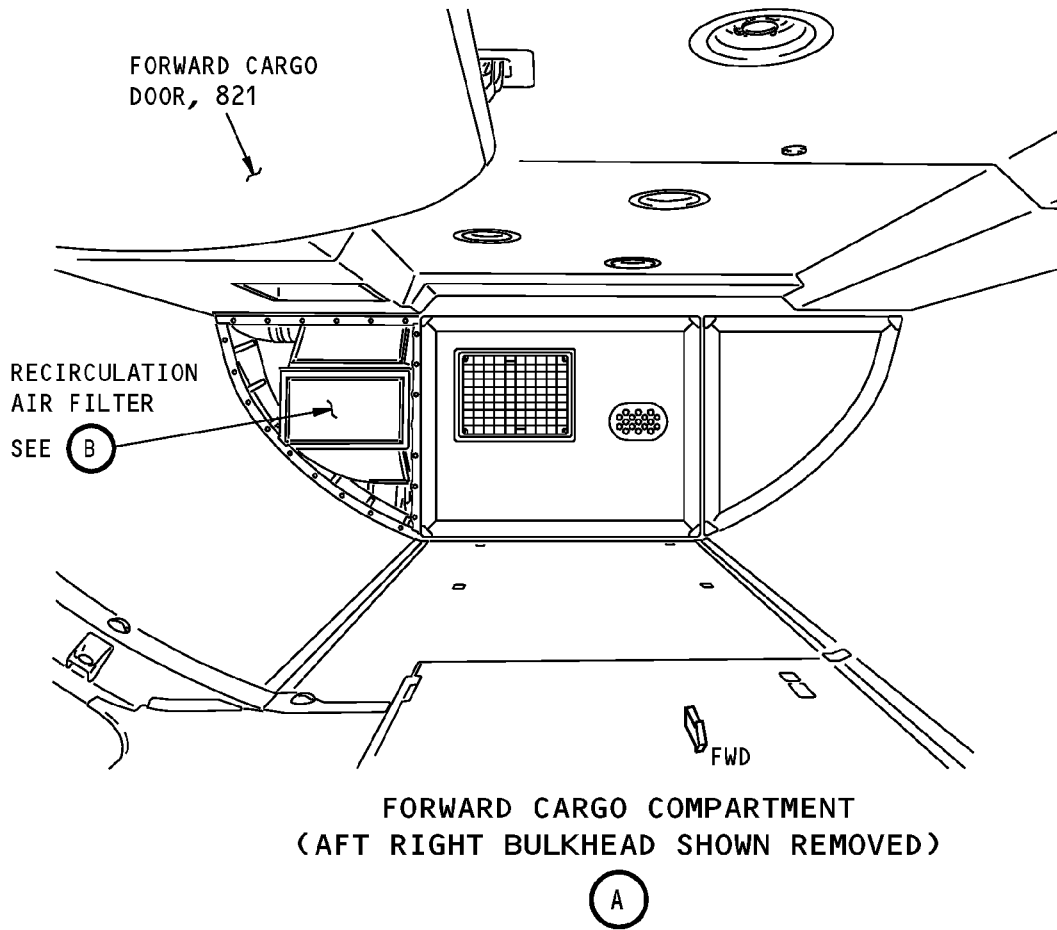
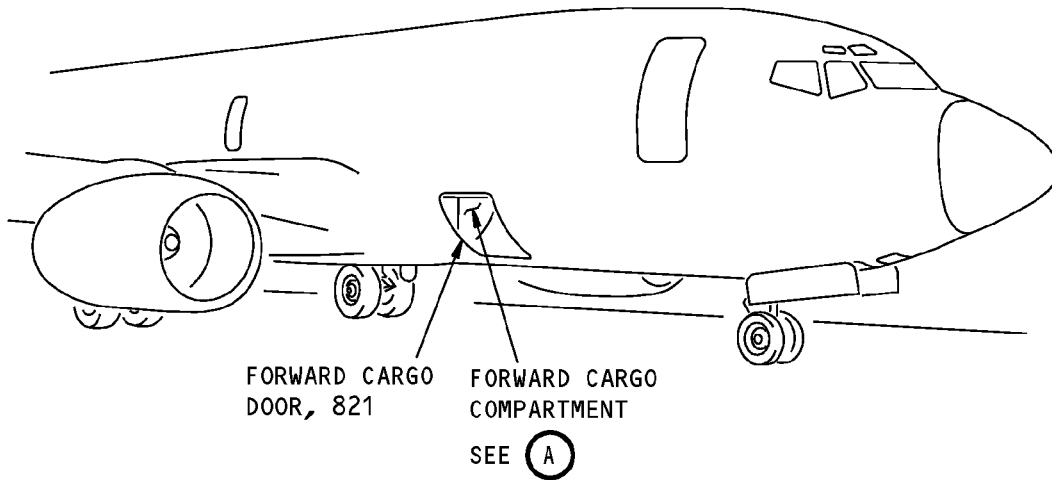
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HAP ALL

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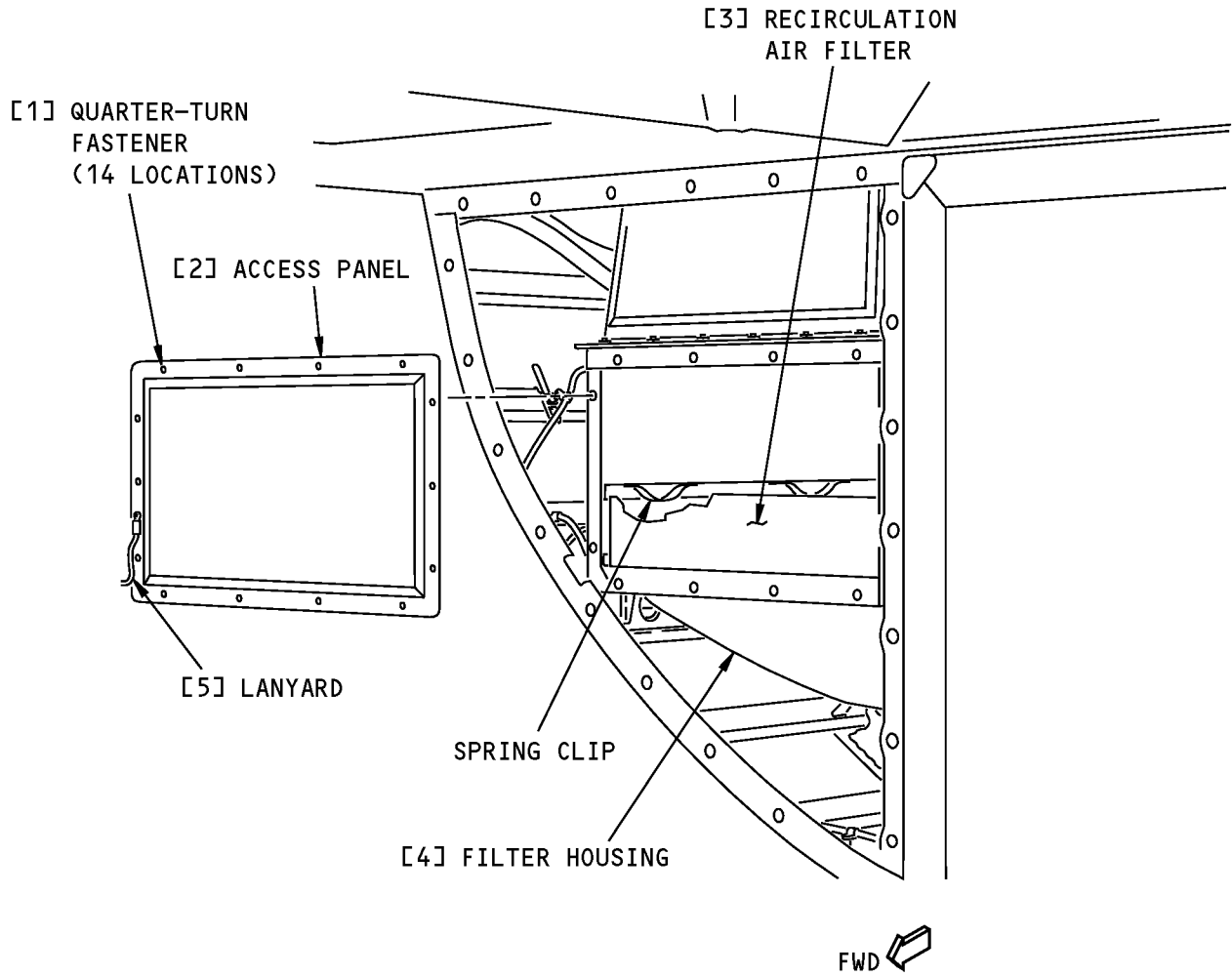
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**Recirculation Air Filter Installation  
Figure 401 (Sheet 1 of 2)/21-25-01-990-801**

EFFECTIVITY  
HAP 101-999

**21-25-01**



**RECIRCULATION AIR FILTER**

**B**

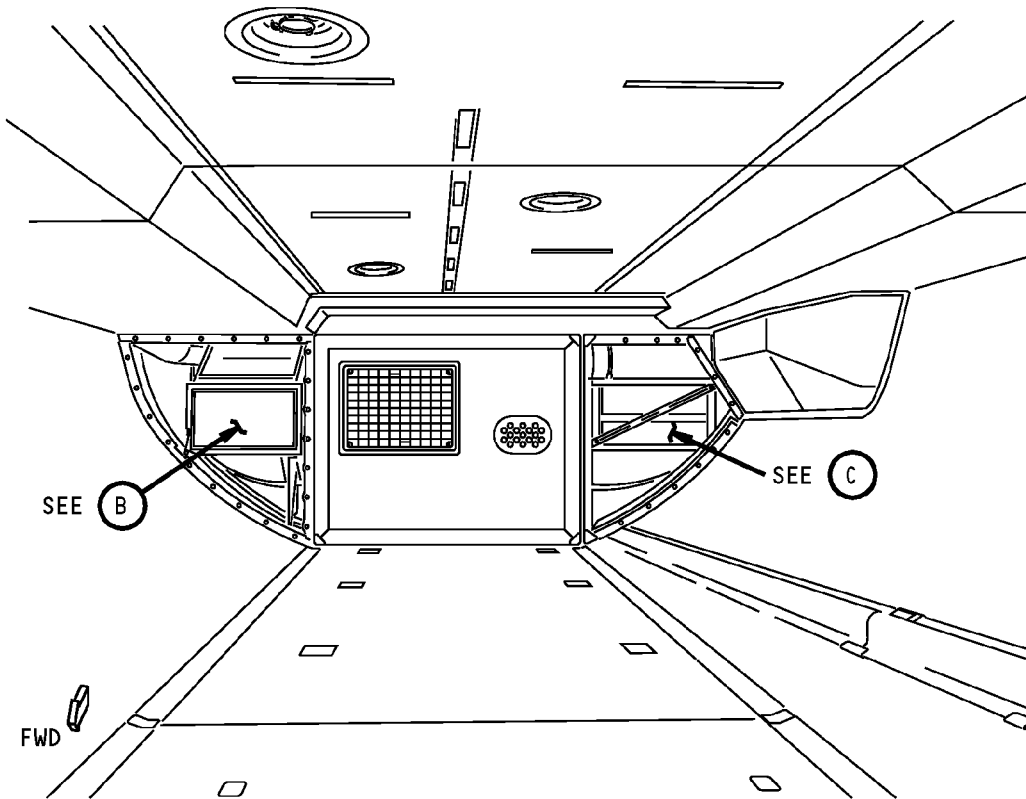
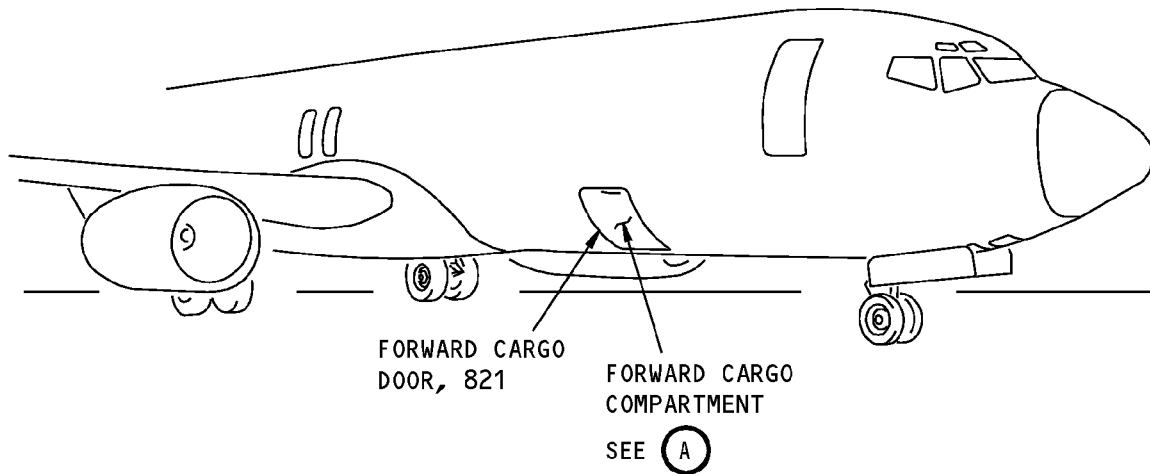
**Recirculation Air Filter Installation  
Figure 401 (Sheet 2 of 2)/21-25-01-990-801**

EFFECTIVITY  
HAP 101-999

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**21-25-01**

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**FORWARD CARGO COMPARTMENT  
(LEFT AND RIGHT AFT BULKHEAD LINER REMOVED)**

(A)

**Recirculation Air Filter Installation  
Figure 402 (Sheet 1 of 3)/21-25-01-990-803**

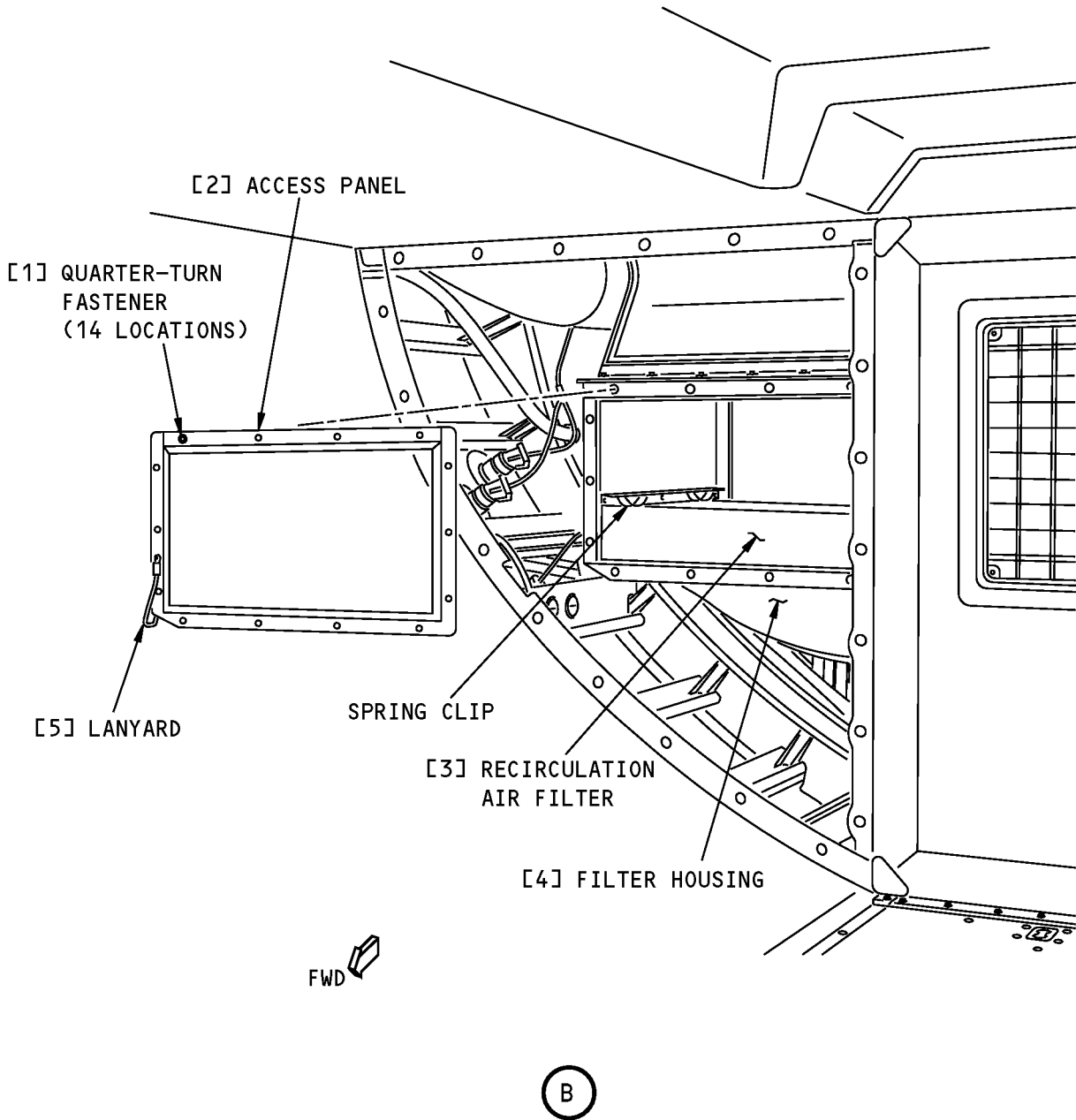
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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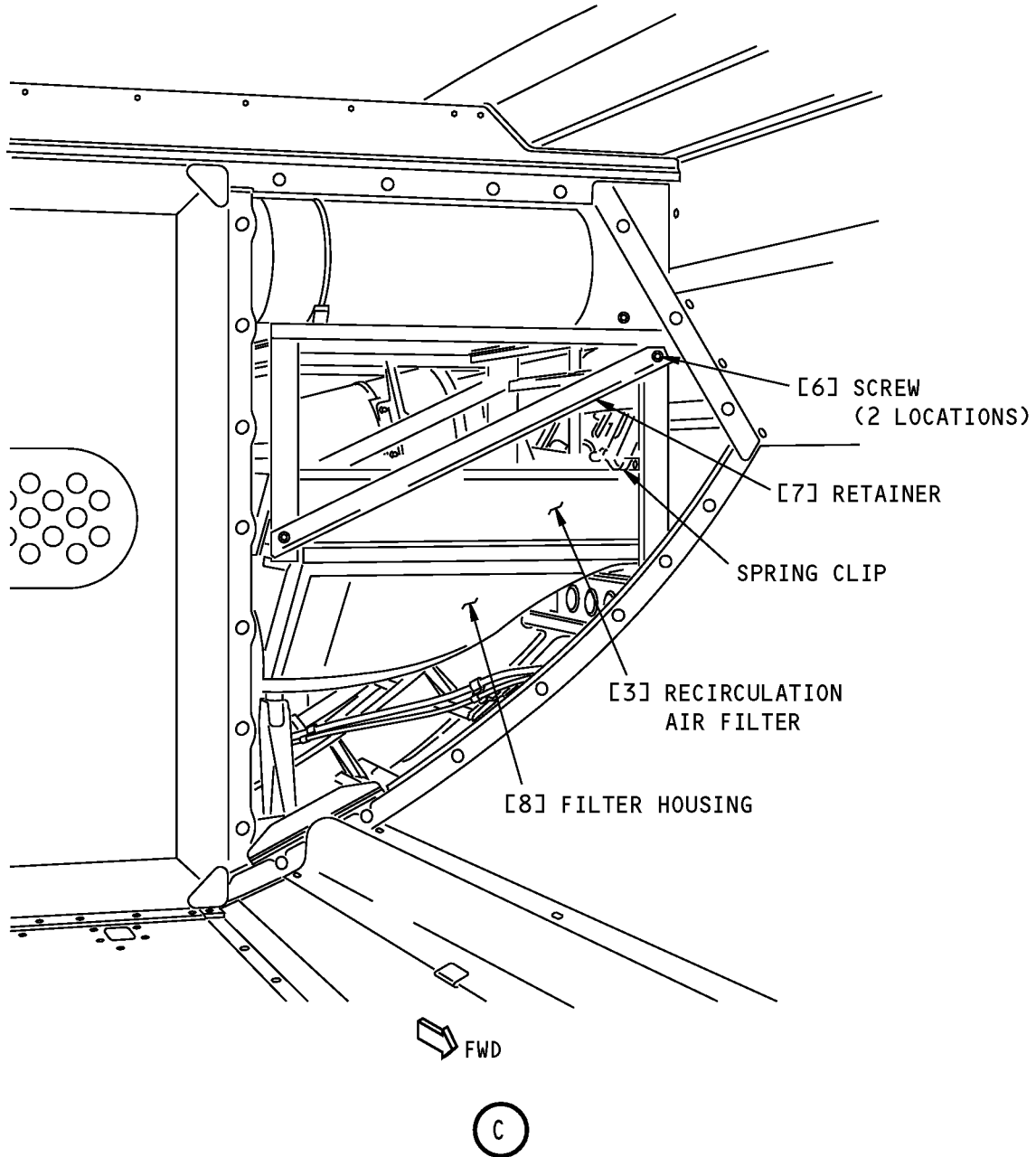
**Recirculation Air Filter Installation  
Figure 402 (Sheet 2 of 3)/21-25-01-990-803**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**Recirculation Air Filter Installation  
Figure 402 (Sheet 3 of 3)/21-25-01-990-803**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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## TASK 21-25-01-400-801

### 3. Recirculation Air Filter Installation

(Figure 401 or Figure 402)

#### A. General

- (1) This procedure is a scheduled maintenance task.

#### B. References

Reference	Title
25-52-17-400-801	Forward Cargo Compartment Aft Bulkhead Liner Installation (P/B 401)

#### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Filter	21-25-01-01-465	HAP 001-013, 015-026, 028-054
		21-25-01-04-185	HAP 101-999

#### D. Location Zones

Zone	Area
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

#### E. Recirculation Air Filter Installation

##### **HAP 101-999**

SUBTASK 21-25-01-420-005

- (1) Install the 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].

**NOTE:** Make sure the filter seal firmly touches the housing

  - (c) 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].

##### **HAP 001-013, 015-026, 028-054**

SUBTASK 21-25-01-420-007

- (2) 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.
  - (b) Put the new recirculation air filter [3] in the filter housing [8].
  - (c) Hold the retainer [7] in its position on the filter housing.
  - (d) Install the two screws [6] for the retainer [7] on the filter housing.

SUBTASK 21-25-01-420-008

- (3) 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.

EFFECTIVITY
HAP ALL

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### AIRCRAFT MAINTENANCE MANUAL

HAP 001-013, 015-026, 028-054 (Continued)

- (b) Put the new recirculation air filter [3] in the filter housing [4].
- (c) 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].

**HAP ALL**

F. Put the Airplane Back to Its Usual Condition

**HAP 101-999**

SUBTASK 21-25-01-010-007

- (1) Install the aft right 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.

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-25-01-010-010

- (2) 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.

**HAP ALL**

SUBTASK 21-25-01-410-003

- (3) Close the forward cargo compartment door.

SUBTASK 21-25-01-865-002

- (4) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-054</b>			
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C01023	AIR CONDITIONING RECIRC FAN RIGHT CONT

**HAP ALL**

E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR
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**HAP 101-999**

SUBTASK 21-25-01-860-006

- (5) Put the RECIRC FAN switch in the AUTO position.

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-25-01-860-007

- (6) Put the RECIRC FAN switches in the AUTO position.

————— **END OF TASK** —————

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HAP ALL	

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AIRCRAFT MAINTENANCE MANUAL

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.

HAP 001-013, 015-026, 028-054

- B. There are two recirculation fans installed behind the liner at the aft end of the forward cargo compartment.

HAP 101-999

- C. The recirculation fan is installed behind the liner at the aft end of the forward cargo compartment.

HAP ALL

TASK 21-25-02-000-801

2. Recirculation Fan Removal

(Figure 401)

A. References

Table with 2 columns: Reference, Title. Row: 25-52-17-000-801, Forward Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)

B. Location Zones

Table with 2 columns: Zone, Area. Rows: 125, Air Conditioning Distribution Bay - Left; 126, Air Conditioning Distribution Bay - Right; 212, Flight Compartment - Right

C. Prepare for the Removal

HAP 101-999

SUBTASK 21-25-02-860-012

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

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Rows: E, 1, C01015, AIR CONDITIONING RECIRC FAN CONT; E, 4, C00884, AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

HAP 001-013, 015-026, 028-054

SUBTASK 21-25-02-860-007

- (2) To remove the left recirculation fan, do this step:
(a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Table with 4 columns: Row, Col, Number, Name. Row: E, 7, C00911, A/C RECIRC FAN LEFT CABIN AIR

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HAP 001-013, 015-026, 028-054 (Continued)

SUBTASK 21-25-02-860-008

- (3) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

HAP ALL

SUBTASK 21-25-02-010-001

- (4) Open the forward cargo door.

SUBTASK 21-25-02-010-002

- (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.

D. Recirculation Fan Removal

SUBTASK 21-25-02-020-001

- (1) Disconnect the electrical connector [4] from the recirculation fan [1].

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 —————

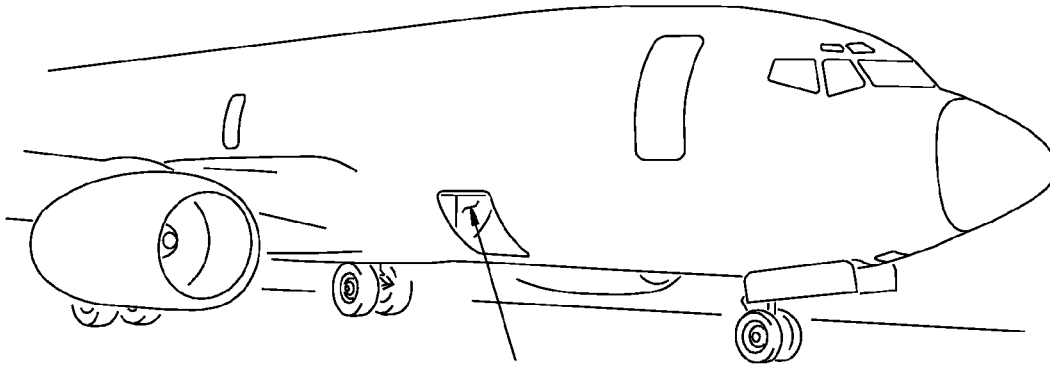
EFFECTIVITY HAP ALL	
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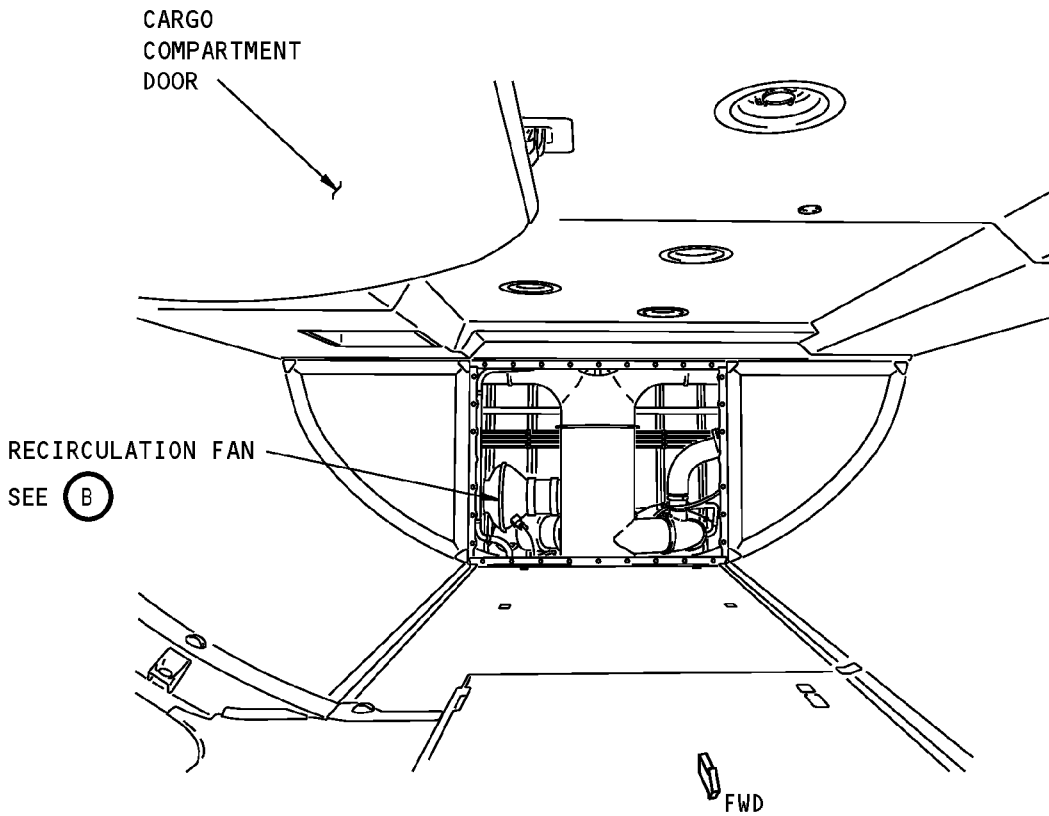
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FORWARD CARGO  
COMPARTMENT

SEE (A)



RECIRCULATION FAN

SEE (B)

FORWARD CARGO COMPARTMENT

(A)

**Recirculation Fan Installation  
Figure 401 (Sheet 1 of 4)/21-25-02-990-801**

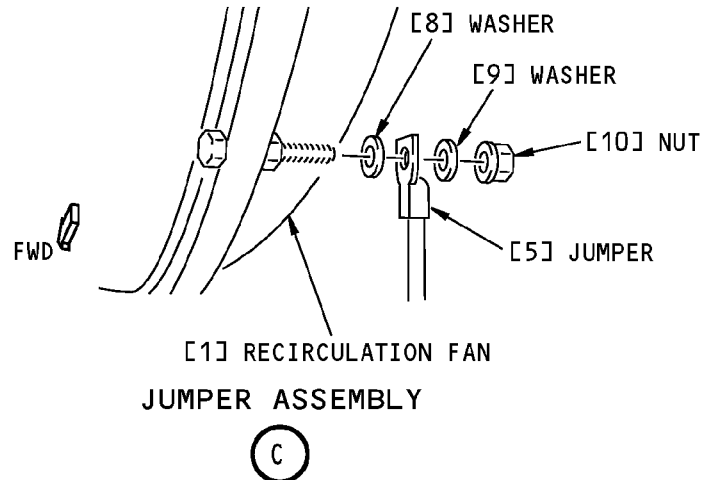
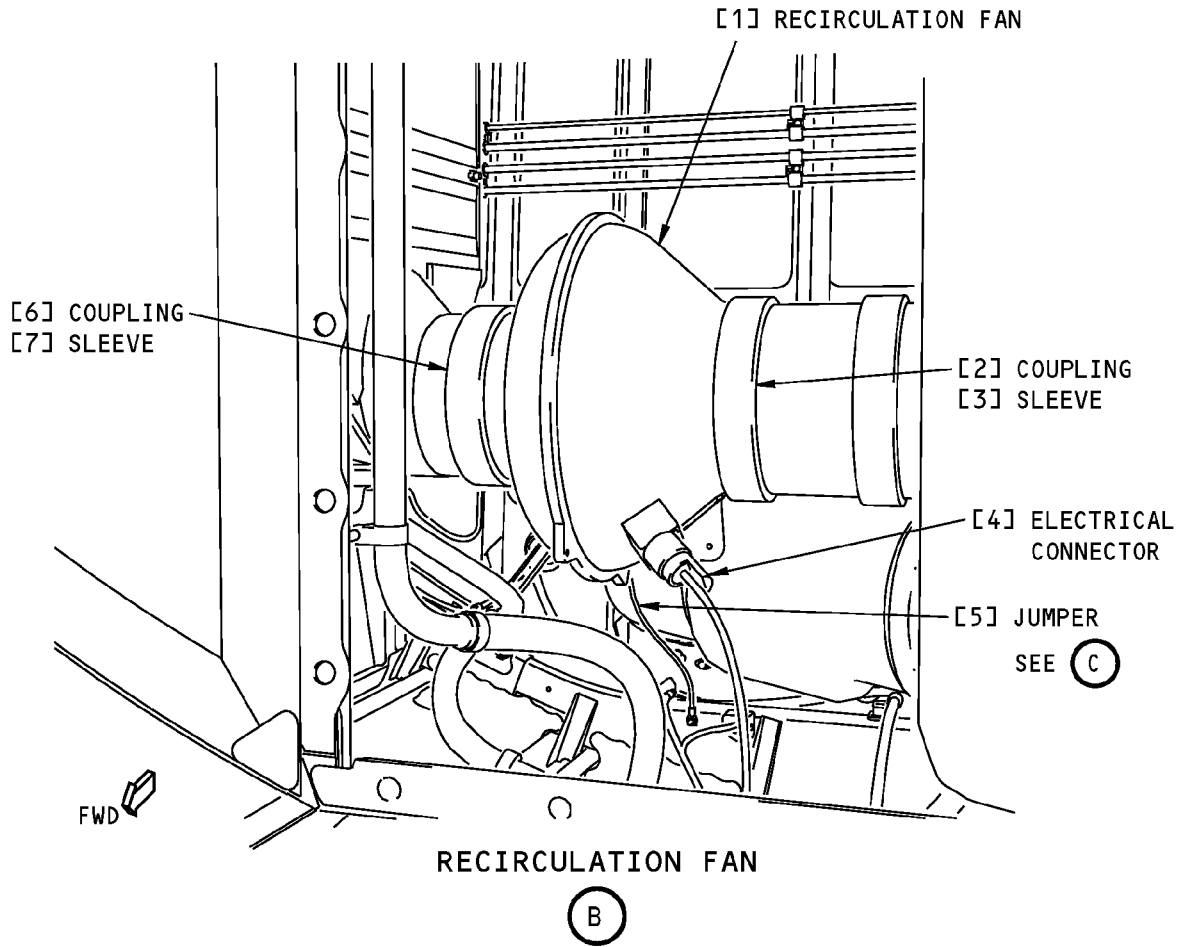
EFFECTIVITY  
HAP 101-999

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**Recirculation Fan Installation  
Figure 401 (Sheet 2 of 4)/21-25-02-990-801**

EFFECTIVITY  
HAP 101-999

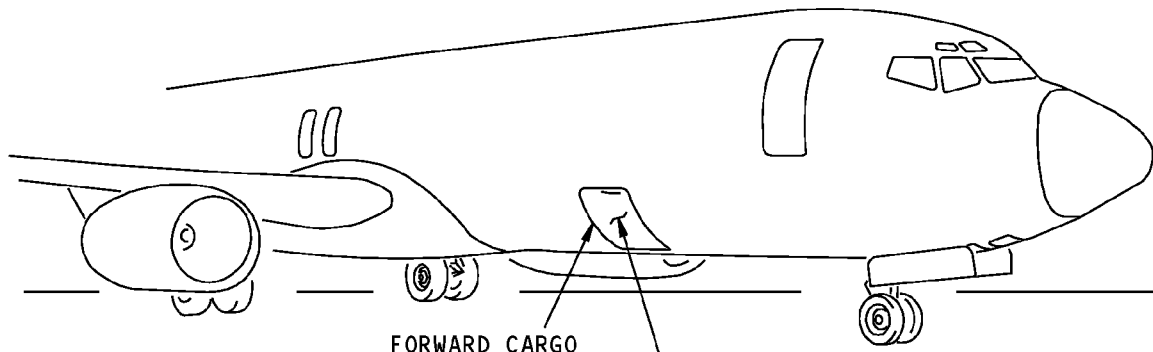
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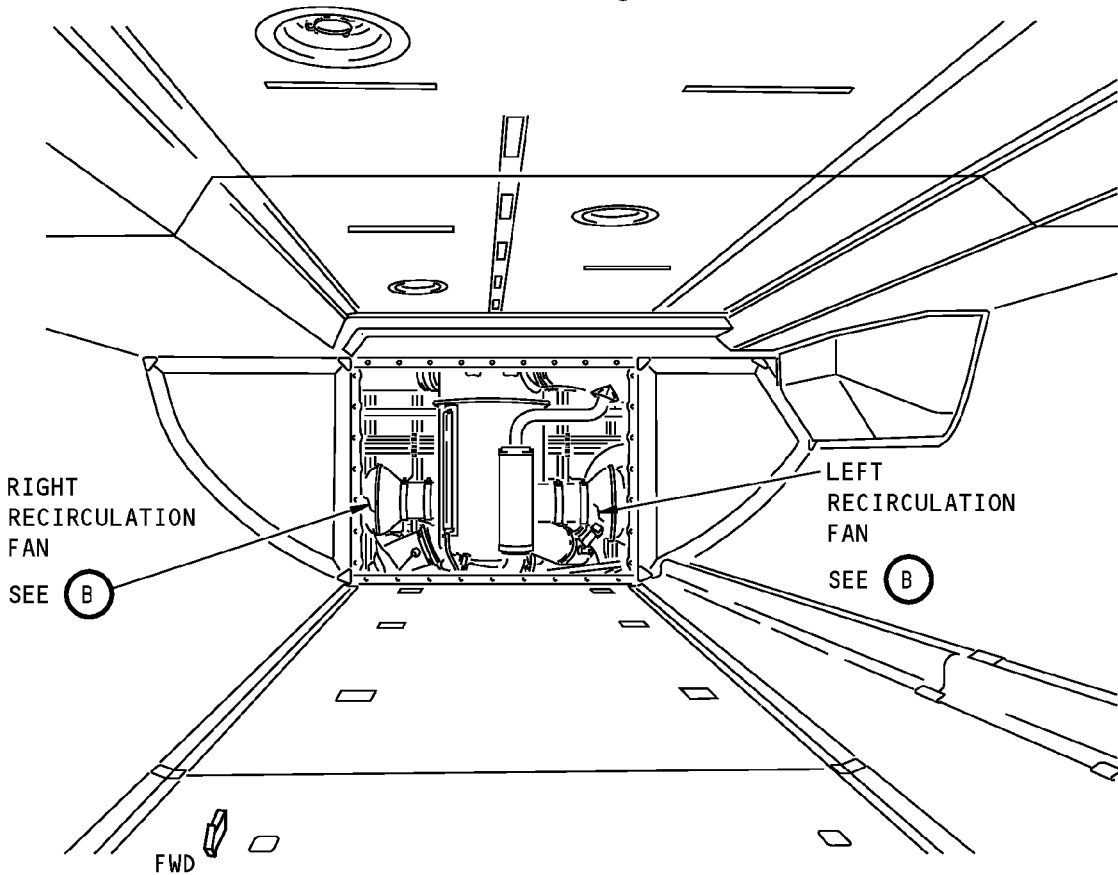
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FORWARD CARGO  
DOOR, 821

FORWARD CARGO  
COMPARTMENT

SEE (A)



RIGHT  
RECIRCULATION  
FAN

SEE (B)

LEFT  
RECIRCULATION  
FAN

SEE (B)

FWD

FORWARD CARGO COMPARTMENT

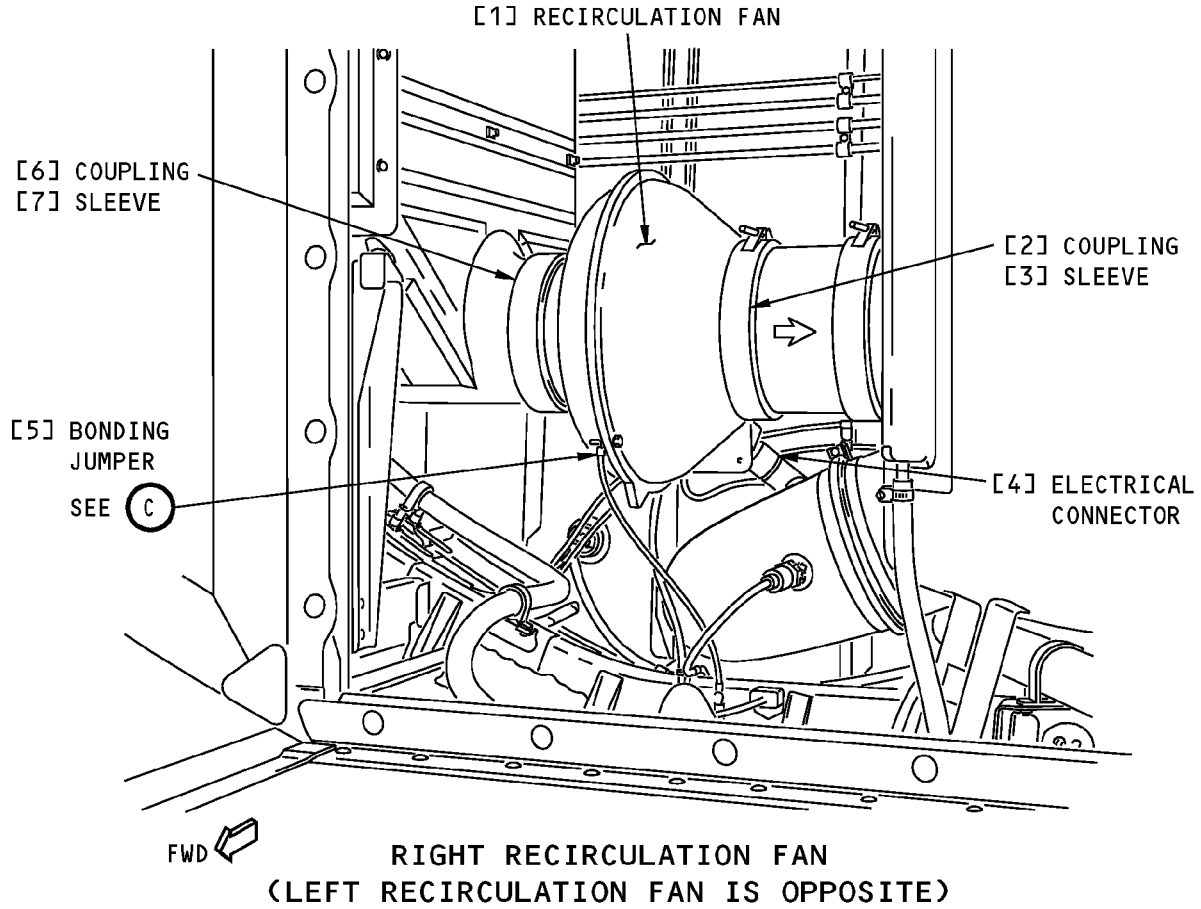
(A)

**Recirculation Fan Installation  
Figure 401 (Sheet 3 of 4)/21-25-02-990-801**

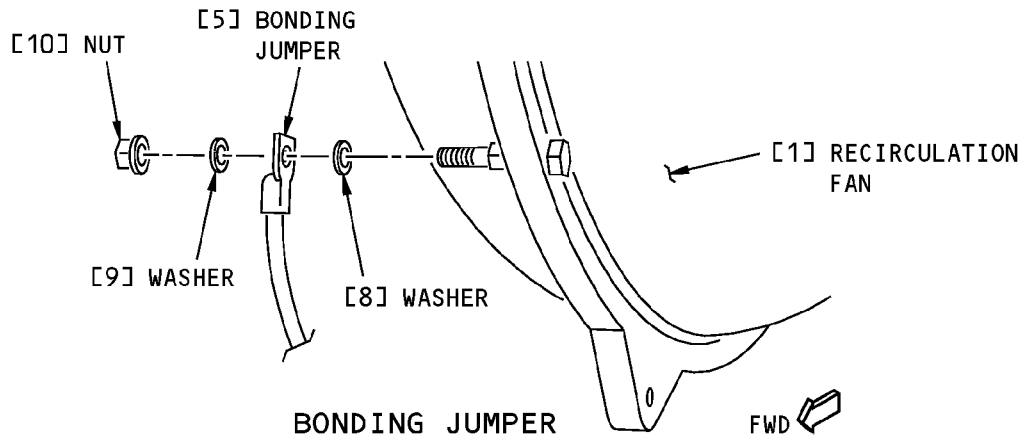
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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(B)



(C)

**Recirculation Fan Installation  
Figure 401 (Sheet 4 of 4)/21-25-02-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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# AIRCRAFT MAINTENANCE MANUAL

## 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	HAP 001-013, 015-026, 028-054

#### 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.

**HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-24-1147**

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.

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HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-24-1147 (Continued)

#### HAP 101-999

SUBTASK 21-25-02-860-015

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C01015	AIR CONDITIONING RECIRC FAN CONT
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

#### HAP 001-013, 015-026, 028-054

SUBTASK 21-25-02-860-009

- (4) If you replaced the left recirculation fan, do this step:
- (a) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR

SUBTASK 21-25-02-860-010

- (5) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

#### HAP ALL

SUBTASK 21-25-02-860-004

- (6) Make sure the L PACK and R PACK switches on the P5-10 Air Conditioning Panel are in the OFF position.

#### HAP 101-999

SUBTASK 21-25-02-860-018

- (7) Put the RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

#### HAP 001-013, 015-026, 028-054

SUBTASK 21-25-02-860-011

- (8) Put the applicable RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

#### HAP ALL

SUBTASK 21-25-02-710-001

- (9) 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.

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# 21-25-02



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SUBTASK 21-25-02-790-001

(10) 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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HAP ALL

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# AIRCRAFT MAINTENANCE MANUAL

## 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.

#### **HAP 001-013, 015-026, 028-054**

B. There are two recirculation fan check valves installed behind the liner at the aft end of the forward cargo compartment.

#### **HAP 101-999**

C. The recirculation fan check valve is installed behind the liner at the aft end of the forward cargo compartment.

#### **HAP ALL**

#### **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

#### **HAP 101-999**

SUBTASK 21-25-03-860-011

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	1	C01015	AIR CONDITIONING RECIRC FAN CONT
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

#### **HAP 001-013, 015-026, 028-054**

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

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HAP 001-013, 015-026, 028-054 (Continued)

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

HAP ALL

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.

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 —————

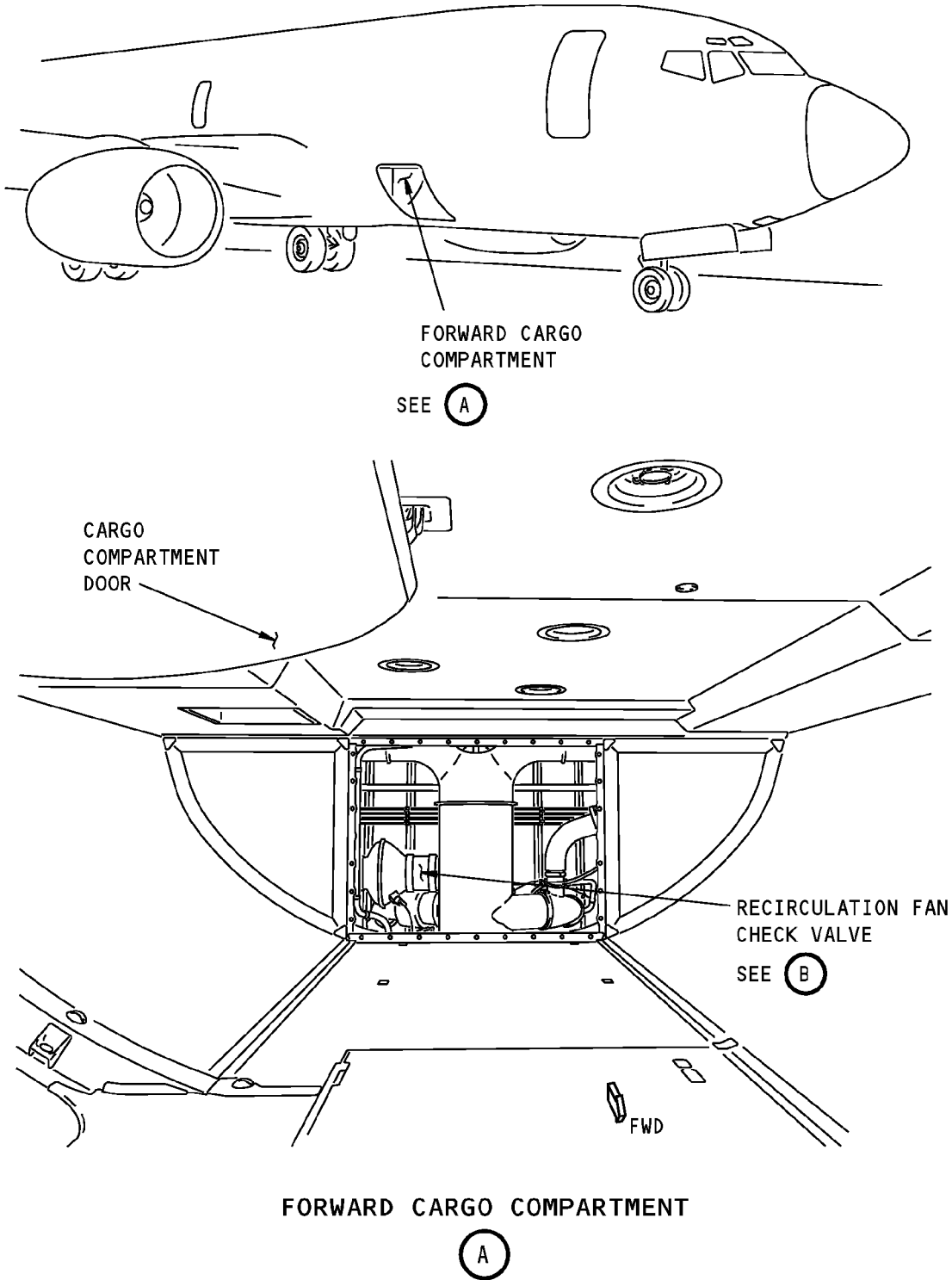
EFFECTIVITY	
HAP ALL	

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AIRCRAFT MAINTENANCE MANUAL**

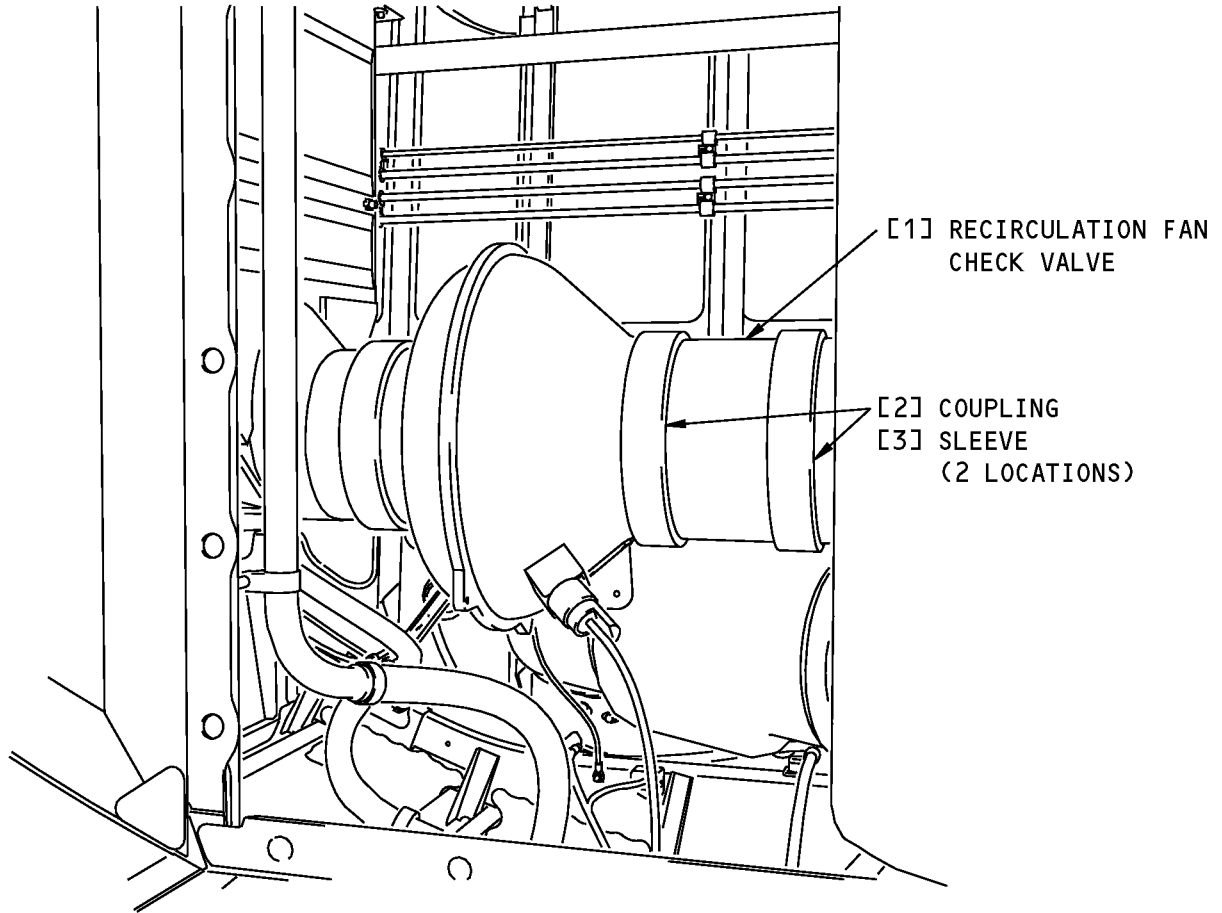


**Recirculation Fan Check Valve Installation  
Figure 401 (Sheet 1 of 4)/21-25-03-990-801**

EFFECTIVITY  
HAP 101-999

D633A101-HAP





FWD ↗

**RECIRCULATION FAN CHECK VALVE**

(B)

**Recirculation Fan Check Valve Installation  
Figure 401 (Sheet 2 of 4)/21-25-03-990-801**

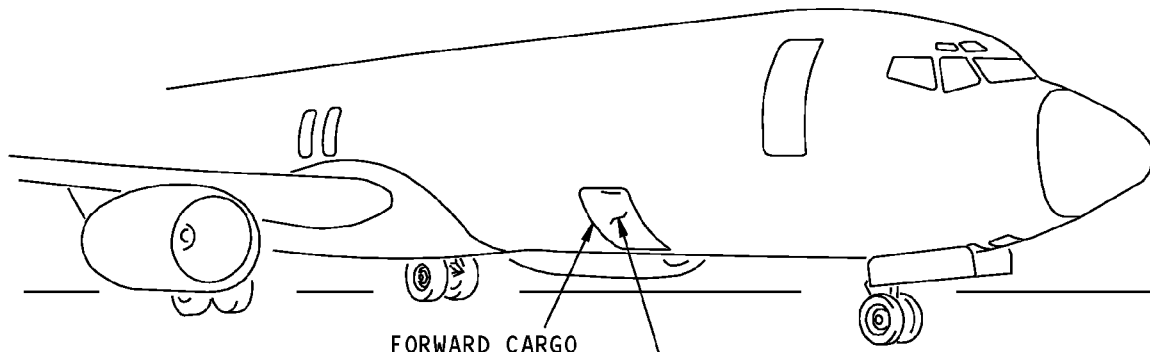
EFFECTIVITY  
HAP 101-999

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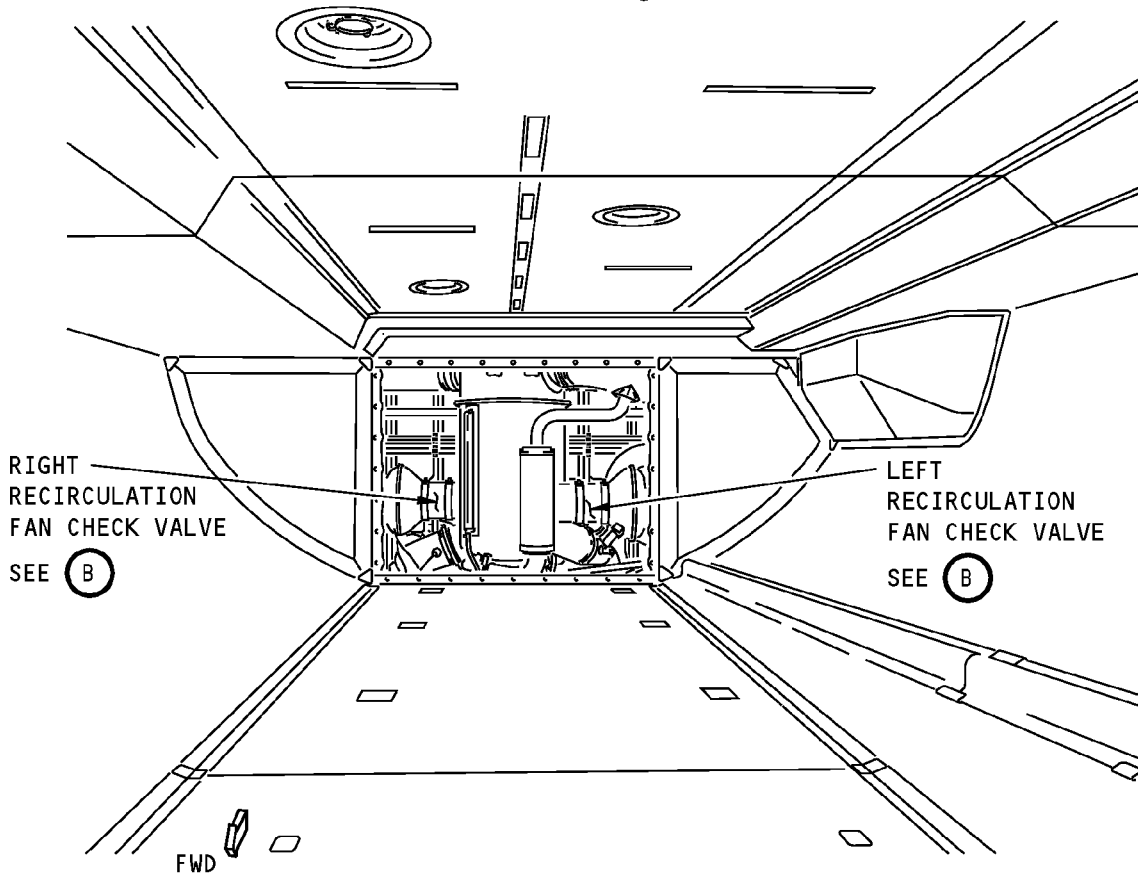
**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**



FORWARD CARGO  
DOOR, 821

FORWARD CARGO  
COMPARTMENT

SEE (A)



RIGHT  
RECIRCULATION  
FAN CHECK VALVE  
SEE (B)

LEFT  
RECIRCULATION  
FAN CHECK VALVE  
SEE (B)

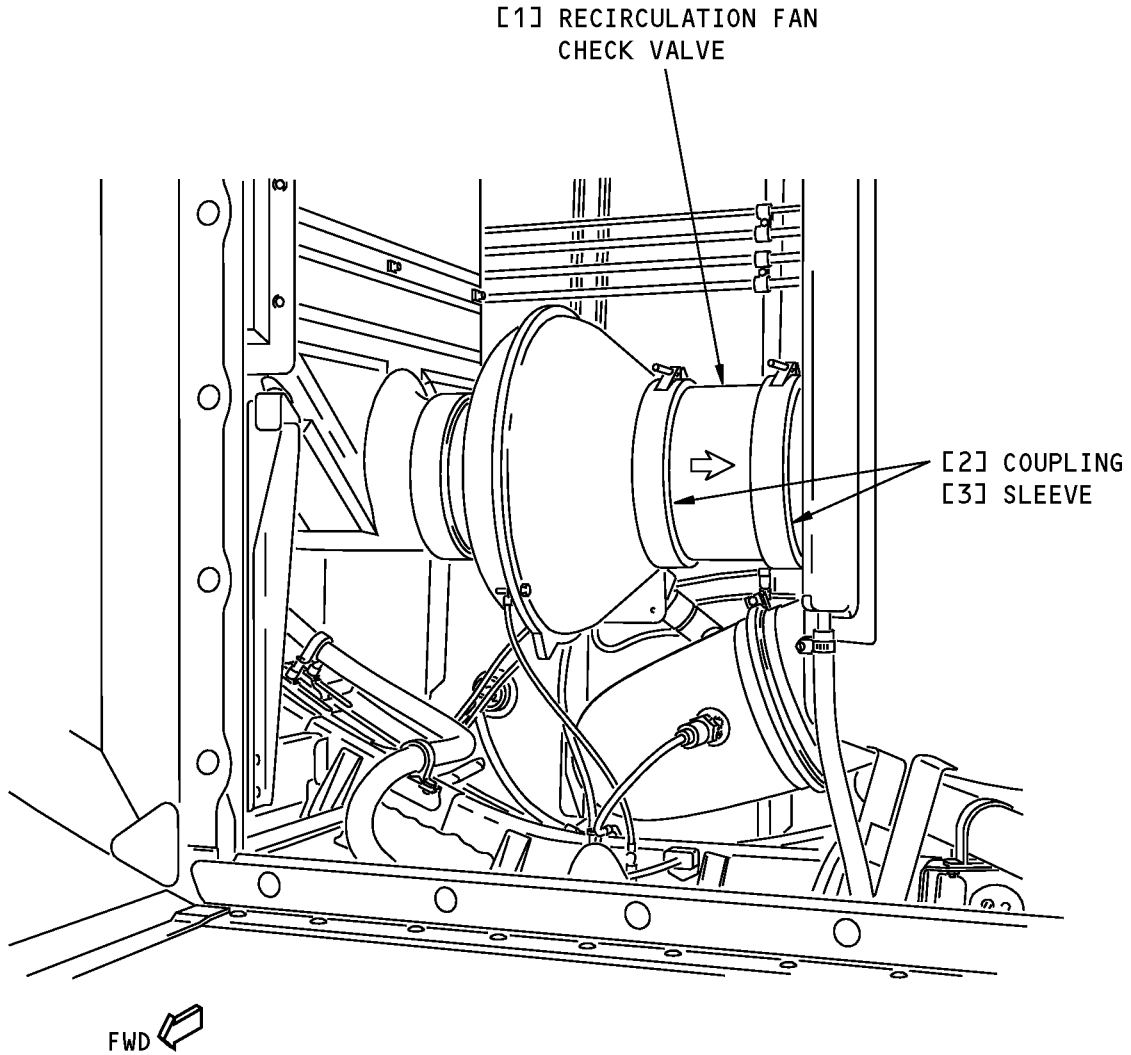
FORWARD CARGO COMPARTMENT

(A)

**Recirculation Fan Check Valve Installation  
Figure 401 (Sheet 3 of 4)/21-25-03-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

**21-25-03**



**RIGHT RECIRCULATION FAN CHECK VALVE  
(LEFT RECIRCULATION FAN CHECK VALVE IS OPPOSITE)**

**B**

**Recirculation Fan Check Valve Installation  
Figure 401 (Sheet 4 of 4)/21-25-03-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

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	HAP 001-013, 015-026, 028-054
		21-25-03-06-015	HAP 101-999

##### 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.

**HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-24-1147**

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.

**HAP 101-999**

SUBTASK 21-25-03-860-013

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
E	1	C01015	AIR CONDITIONING RECIRC FAN CONT
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

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HAP 101-999 (Continued)

HAP 001-013, 015-026, 028-054

SUBTASK 21-25-03-860-009

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

CAPT Electrical System Panel, P18-3

Table with 4 columns: Row, Col, Number, Name. Row E, Col 7, Number C00911, Name A/C RECIRC FAN LEFT CABIN AIR

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Row E, Col 4, Number C00884, Name AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

HAP ALL

SUBTASK 21-25-03-860-005

- (5) Make sure the L PACK and R PACK switches on the P5-10 Air Conditioning Panel are in the OFF position.

HAP 101-999

SUBTASK 21-25-03-860-015

- (6) Put the RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

HAP 001-013, 015-026, 028-054

SUBTASK 21-25-03-860-010

- (7) Put the applicable L or R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

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SUBTASK 21-25-03-790-001

- (8) 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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AIRCRAFT MAINTENANCE MANUAL

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

A. General

- (1) This procedure is a scheduled maintenance task.

B. 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)

C. Recirculation Fan Check Valve Removal

SUBTASK 21-25-03-020-003

- (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.

D. Recirculation Fan Check Valve Inspection

SUBTASK 21-25-03-210-002

- (1) Examine the recirculation fan check valve as follows:
  - (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.
  - (e) Make sure that there is no corrosion or lint on the flappers or the hinge pin.

E. 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.

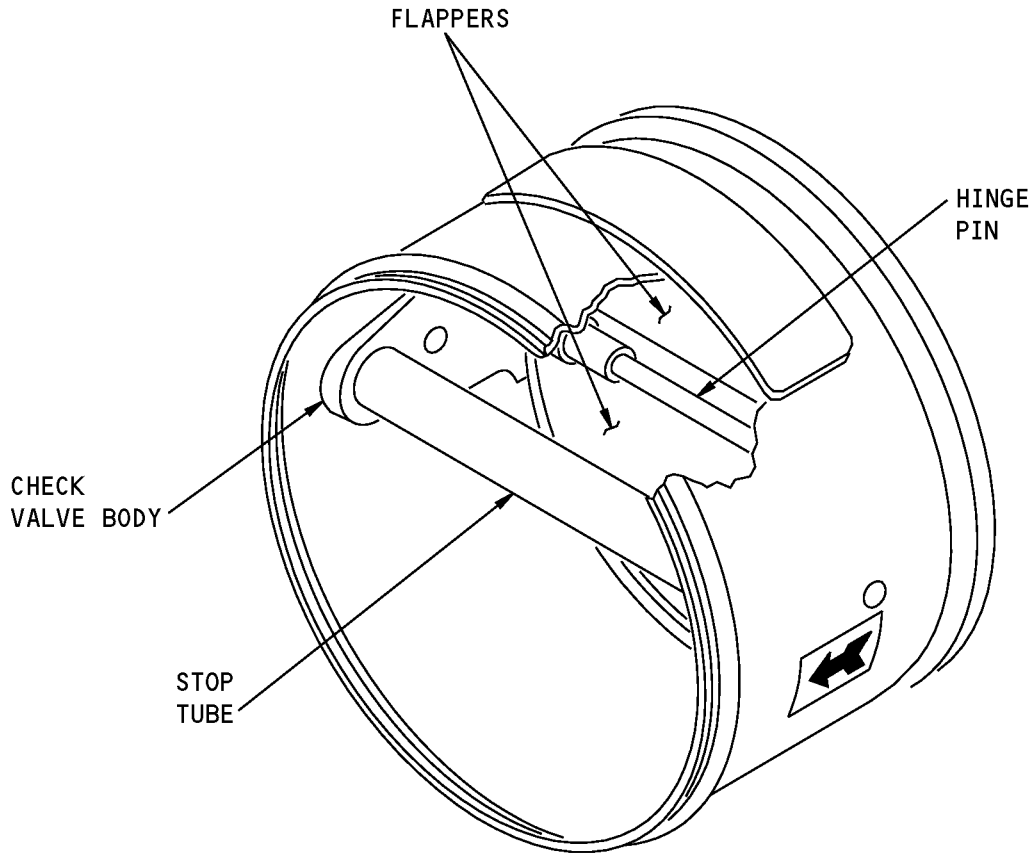
————— **END OF TASK** —————

EFFECTIVITY <b>HAP ALL</b>	
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**Recirculation Fan Check Valve Inspection  
Figure 601/21-25-03-990-803**

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# AIRCRAFT MAINTENANCE MANUAL

## 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** —————

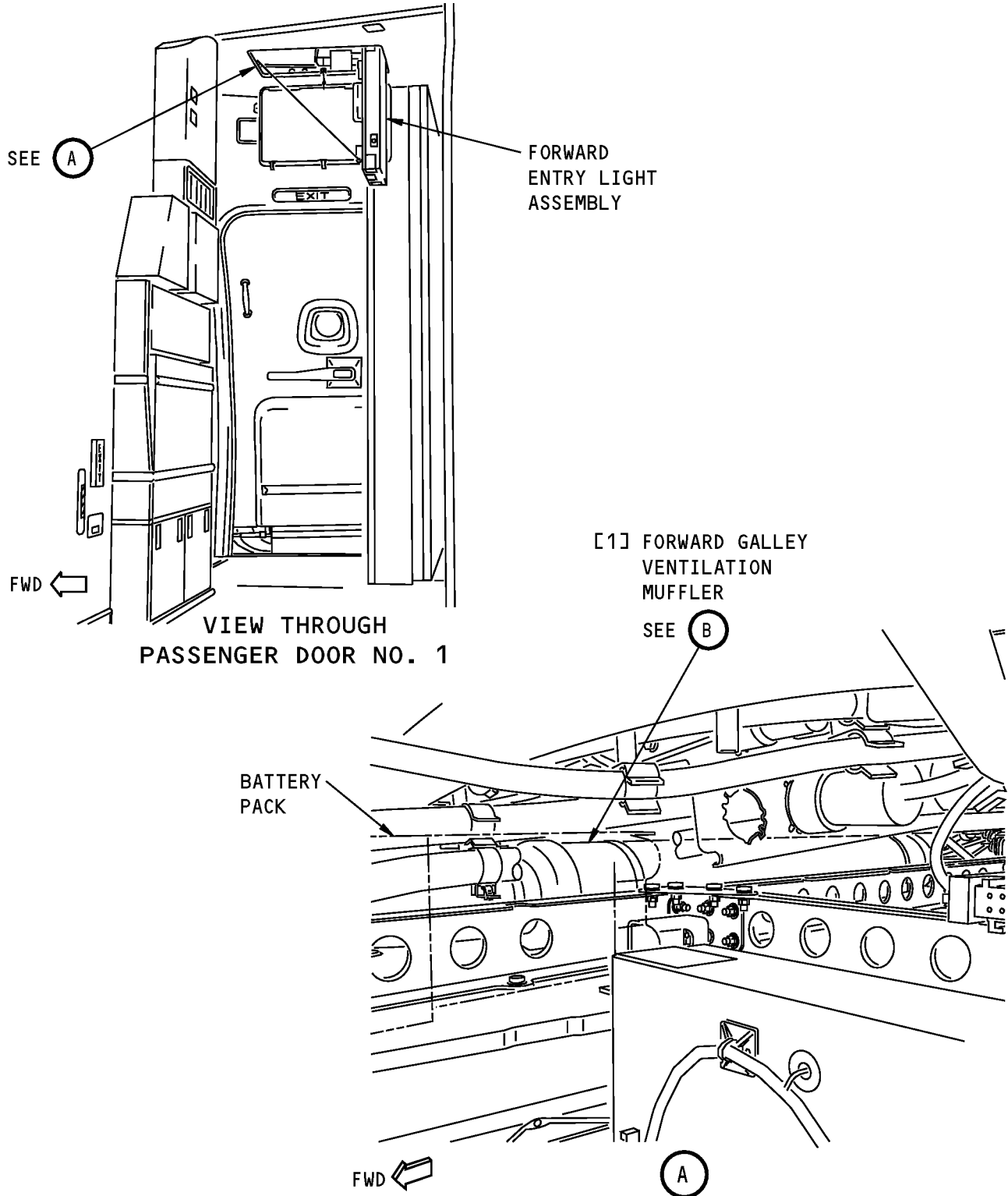
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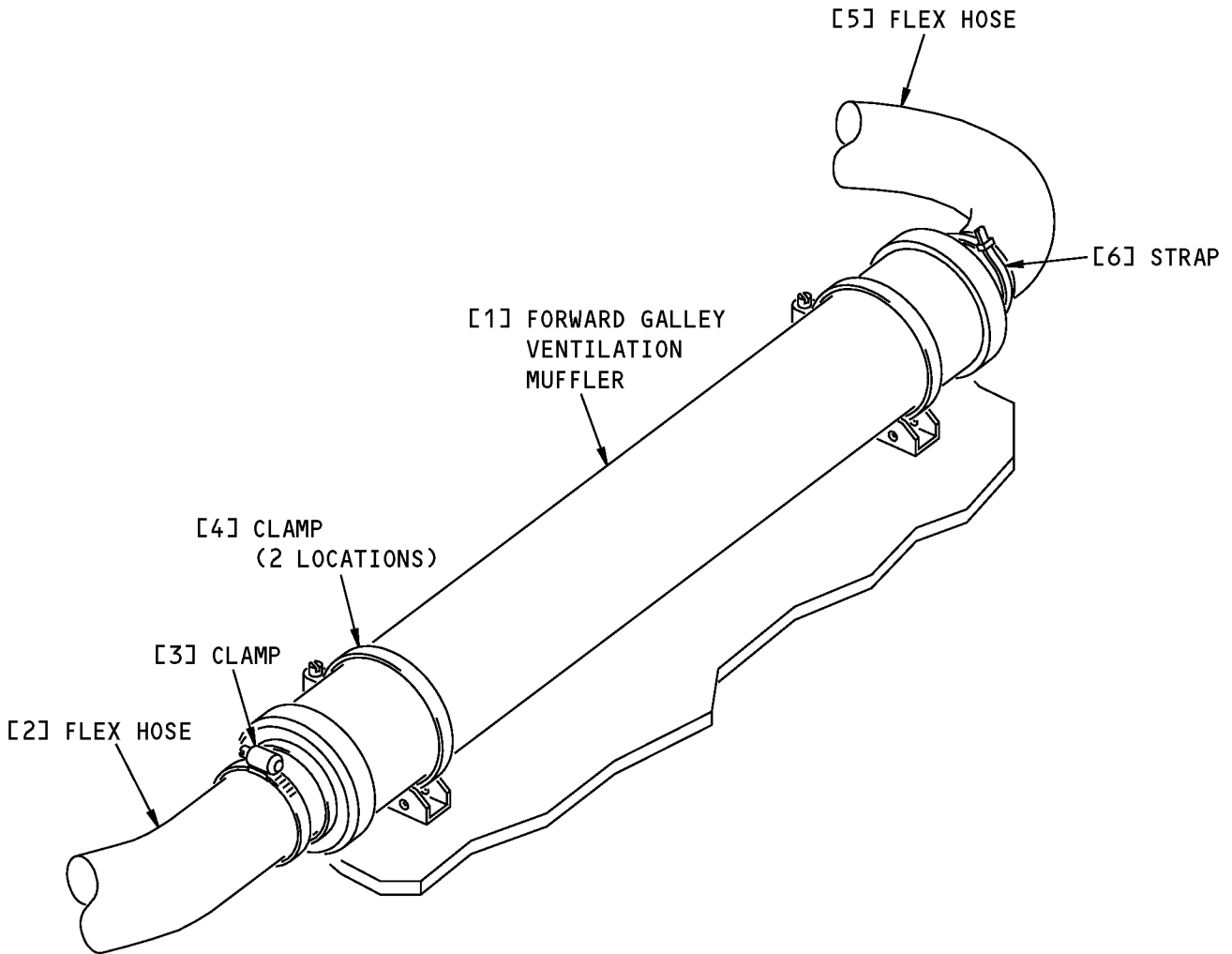
**Forward Galley Ventilation Muffler Installation**  
**Figure 401 (Sheet 1 of 2)/21-26-01-990-801**

EFFECTIVITY  
HAP ALL

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**FORWARD GALLEY VENTILATION MUFFLER**

**(B)**

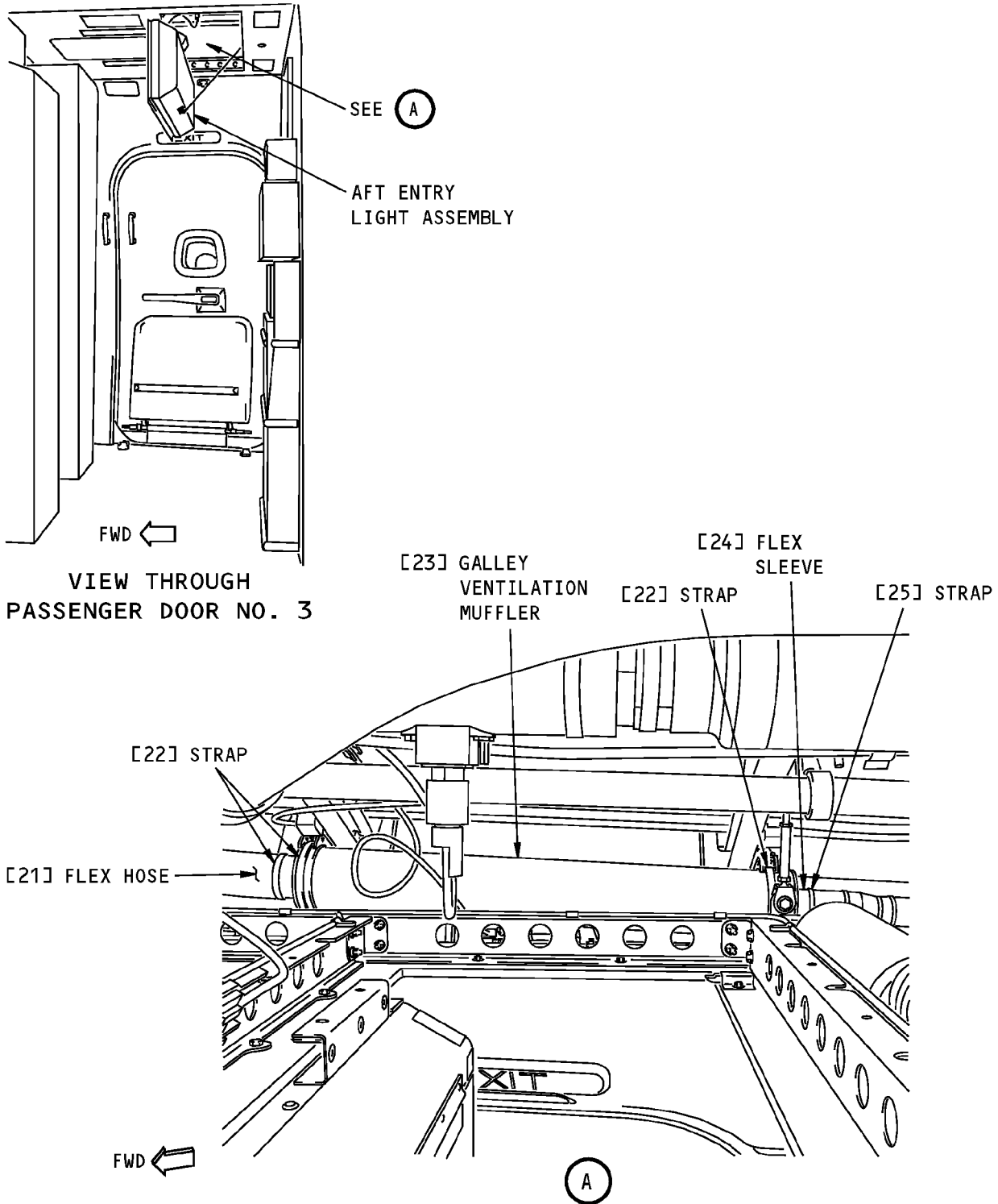
**Forward Galley Ventilation Muffler Installation  
Figure 401 (Sheet 2 of 2)/21-26-01-990-801**

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**Aft Galley Ventilation Muffler Installation  
Figure 402/21-26-01-990-802**

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### AIRCRAFT MAINTENANCE MANUAL

**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	21-26-01-01-010	HAP 001-013, 015-026, 028-036
		21-26-01-01B-010	HAP 037-054, 101-999
23	Muffler	21-26-51-02-080	HAP 001-007
		21-26-51-09-090	HAP 031-054, 101-999
		21-26-51-09B-090	HAP 008-013, 015-026, 028-030

##### 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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# AIRCRAFT MAINTENANCE MANUAL

## 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.

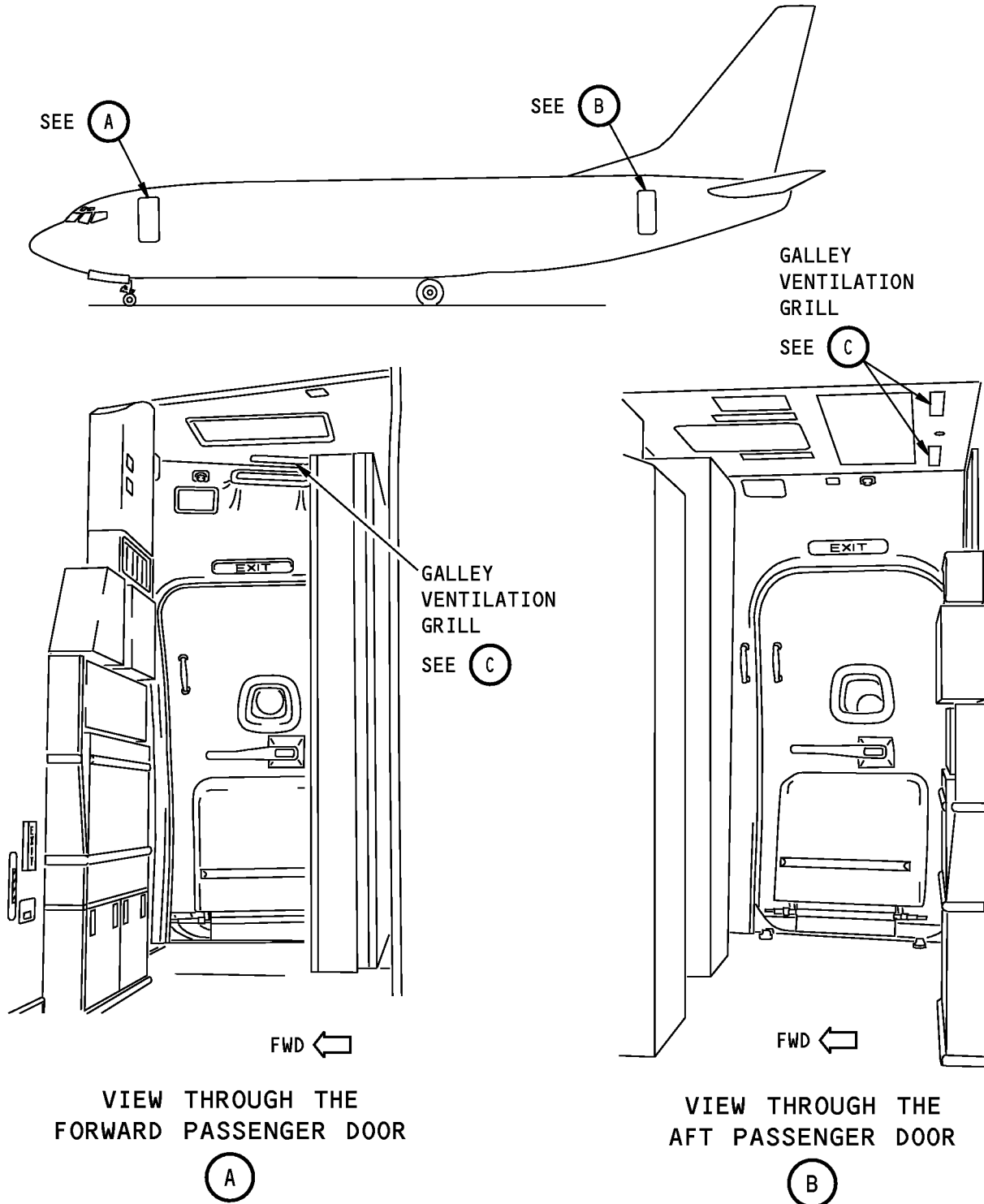
————— **END OF TASK** —————

<p>EFFECTIVITY</p> <p>HAP ALL</p>
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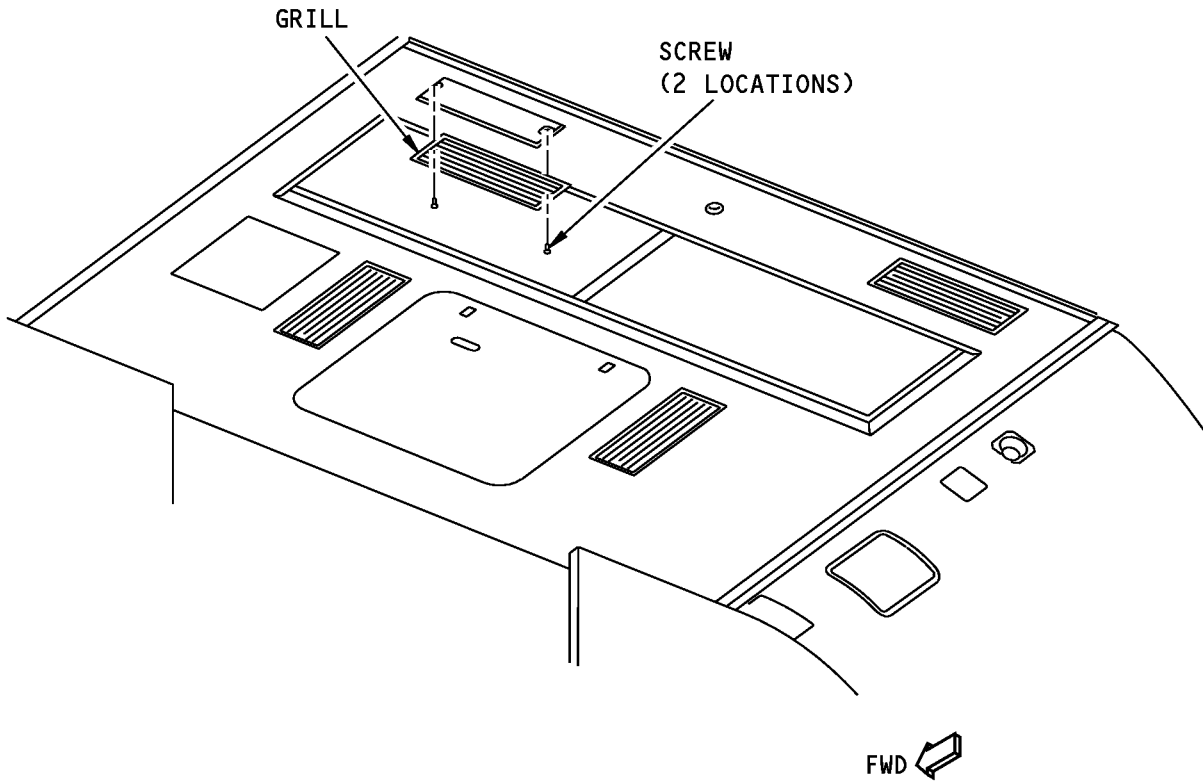
**Galley Ceiling Ventilation Grill Removal  
Figure 201 (Sheet 1 of 2)/21-26-03-990-802**

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**GALLEY VENTILATION GRILL  
(EXAMPLE)**

(C)

1652694 S0000303048\_V1

**Galley Ceiling Ventilation Grill Removal  
Figure 201 (Sheet 2 of 2)/21-26-03-990-802**

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### AIRCRAFT MAINTENANCE MANUAL

#### 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

##### 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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**AIRCRAFT MAINTENANCE MANUAL**

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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# AIRCRAFT MAINTENANCE MANUAL

## 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 these circuit breakers:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	8	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP 037-054, 101-999</b>			
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

**HAP ALL**

(b) Make sure the equipment cooling supply OFF light comes on after 20 seconds.

(c) Close these circuit breakers:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	8	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP 037-054, 101-999</b>			
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

**HAP ALL**

(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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

(b) Make sure the equipment cooling exhaust OFF light comes on after 20 seconds.

(c) Close this circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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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**AIRCRAFT MAINTENANCE MANUAL**

- (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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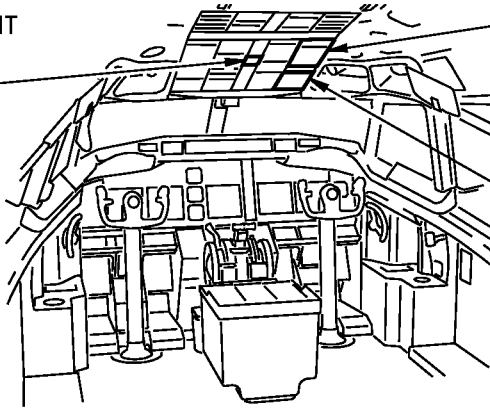
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**AIRCRAFT MAINTENANCE MANUAL**

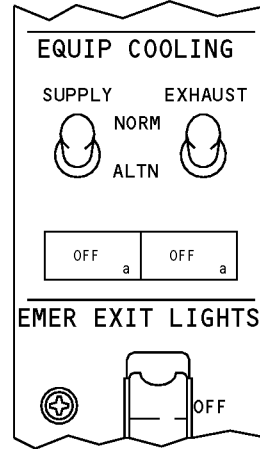
EQUIPMENT COOLING PANEL  
SEE (A)

AIR CONDITIONING MODULE  
SEE (B)

CABIN PRESSURE CONTROL MODULE  
SEE (C)

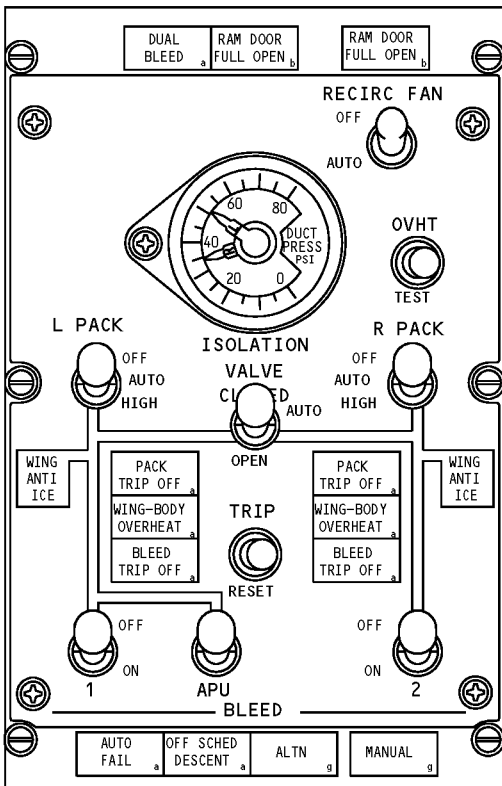


**FLIGHT COMPARTMENT**



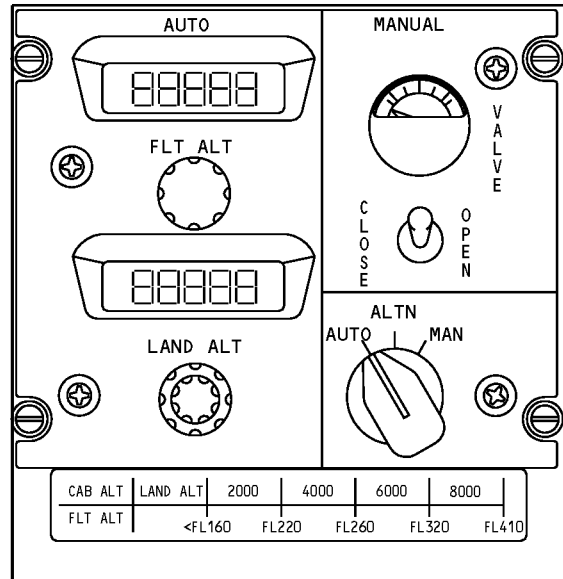
**EQUIPMENT COOLING PANEL**

(A)



**AIR CONDITIONING MODULE**

(B)



**CABIN PRESSURE CONTROL MODULE**

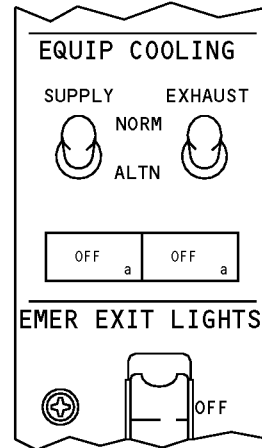
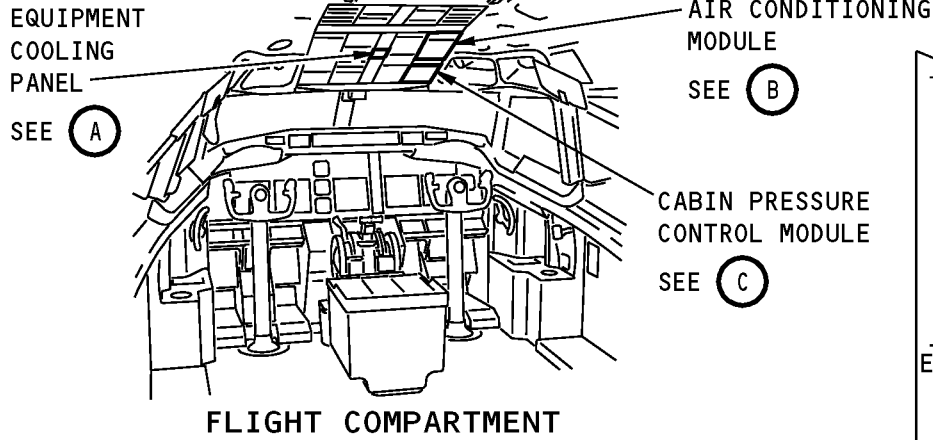
(C)

**Equipment Cooling System - Adjustment/Test**  
**Figure 501 (Sheet 1 of 2)/21-27-00-990-801**

EFFECTIVITY  
HAP 101-999

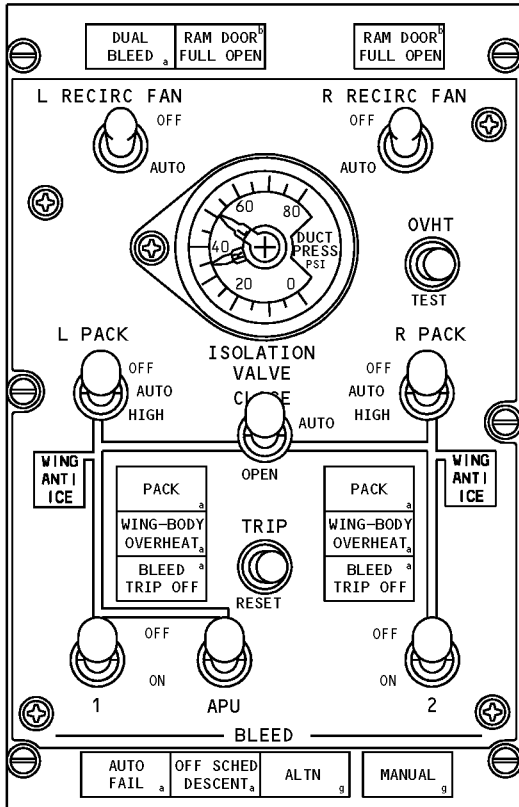
**21-27-00**

**AIRCRAFT MAINTENANCE MANUAL**



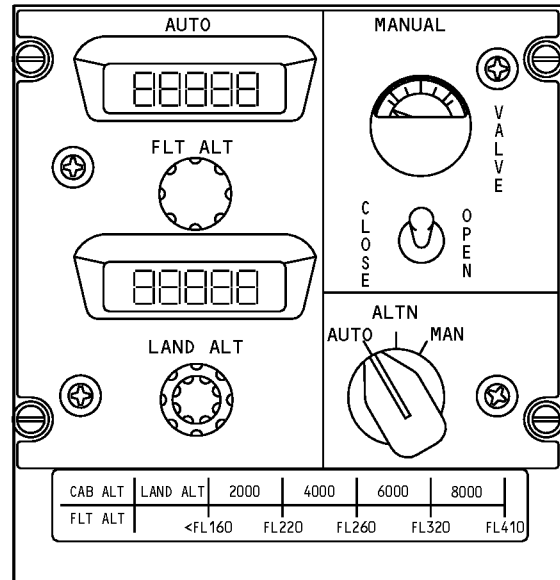
**EQUIPMENT COOLING PANEL**

(A)



**AIR CONDITIONING MODULE**

(B)



**CABIN PRESSURE CONTROL MODULE**

(C)

**Equipment Cooling System - Adjustment/Test**  
**Figure 501 (Sheet 2 of 2)/21-27-00-990-801**

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 HAP 001-013, 015-026, 028-054

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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 these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
<b>HAP 001-013, 015-026, 028-036</b>			
A	8	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP 037-054, 101-999</b>			
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP ALL</b>			

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SUBTASK 21-27-00-710-003

(6) Make sure the equipment cooling supply OFF light comes on after 20 seconds.

SUBTASK 21-27-00-860-009

(7) Put the EQUIP COOLING SUPPLY switch in the ALTN position.

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 these circuit breakers:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	8	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP 037-054, 101-999</b>			
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

**HAP ALL**

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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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.

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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 —————

## 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
12-15-21-600-801-001	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.

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- (c) Remove the crew oxygen system cylinder. To remove the oxygen cylinder, do this task: Crew Oxygen Cylinder Replacement, TASK 12-15-21-600-801-001.

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.

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.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-24-1147

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.

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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

Table with 4 columns: Row, Col, Number, Name. Contains entries for A/C RECIRC FAN LEFT CABIN AIR and A/C RECIRC FAN LEFT CONT.

F/O Electrical System Panel, P6-3

Table with 4 columns: Row, Col, Number, Name. Contains entries for LANDING GEAR AIR/GND SYS 2, PSEU PRI, and PSEU ALTN.

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Contains entries for EQUIPMENT COOLING SUPPLY FAN CONTROL NORMAL, EQUIPMENT COOLING SUPPLY FAN CONTROL ALTN, EQUIPMENT COOLING EXHAUST FAN CONTROL NORMAL, EQUIPMENT COOLING EXHAUST FAN CONTROL ALTN, and AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT.

Box containing EFFECTIVITY and HAP ALL labels.

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST VALVE RECONFIG CONT

**HAP 101-999**

E	1	C01015	AIR CONDITIONING RECIRC FAN CONT
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**HAP 001-013, 015-026, 028-054**

E	2	C01023	AIR CONDITIONING RECIRC FAN RIGHT CONT
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**HAP ALL**

E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR
F	3	C01270	PRESSURIZATION CONTROL AUTO 1

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00935	EQPT CLG SPLY FAN PWR-ALTN
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	8	C00934	EQPT CLG SPLY FAN PWR-NORM
A	10	C00837	EQPT CLG EXH FAN PWR-ALTN

**HAP 037-054, 101-999**

D	10	C00934	EQPT CLG SPLY FAN PWR-NORM
D	12	C00837	EQPT CLG EXH FAN PWR-ALTN

**HAP ALL**

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

**HAP 101-999**

- (c) RECIRC FAN

**HAP 001-013, 015-026, 028-054**

- (d) R RECIRC FAN

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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.

### HAP 101-999

SUBTASK 21-27-00-860-173

- (9) Set the RECIRC FAN switch on the P5-10 Air Conditioning Panel to the OFF position.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-27-00-860-174

- (10) Set the R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the OFF position.

### HAP ALL

SUBTASK 21-27-00-720-002

- (11) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

### HAP 101-999

SUBTASK 21-27-00-860-175

- (12) Set the RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-27-00-860-176

- (13) Set the R RECIRC FAN switch on the P5-10 Air Conditioning Panel to the AUTO position.

### HAP ALL

SUBTASK 21-27-00-860-177

- (14) Set the L PACK switch on the P5-10 Air Conditioning Panel to the HIGH position.

SUBTASK 21-27-00-720-003

- (15) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-860-178

- (16) Set the L PACK switch on the P5-10 Air Conditioning Panel to the AUTO position.

SUBTASK 21-27-00-860-179

- (17) Set the R PACK switch on the P5-10 Air Conditioning Panel to the HIGH position.

SUBTASK 21-27-00-720-004

- (18) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-860-180

- (19) 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

(20) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-720-007

(21) 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

(22) 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

(23) Put the EQUIP COOLING SUPPLY and EXHAUST fan switches to the ALTN positions.

SUBTASK 21-27-00-720-019

(24) 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

(25) 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

(26) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

(27) Make sure that the position indicator on the overboard exhaust valve actuator is in the NORMAL position.

SUBTASK 21-27-00-720-010

(28) 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.

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	3	C01270	PRESSURIZATION CONTROL AUTO 1

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- (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.

### HAP 101-999

SUBTASK 21-27-00-860-187

- (29) Set the 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.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-27-00-860-188

- (30) 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.

### HAP ALL

SUBTASK 21-27-00-720-011

- (31) Make sure the equipment cooling alternate M1323 supply fan is not operating.

SUBTASK 21-27-00-720-012

- (32) Make sure the equipment cooling alternate M99 exhaust fan is operating.

### HAP 101-999

SUBTASK 21-27-00-720-013

- (33) Make sure that the EQUIP COOLING SUPPLY OFF light is not on after 30 seconds since the RECIRC FAN was set to OFF.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-27-00-720-014

- (34) Make sure that the EQUIP COOLING SUPPLY OFF light is not on after 30 seconds since the R RECIRC FAN was set to OFF.

### HAP 101-999

SUBTASK 21-27-00-720-015

- (35) Make sure that the equipment cooling alternate M1323 supply fan is operating within 4-1/2 to 5-1/2 minutes of when the RECIRC FAN was set to OFF.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-27-00-720-016

- (36) 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.

### HAP 001-013, 015-026, 028-030

SUBTASK 21-27-00-720-071

- (37) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-720-072

- (38) Do these checks of the recirculation fan:

(a) Make sure that the recirculation fan is not operating.

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HAP 001-013, 015-026, 028-030 (Continued)

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST VALVE RECONFIG CONT

(c) Make sure the recirculation fan is operating.

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST VALVE RECONFIG CONT

(e) Make sure the recirculation fan is not operating.

HAP ALL

SUBTASK 21-27-00-720-017

(39) Make sure that the exhaust fan is operating.

SUBTASK 21-27-00-720-044

(40) Make sure that the EQUIP COOLING SUPPLY and EXHAUST OFF lights are not on.

HAP 031-054, 101-999

SUBTASK 21-27-00-860-213

(41) Do these steps:

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	16	C01523	CARGO FIRE FORWARD DET B
C	17	C01522	CARGO FIRE FORWARD DET A
C	18	C01525	CARGO FIRE AFT DET B
C	19	C01524	CARGO FIRE AFT DET A

SUBTASK 21-27-00-720-018

(42) 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.

HAP ALL

SUBTASK 21-27-00-720-021

(43) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

HAP 031-054, 101-999

SUBTASK 21-27-00-720-022

(44) 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.

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HAP 031-054, 101-999 (Continued)

SUBTASK 21-27-00-720-023

(45) 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

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

SUBTASK 21-27-00-720-025

(47) 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

(48) 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

(49) 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

(50) 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

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01444	AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT

SUBTASK 21-27-00-860-192

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01444	AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT

(a) Make a record of the time when you do this step.

SUBTASK 21-27-00-720-031

(53) 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

(54) Make sure the equipment cooling normal exhaust fan M98 is operating:

(a) Put your hand on the fan case to that it is operating.

SUBTASK 21-27-00-720-033

(55) Make sure that 30 seconds from when circuit breaker C01444 was closed that the EQUIP COOLING SUPPLY OFF light is not on.

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HAP 031-054, 101-999 (Continued)

SUBTASK 21-27-00-720-034

(56) 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

(57) Set the EQUIP COOLING SUPPLY switch to the NORMAL position.

SUBTASK 21-27-00-720-035

(58) 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

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	16	C01523	CARGO FIRE FORWARD DET B
C	17	C01522	CARGO FIRE FORWARD DET A

SUBTASK 21-27-00-860-195

(60) 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

(61) 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

(62) 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

(63) Make sure that the overboard exhaust valve position indicator is in the NORMAL position.

SUBTASK 21-27-00-860-196

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01444	AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT

SUBTASK 21-27-00-860-197

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01444	AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT

(a) Make a record of the time you do this step.

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## HAP 031-054, 101-999 (Continued)

SUBTASK 21-27-00-720-039

(66) 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 21-27-00-720-040

(67) 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

(68) Make sure the overboard exhaust valve position indicator is in the SMOKE position

SUBTASK 21-27-00-720-042

(69) Make sure that after 30 seconds the EQUIP COOLING SUPPLY OFF light is not on.

SUBTASK 21-27-00-720-043

(70) 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

(71) Do these checks of the recirculation fan:

### HAP 101-999

- (a) Make sure the recirculation fan is not operating.

### HAP 031-054

- (b) Make sure the right recirculation fan is not operating.

### HAP 101-999

- (c) Set the RECIRC FAN switch to AUTO.

### HAP 031-054

- (d) Set the R RECIRC FAN switch to AUTO.

### HAP 101-999

- (e) Make sure the recirculation fan is operating.
  - 1) Feel the fan case to make sure the fan is operating.

### HAP 031-054

- (f) Make sure the right recirculation fan is operating.
  - 1) Feel the fan case to make sure the fan is operating.

### HAP 031-054, 101-999

- (g) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST VALVE RECONFIG CONT

EFFECTIVITY	
HAP ALL	

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AIRCRAFT MAINTENANCE MANUAL

HAP 031-054, 101-999 (Continued)

HAP 101-999

- (h) Set the RECIRC FAN switch to OFF.
  - 1) Make a record of the time when you do this step.

HAP 031-054

- (i) Set the R RECIRC FAN switch to OFF.
  - 1) Make a record of the time when you do this step.

HAP 101-999

- (j) Make sure the recirculation fan is operating.
  - 1) Put your hand on the fan case to feel that it is operating.

HAP 031-054

- (k) Make sure the right recirculation fan is operating.
  - 1) Put your hand on the fan case to feel that it is operating.

HAP 031-054, 101-999

- (l) 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.
- (m) Make sure the equipment cooling normal exhaust fan is operating.
  - 1) Put your hand on the fan case to feel that it is operating.
- (n) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.
- (o) Make sure that after 30 seconds the EQUIP COOLING SUPPLY OFF light is not on.
- (p) 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

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	16	C01523	CARGO FIRE FORWARD DET B
C	17	C01522	CARGO FIRE FORWARD DET A
C	18	C01525	CARGO FIRE AFT DET B
C	19	C01524	CARGO FIRE AFT DET A

SUBTASK 21-27-00-720-045

(73) 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

(74) 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.

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HAP 031-054, 101-999 (Continued)

SUBTASK 21-27-00-720-047

(75) 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

(76) Make sure that the position indicator on the overboard exhaust valve actuator is in the NORMAL position.

SUBTASK 21-27-00-720-049

(77) 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

(78) 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

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01444	AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT

SUBTASK 21-27-00-860-207

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01444	AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT

(a) Make a record of the time you do this step.

SUBTASK 21-27-00-720-051

(81) 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

(82) Make sure the equipment cooling exhaust fan M98 is operating.

(a) Put your hand on the fan case to feel that it is operating.

SUBTASK 21-27-00-720-053

(83) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-720-054

(84) Do this check of the recirculation fan:

HAP 101-999

(a) Make sure that the recirculation fan is operating.

1) Put your hand on the fan case to feel that the fan is operating.

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HAP 101-999 (Continued)

HAP 031-054

- (b) Make sure that the right recirculation fan is operating.
  - 1) Put your hand on the fan case to feel that the fan is operating.

HAP 031-054, 101-999

SUBTASK 21-27-00-720-055

- (85) 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

- (86) 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

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	16	C01523	CARGO FIRE FORWARD DET B
C	17	C01522	CARGO FIRE FORWARD DET A

SUBTASK 21-27-00-720-057

- (88) 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

- (89) 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

- (90) 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

- (91) Make sure that the position indicator on the overboard exhaust valve actuator is in the NORMAL position.

SUBTASK 21-27-00-720-061

- (92) Do this check of the recirculation fan:

HAP 101-999

- (a) Make sure that the recirculation fan is operating.
  - 1) Put your hand on the fan case to feel that the fan is operating.

HAP 031-054

- (b) Make sure that the right recirculation fan is operating.
  - 1) Put your hand on the fan case to feel that the fan is operating.

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## HAP 031-054 (Continued)

### HAP 031-054, 101-999

SUBTASK 21-27-00-860-209

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01444	AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT

SUBTASK 21-27-00-860-210

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01444	AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT

(a) Make a record of the time that you do this step.

SUBTASK 21-27-00-720-062

(95) 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

(96) 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

(97) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-720-065

(98) Do this check of the recirculation fan:

### HAP 101-999

(a) Make sure that the recirculation fan is operating.

1) Put your hand on the fan case to feel that the fan is operating.

### HAP 031-054

(b) Make sure that the right recirculation fan is operating.

1) Put your hand on the fan case to feel that the fan is operating.

### HAP 031-054, 101-999

SUBTASK 21-27-00-720-066

(99) 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

(100) 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.

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### HAP 031-054, 101-999 (Continued)

- (a) Put your hand on the fan case to feel that the fan is operating.

SUBTASK 21-27-00-720-068

- (101) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-27-00-720-069

- (102) Make sure that the position indicator on the overboard exhaust valve actuator is in the SMOKE position.

SUBTASK 21-27-00-860-211

- (103) Set the recirculation fan as follows:

#### HAP 101-999

- (a) Set the RECIRC FAN switch to AUTO.

#### HAP 031-054

- (b) Set the R RECIRC FAN switch to AUTO.

#### HAP 031-054, 101-999

SUBTASK 21-27-00-720-070

- (104) Make sure that the position indicator on the overboard exhaust valve actuator is in the NORMAL position.

#### HAP ALL

- 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

#### HAP 101-999

- (c) RECIRC FAN

#### HAP 001-013, 015-026, 028-054

- (d) R RECIRC FAN

#### HAP ALL

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 12-15-21-600-801-001.

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

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SUBTASK 21-27-00-410-004

(6) Close the forward cargo compartment door.

SUBTASK 21-27-00-410-005

(7) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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

<u>Reference</u>	<u>Title</u>
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

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	12	C01116	EQUIPMENT COOLING SUPPLY FAN CONTROL NORMAL

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Row	Col	Number	Name
C	13	C01117	EQUIPMENT 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
<b>HAP 001-013, 015-026, 028-036</b>			
A	8	C00934	EQPT CLG SPLY FAN PWR-NORM
A	10	C00837	EQPT CLG EXH FAN PWR-ALTN
<b>HAP 037-054, 101-999</b>			
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM
D	12	C00837	EQPT CLG EXH FAN PWR-ALTN

HAP ALL

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.
  - (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.

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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)

#### A. General

- (1) This procedure is a scheduled maintenance task.
- (2) 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 these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
<b>HAP 001-013, 015-026, 028-036</b>			
A	8	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP 037-054, 101-999</b>			
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP ALL</b>			

SUBTASK 21-27-00-710-009

- (5) Make sure the equipment cooling supply OFF light comes on after 20 seconds.

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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) Close these circuit breakers:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	8	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP 037-054, 101-999</b>			
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP ALL</b>			

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)

A. General

- (1) This procedure is a scheduled maintenance task.
- (2) This task does a test of the equipment cooling alternate exhaust fan.

B. References

<u>Reference</u>	<u>Title</u>
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

<u>Zone</u>	<u>Area</u>
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.

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SUBTASK 21-27-00-860-037

(2) Make sure the equipment cooling exhaust OFF light on the equipment cooling panel is not on.

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:

Power Distribution Panel Number 1, P91

Table with 4 columns: Row, Col, Number, Name. Row E, Col 1, Number C00836, Name 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 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) Close this circuit breaker:

Power Distribution Panel Number 1, P91

Table with 4 columns: Row, Col, Number, Name. Row E, Col 1, Number C00836, Name 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

TASK 21-27-00-700-805

8. Equipment Cooling Overboard Exhaust Valve Smoke Clearance Mode - Operational Test

(Figure 501)

A. General

(1) This procedure is a scheduled maintenance task.

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- (2) This task does a test of the equipment cooling overboard exhaust valve in the smoke removal mode.
- (3) 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 1.5 Psi (10.34 kPa) differential pressure:
  - (a) Close all exterior doors.
  - (b) Make sure the flight compartment sliding windows are closed.
  - (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.

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- (e) Set the RECIRC FAN switch on the P5-10 air conditioning panel to the AUTO position.
- (f) Set the CONT CABIN and PASS CABIN temperature selectors on the P5-17 cabin temperature control panel to the AUTO NORMAL position.

### HAP 001-013, 015-026, 028-054

- (g) Set the R RECIRC FAN switch on the P5-10 air conditioning panel to the AUTO position.
- (h) Set the CONT CAB, FWD CAB and AFT CAB temperature selectors on the P5-17 cabin temperature control panel to the AUTO position.

### HAP ALL

- (i) Put the Cabin Pressurization Switch on the Cabin Pressure Control Panel to the MAN position.
- (j) 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.

- (k) 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.
- (l) Increase the cabin pressure until the cabin DIFF PRESS indicator on the Cabin Pressure Control Panel shows a differential pressure of 1.5 psi (10.34 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.

### HAP 001-013, 015-026, 028-054

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.

### HAP 101-999

SUBTASK 21-27-00-860-085

- (7) Make sure the RECIRC FAN switch, on the P5-10 Air Conditioning Panel, is in the AUTO position.

### HAP ALL

SUBTASK 21-27-00-710-020

- (8) 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.

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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.

(9) 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.

SUBTASK 21-27-00-860-181

(10) Put the R PACK switch to OFF.

### HAP 101-999

SUBTASK 21-27-00-860-169

(11) Put the RECIRC FAN switch to the OFF position.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-27-00-860-170

(12) Put the R RECIRC FAN switch to the OFF position.

### HAP ALL

SUBTASK 21-27-00-710-025

(13) 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.

(14) 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

(15) Put the L PACK switch to OFF.

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SUBTASK 21-27-00-710-040

- (16) 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

#### HAP 001-013, 015-026, 028-054

- (c) R RECIRC FAN

#### HAP 101-999

- (d) RECIRC FAN

#### HAP ALL

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.

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 —————

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## AIRCRAFT MAINTENANCE MANUAL

### 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)

##### A. General

- (1) This procedure is a scheduled maintenance task.
- (2) 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)

##### 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.

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.

##### E. Equipment Cooling Air Filter Removal

SUBTASK 21-27-01-010-003

- (1) Close the forward cargo compartment door.

**NOTE:** The cargo door must be lowered to permit the removal of the air filter.

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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].

————— END OF TASK —————

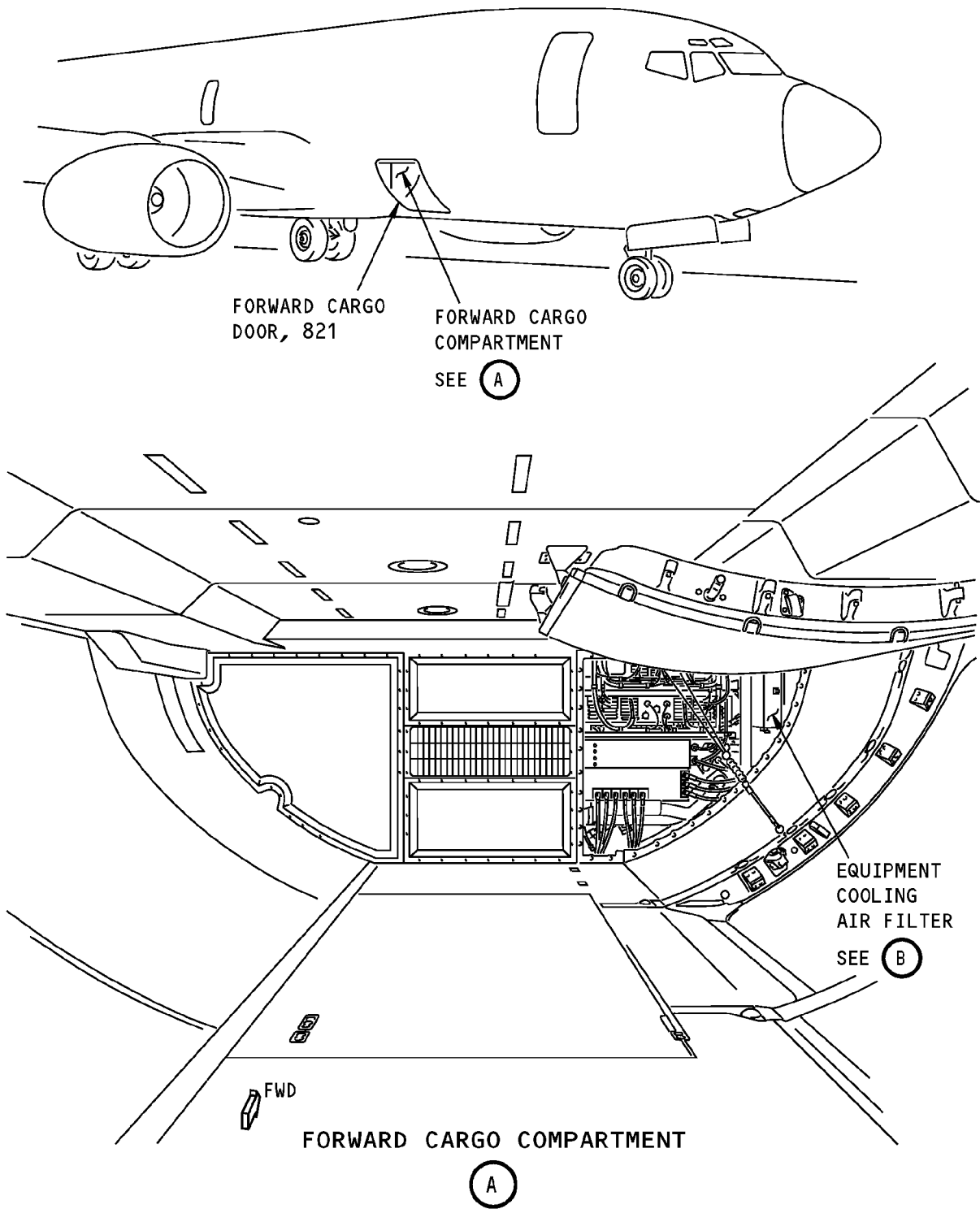
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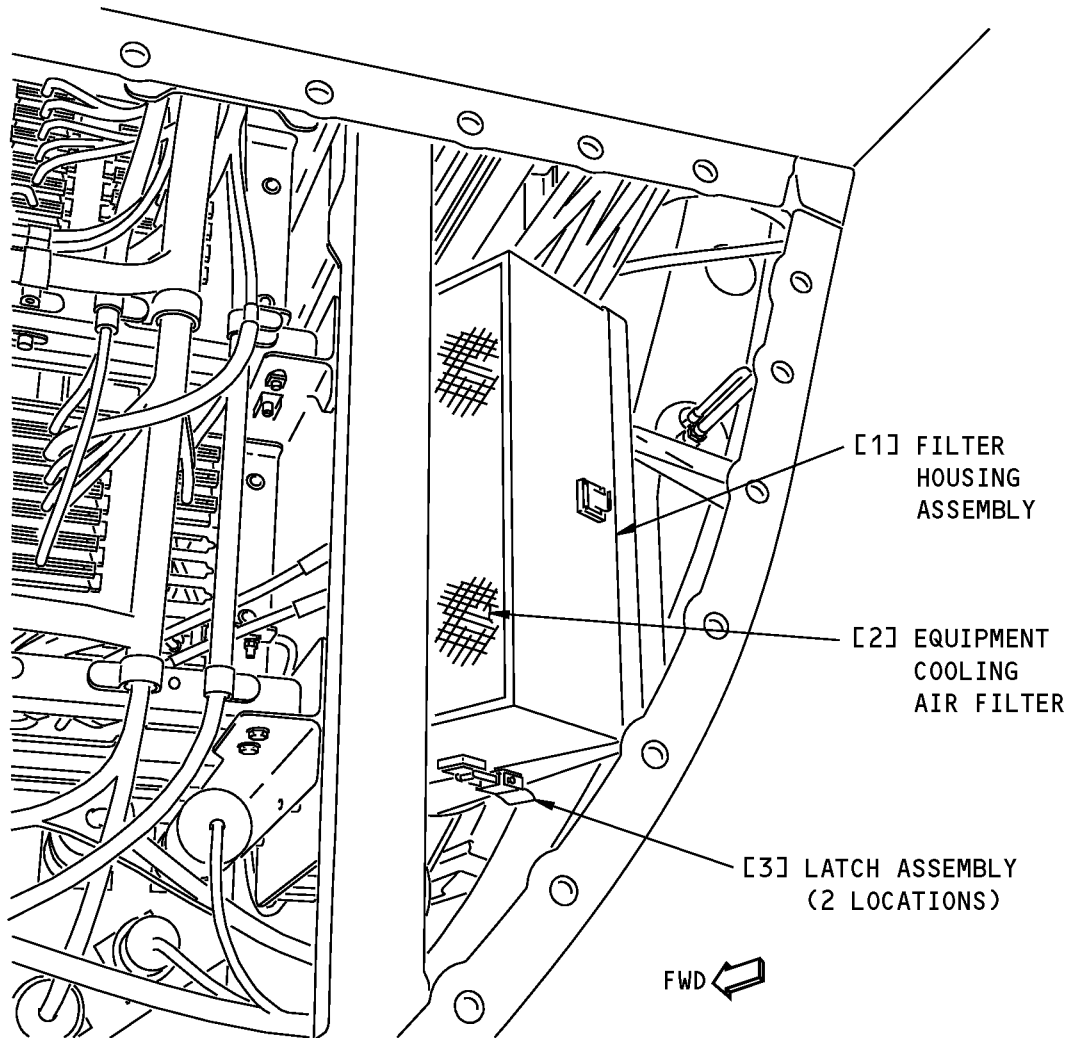
**Equipment Cooling Air Filter Installation  
Figure 401 (Sheet 1 of 2)/21-27-01-990-801**

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**EQUIPMENT COOLING AIR FILTER**

**B**

**Equipment Cooling Air Filter Installation  
Figure 401 (Sheet 2 of 2)/21-27-01-990-801**

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#### TASK 21-27-01-400-801

#### 3. Equipment Cooling Air Filter Installation

(Figure 401)

##### A. General

- (1) This procedure is a scheduled maintenance task.

##### B. References

Reference	Title
25-52-16-400-801	Forward Cargo Compartment Forward Bulkhead Liner Installation (P/B 401)

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Filter	21-27-51-07-100	HAP 001-013, 015-026, 028-036
		21-27-51-07B-100	HAP 037-054, 101-999

##### D. Location Zones

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

##### E. Equipment Cooling Air Filter Installation

SUBTASK 21-27-01-020-003

- (1) Put the equipment cooling air filter [2] in its position on the filter housing assembly [1].

SUBTASK 21-27-01-020-004

- (2) 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 21-27-01-410-002

- (2) 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

Table with 2 columns: Reference, Title. Row: 24-22-00-860-812, Remove Electrical Power (P/B 201)

C. Location Zones

Table with 2 columns: Zone, Area. Row: 118, Electrical and Electronics Compartment - Right

D. Access Panels

Table with 2 columns: Number, Name/Location. Row: 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:

Table with 2 columns: Number, Name/Location. Row: 117A, Electronic Equipment Access Door

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].

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- (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].

————— **END OF TASK** —————

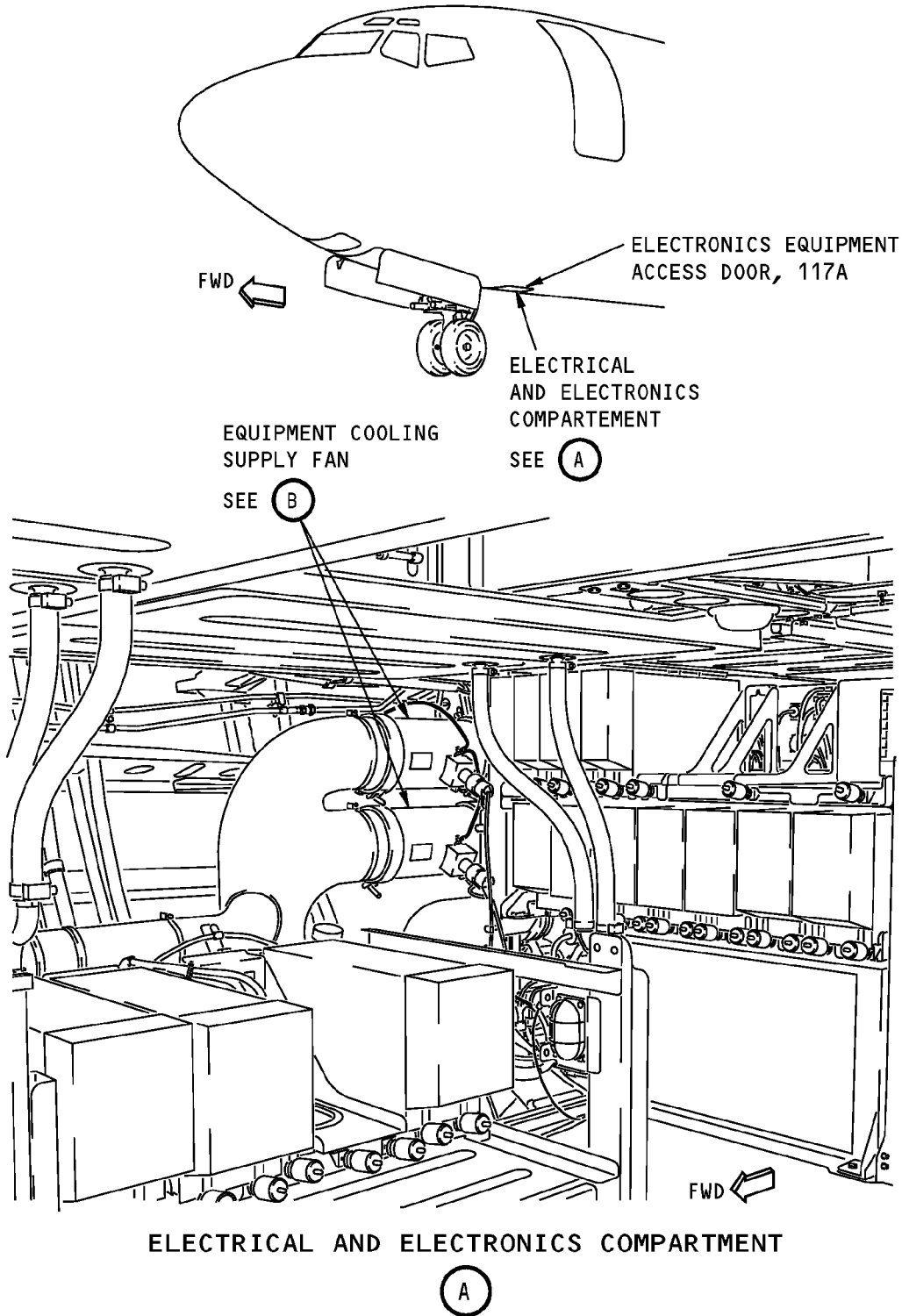
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**Equipment Cooling Supply Fan Installation  
Figure 401 (Sheet 1 of 2)/21-27-02-990-801**

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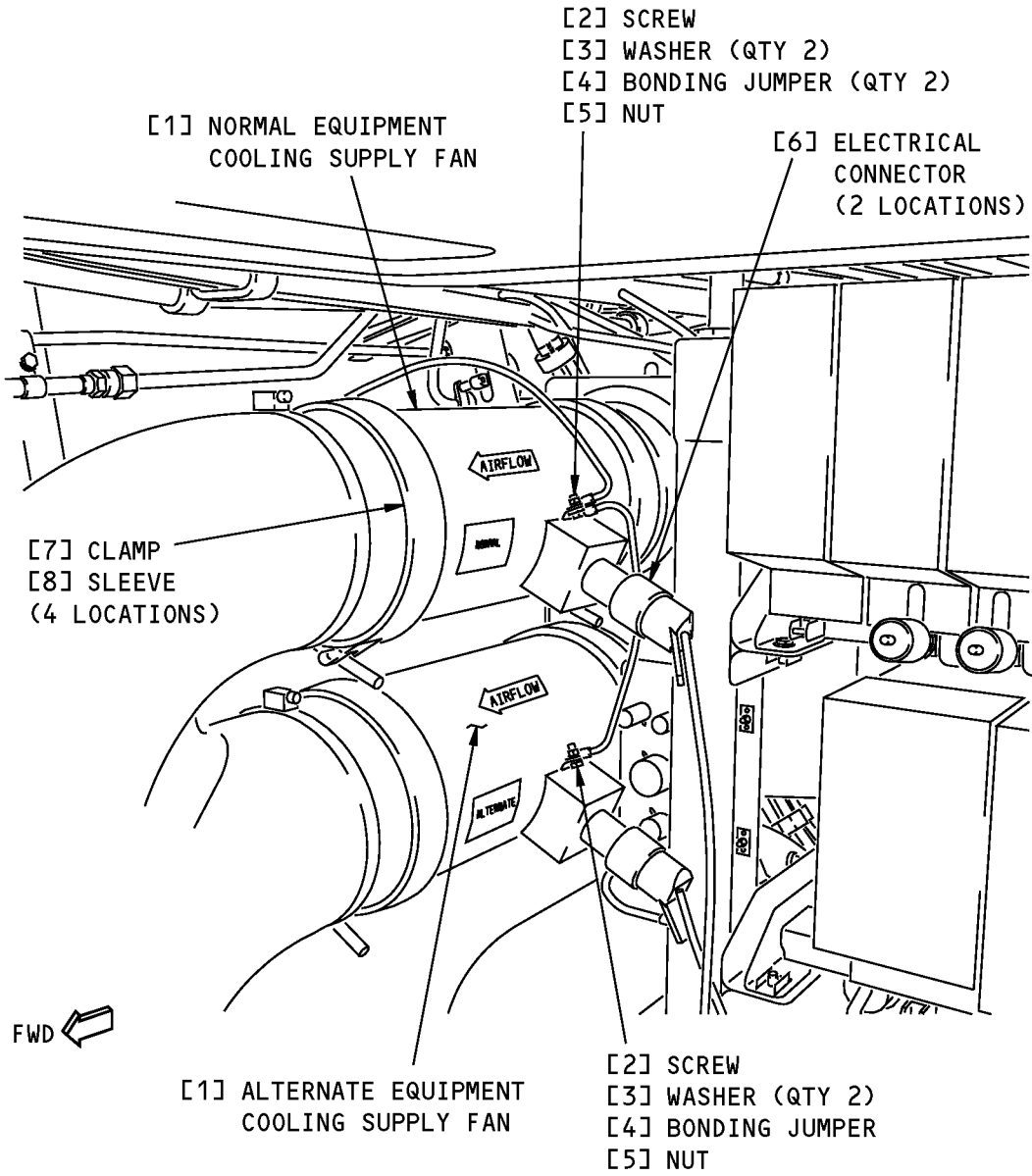
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**EQUIPMENT COOLING SUPPLY FAN**

**B**

**Equipment Cooling Supply Fan Installation  
Figure 401 (Sheet 2 of 2)/21-27-02-990-801**

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## TASK 21-27-02-400-801

### 3. Equipment Cooling Supply 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)

#### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	21-27-51-07B-225	HAP 037-054, 101-999

#### 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].

#### 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:

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(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:

<u>Number</u>	<u>Name/Location</u>
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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# AIRCRAFT MAINTENANCE MANUAL

## 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 - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~ C32

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 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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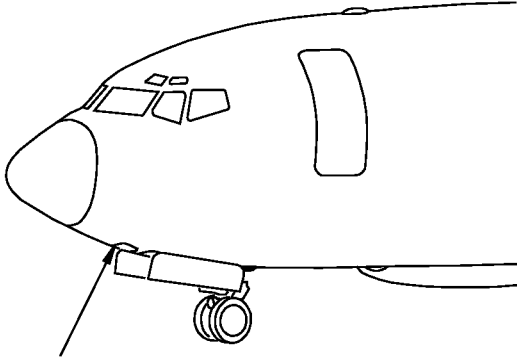
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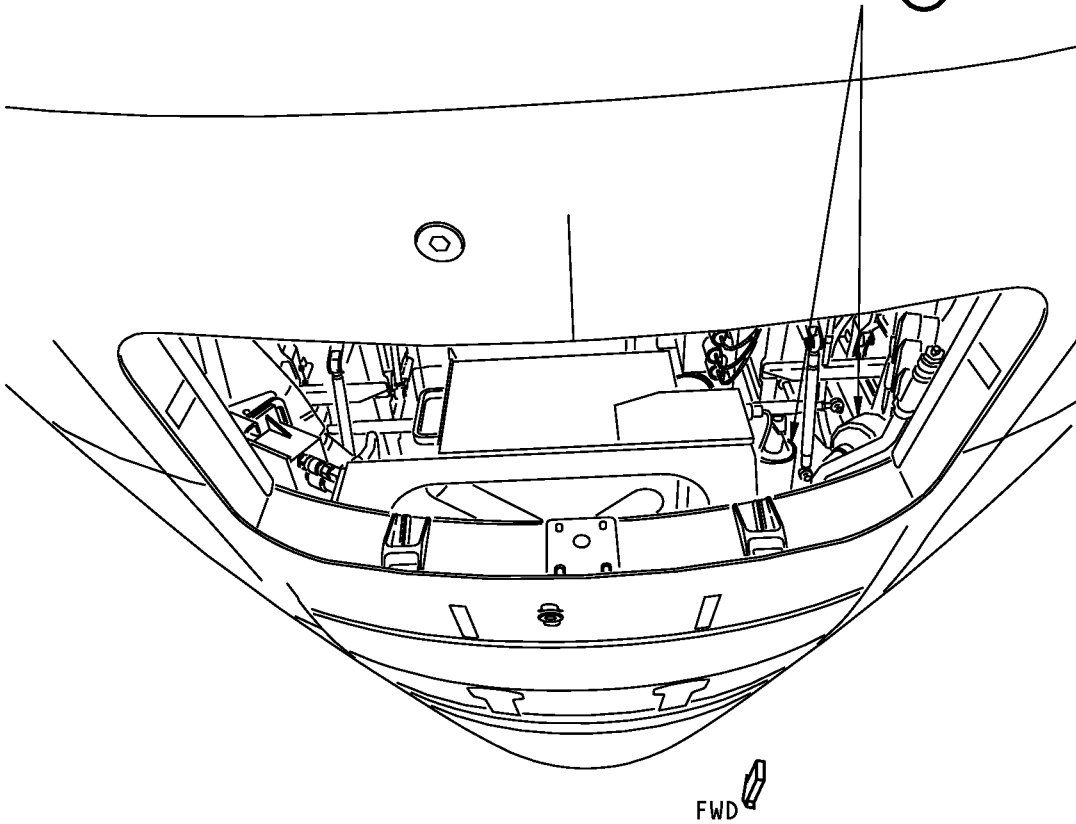


FORWARD ACCESS  
DOOR, 112A

SEE (A)

EQUIPMENT COOLING  
LOW FLOW SENSORS

SEE (B)



(VIEW THROUGH THE FORWARD ACCESS DOOR, 112A)

(A)

Equipment Cooling Low Flow Sensors Installation  
Figure 201 (Sheet 1 of 2)/21-27-03-990-802

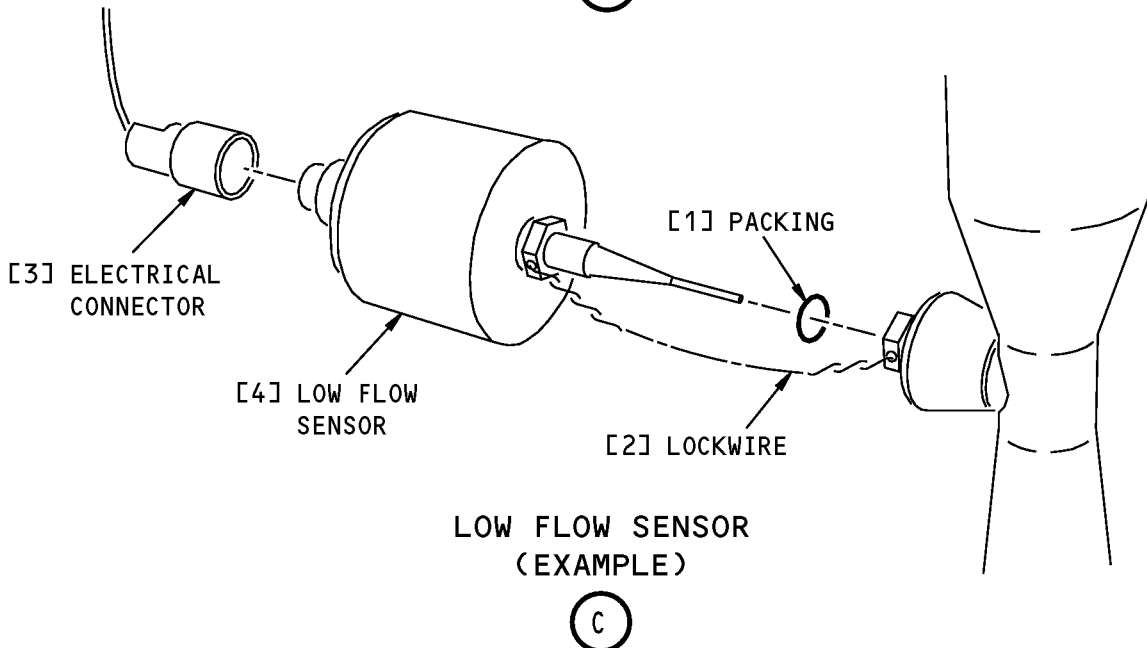
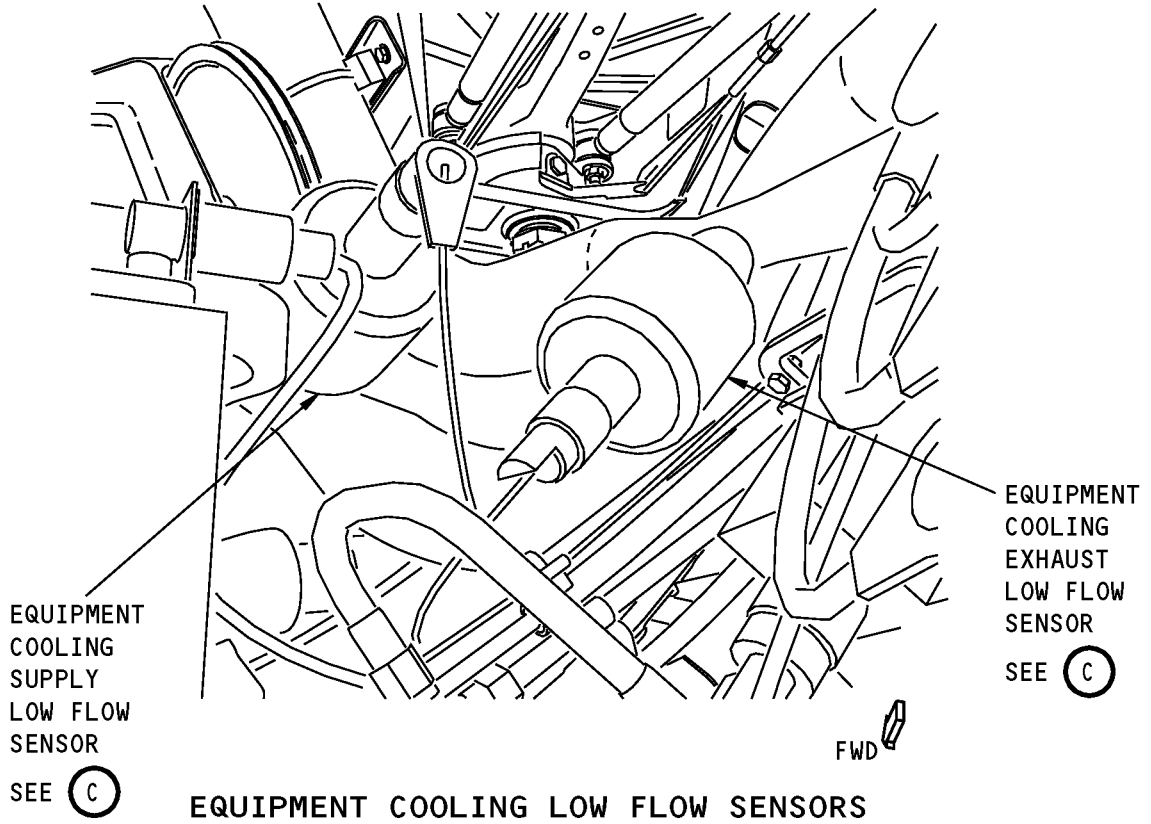
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**Equipment Cooling Low Flow Sensors Installation**  
**Figure 201 (Sheet 2 of 2)/21-27-03-990-802**

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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 - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~ C32

#### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Packing	21-27-51-04-100	HAP 001-011
		21-27-51-05-020	HAP 001-011
		21-27-51-47-095	HAP 012, 013, 015-026, 028-030
		21-27-51-50-020	HAP 012, 013, 015-026, 028-030
4	Sensor	21-27-51-50A-020	HAP 031-054, 101-999
		21-27-51-47-090	HAP 012, 013, 015-026, 028-030
		21-27-51-50-025	HAP 012, 013, 015-026, 028-030
		21-27-51-50A-025	HAP 031-054, 101-999

#### 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.

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SUBTASK 21-27-03-420-007

- (4) Install the 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.

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 these circuit breakers:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	8	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP 037-054, 101-999</b>			
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

**HAP ALL**

- (b) Make sure the equipment cooling supply OFF light comes on after approximately 20 seconds.
- (c) Close these circuit breakers:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	8	C00934	EQPT CLG SPLY FAN PWR-NORM
<b>HAP 037-054, 101-999</b>			
D	10	C00934	EQPT CLG SPLY FAN PWR-NORM

**HAP ALL**

- (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:

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(a) Open this circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

(b) Make sure the equipment cooling exhaust OFF light comes on after approximately 20 seconds.

(c) Close this circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00836	EQPT CLG EXH FAN PWR-NORM

(d) Make sure the equipment cooling exhaust OFF light goes out within 20 seconds.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-27-03-410-002

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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

<u>Reference</u>	<u>Description</u>	<u>Specification</u>
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5

B. Location Zones

<u>Zone</u>	<u>Area</u>
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
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:

<u>Number</u>	<u>Name/Location</u>
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].

**END OF TASK**

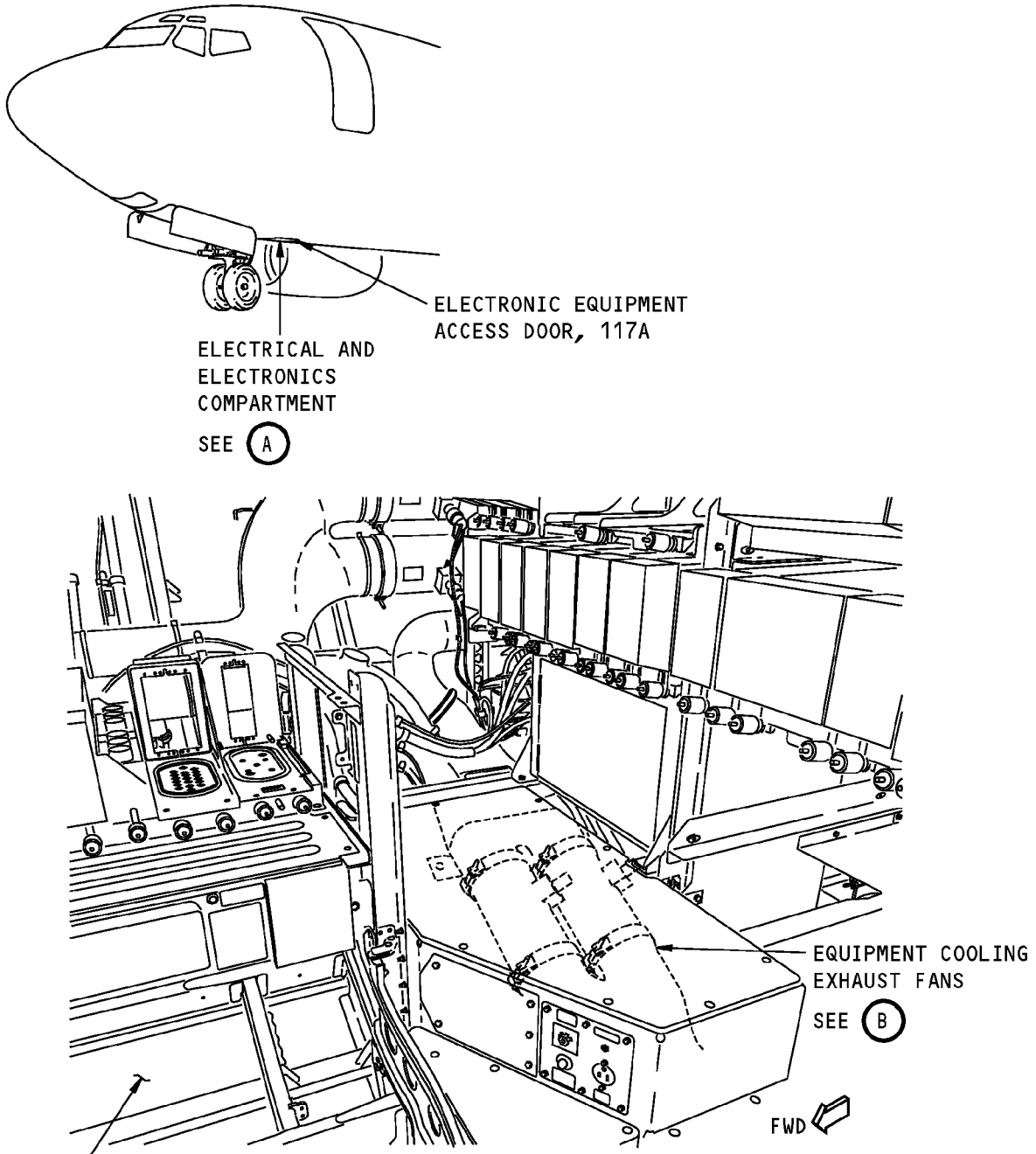
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ELECTRONIC EQUIPMENT ACCESS DOOR, 117A

ELECTRICAL AND ELECTRONICS COMPARTMENT

(A)

**Equipment Cooling Exhaust Fan Installation  
Figure 401 (Sheet 1 of 2)/21-27-04-990-801**

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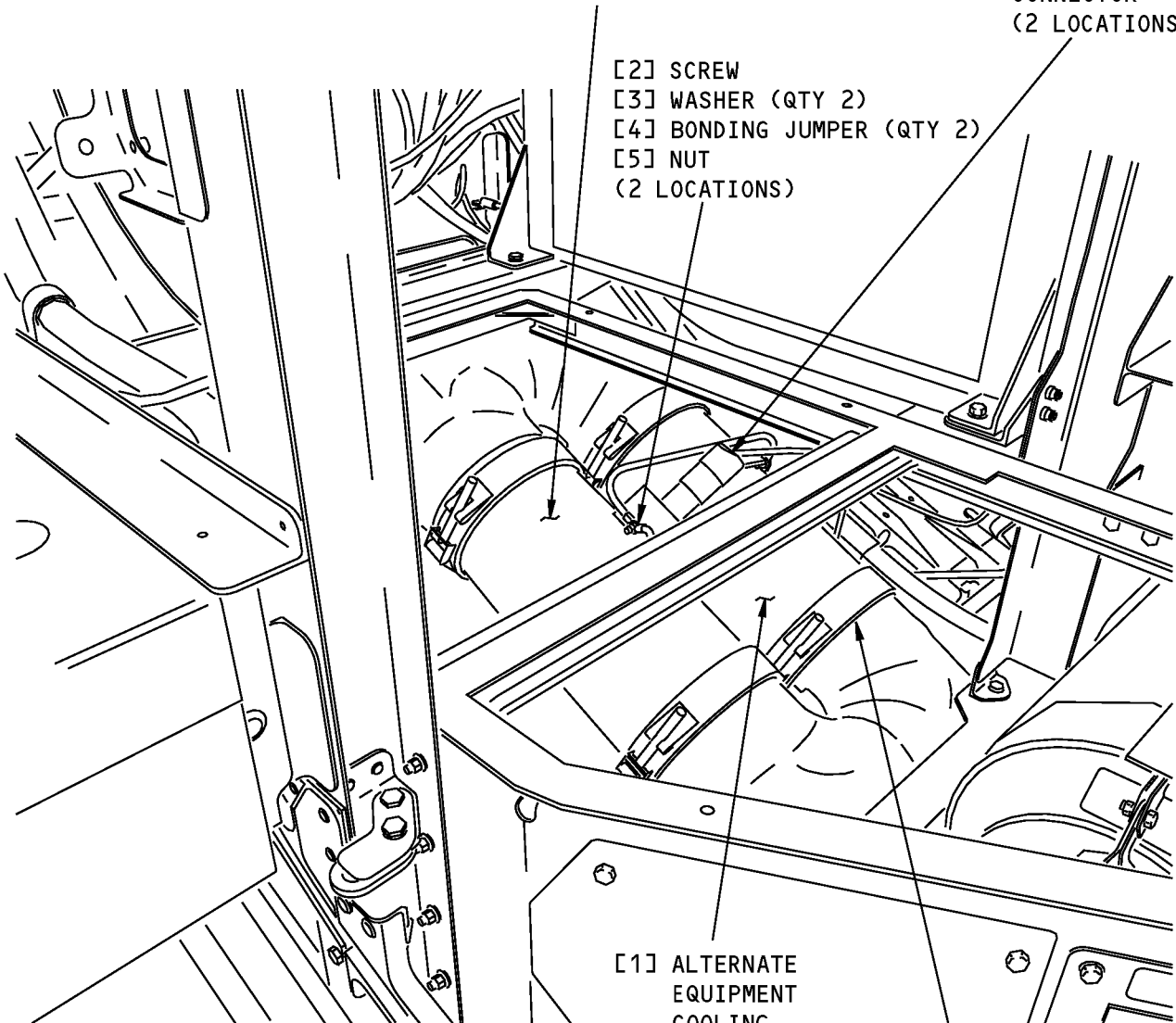
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[1] NORMAL EQUIPMENT COOLING  
EXHAUST FAN

[6] ELECTRICAL  
CONNECTOR  
(2 LOCATIONS)

[2] SCREW  
[3] WASHER (QTY 2)  
[4] BONDING JUMPER (QTY 2)  
[5] NUT  
(2 LOCATIONS)



FWD

[11] ALTERNATE  
EQUIPMENT  
COOLING  
EXHAUST FAN

[7] CLAMP  
[8] SLEEVE  
(4 LOCATIONS)

**EQUIPMENT COOLING EXHAUST FANS**

(B)

**Equipment Cooling Exhaust Fan Installation**  
**Figure 401 (Sheet 2 of 2)/21-27-04-990-801**

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#### TASK 21-27-04-400-801

### 3. Equipment Cooling Exhaust 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)

#### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fan	Not Specified	

#### 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.

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].

#### 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.

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- (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:

<u>Number</u>	<u>Name/Location</u>
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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# AIRCRAFT MAINTENANCE MANUAL

## 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
12-15-21-600-801-001	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

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SUBTASK 21-27-05-010-002

- (3) Remove the access panel on the top of the raised platform that is just aft and outboard of this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

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 12-15-21-600-801-001.

**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** —————

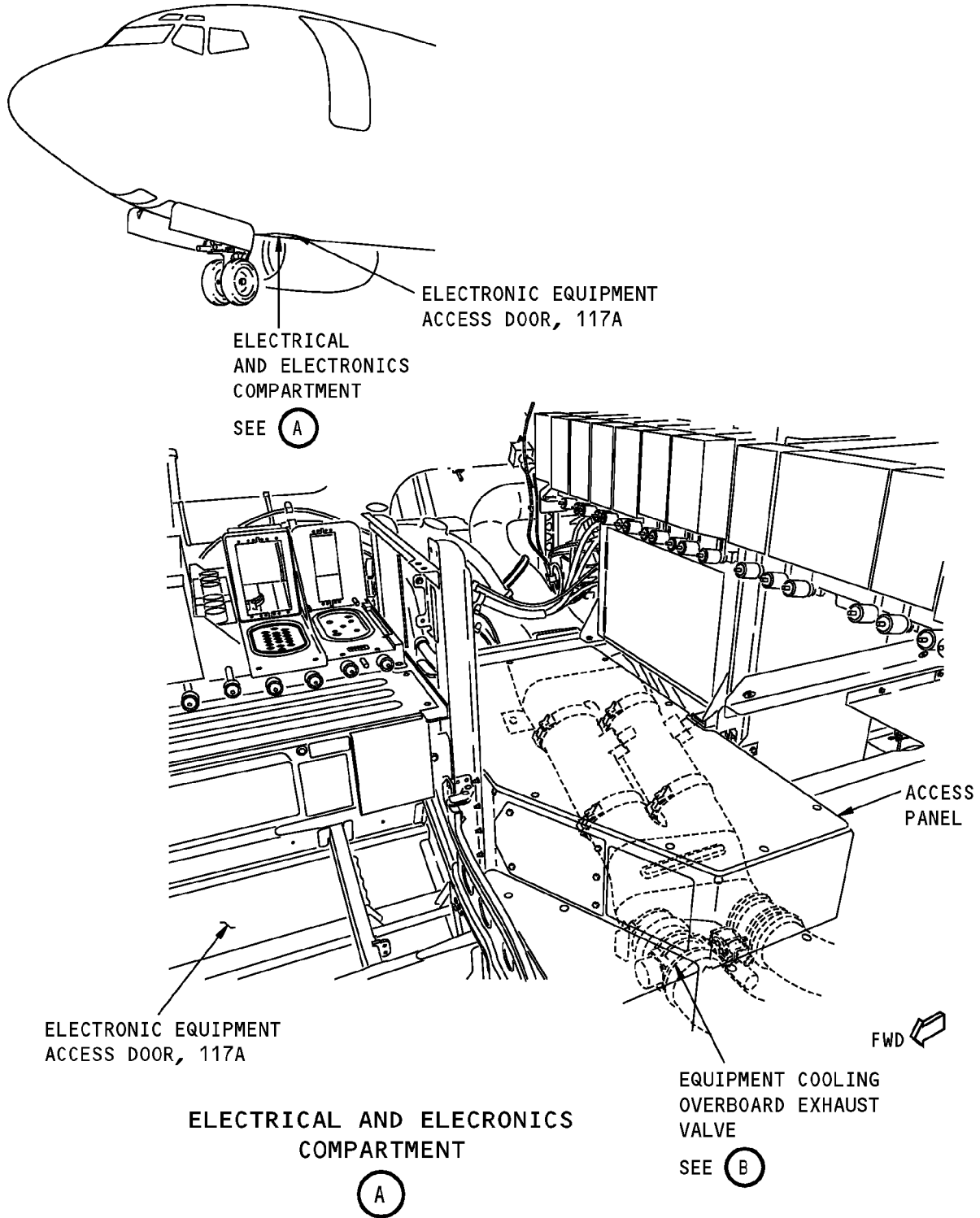
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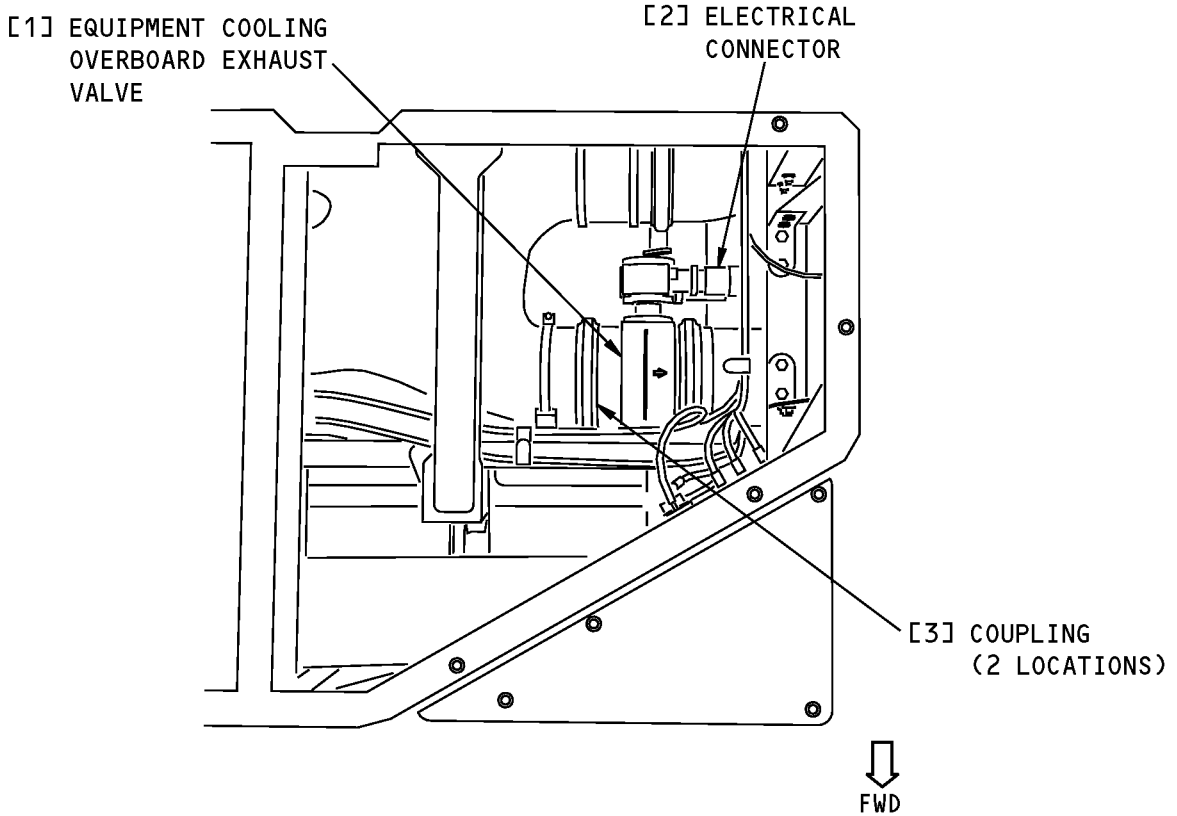
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**Equipment Cooling Overboard Exhaust Valve Installation  
Figure 401 (Sheet 1 of 2)/21-27-05-990-801**

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**EQUIPMENT COOLING OVERBOARD EXHAUST VALVE  
(OXYGEN BOTTLE INSTALLATION NOT SHOWN FOR CLARITY)  
(VIEW IN THE DOWN DIRECTION)**

**B**

**Equipment Cooling Overboard Exhaust Valve Installation  
Figure 401 (Sheet 2 of 2)/21-27-05-990-801**

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#### TASK 21-27-05-400-801

### 3. Equipment Cooling Overboard Exhaust Valve Installation

(Figure 401)

#### A. References

Reference	Title
12-15-21-600-801-001	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	21-21-01-02-270	HAP 005, 008-013, 015-026, 028-030
		21-27-05-01-015	HAP 001-004, 006, 007, 031-054, 101-999

#### 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

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**HAP 101-999**

- (c) RECIRC FAN

**HAP 001-013, 015-026, 028-054**

- (d) L RECIRC FAN
- (e) R RECIRC FAN

**HAP ALL**

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

**HAP 101-999**

SUBTASK 21-27-05-860-007

- (9) Put the RECIRC FAN switch to the OFF position.

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-27-05-860-016

- (10) Put the R RECIRC FAN switch to the OFF position.

**HAP ALL**

SUBTASK 21-27-05-710-002

- (11) 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.

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HAP ALL

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SUBTASK 21-27-05-860-010

(3) Put these switches in the AUTO position:

- (a) L PACK
- (b) R PACK

**HAP 101-999**

- (c) RECIRC FAN

**HAP 001-013, 015-026, 028-054**

- (d) L RECIRC FAN
- (e) R RECIRC FAN

**HAP ALL**

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 12-15-21-600-801-001.

SUBTASK 21-27-05-410-003

(6) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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** —————

EFFECTIVITY  
HAP ALL

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# AIRCRAFT MAINTENANCE MANUAL

## 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 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** —————

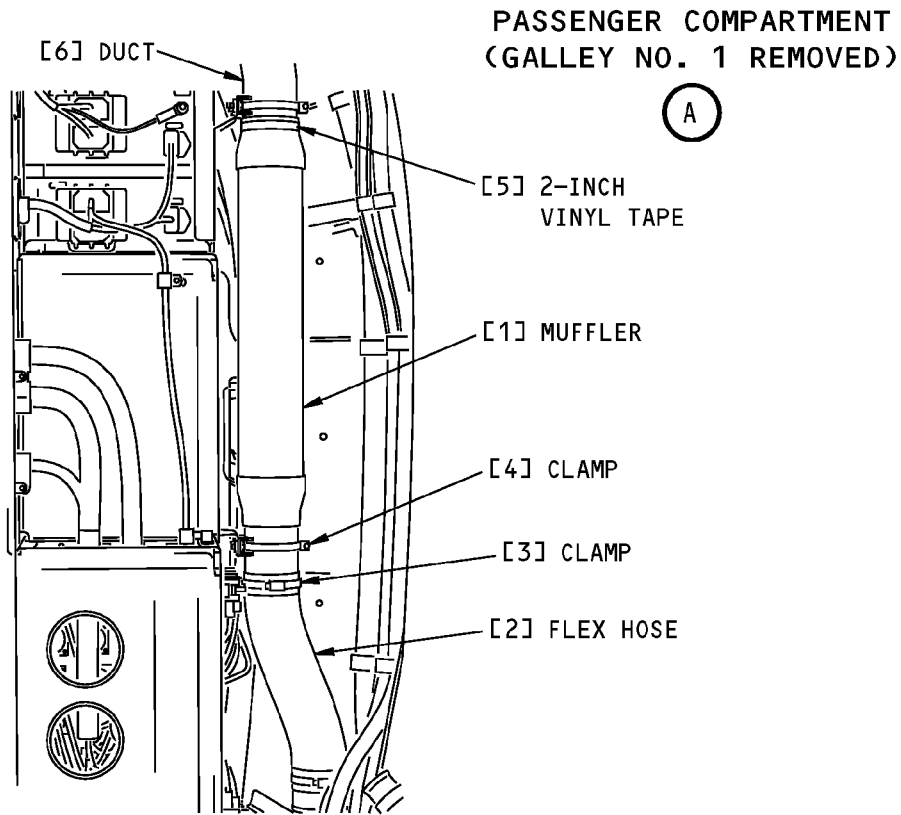
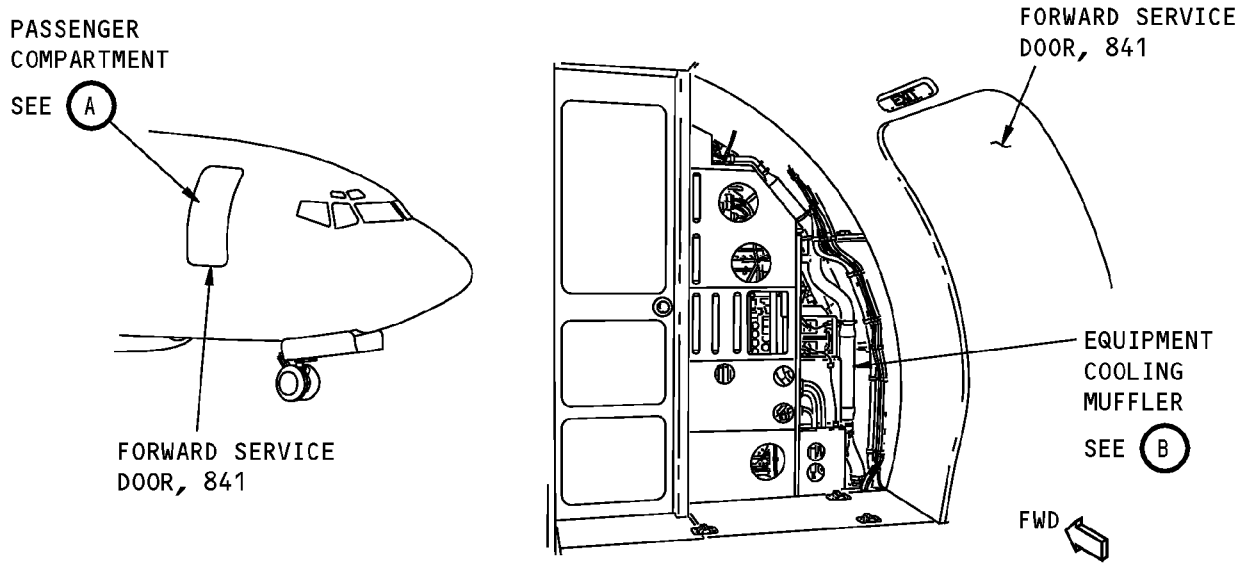
EFFECTIVITY HAP ALL
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**AIRCRAFT MAINTENANCE MANUAL**



**EQUIPMENT COOLING MUFFLER**

(B)

**Equipment Cooling Muffler Installation**  
**Figure 401/21-27-07-990-801**

EFFECTIVITY  
HAP ALL

**21-27-07**



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### AIRCRAFT MAINTENANCE MANUAL

#### TASK 21-27-07-400-801

#### 3. Equipment Cooling Muffler Installation

(Figure 401)

##### A. References

Reference	Title
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	21-27-51-03-065	HAP 001-013, 015-026, 028-030
		21-27-51-03A-070	HAP 031-054, 101-999

##### D. Location Zones

Zone	Area
220	Subzone - Passenger Compartment - Body Station 259.50 to 360.00

##### E. Equipment Cooling Muffler Installation

SUBTASK 21-27-07-110-001

(1) Clean the surfaces at the joint between the muffler [1] and the duct [6] with solvent, B00090.

SUBTASK 21-27-07-420-001

(2) 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) Position the clamp [3] and tighten.
- (e) Install two layers of 2-inch vinyl plastic tape [5] over the joint between the muffler [1] and the duct [6].

SUBTASK 21-27-07-410-001

(3) 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** —————

EFFECTIVITY
HAP ALL

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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

HAP 028-054, 101-999; HAP 001-013, 015-026 POST SB 737-21-1135

- (2) 750 Feet Per Minute Descent With Cargo Fire Mode Test

HAP ALL

- (3) Master Caution Test
(4) Pressurization System Ground Test

TASK 21-31-00-710-801

2. Pressurization System Manual Mode Test

(Figure 501 or Figure 502)

A. General

- (1) This procedure is a scheduled maintenance task.
(2) 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

Table with 2 columns: Reference, Title. Rows include 24-22-00-860-811 (Supply Electrical Power) and 24-22-00-860-812 (Remove Electrical Power).

C. Location Zones

Table with 2 columns: Zone, Area. Rows include 211 (Flight Compartment - Left) and 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

Table with 4 columns: Row, Col, Number, Name. Lists circuit breakers C01273 through C01272.

EFFECTIVITY table with HAP ALL entry.

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## AIRCRAFT MAINTENANCE MANUAL

### 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 —————

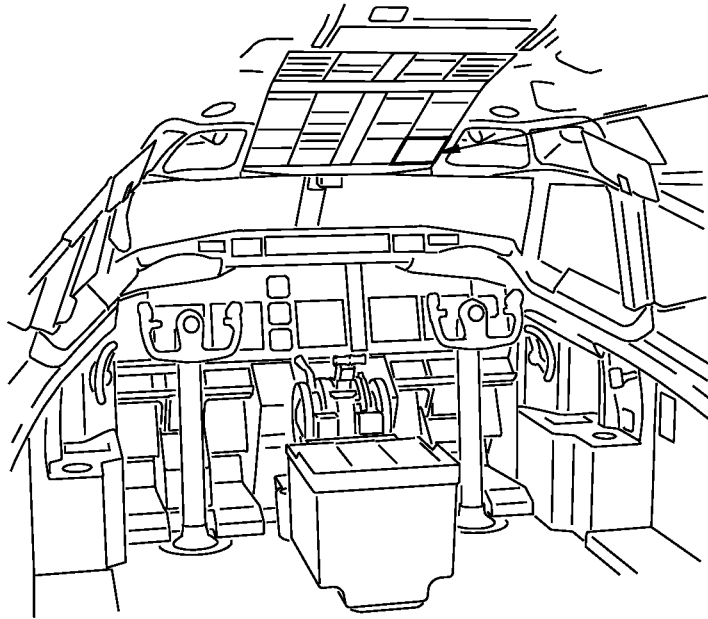
EFFECTIVITY  
HAP ALL

D633A101-HAP

# 21-31-00

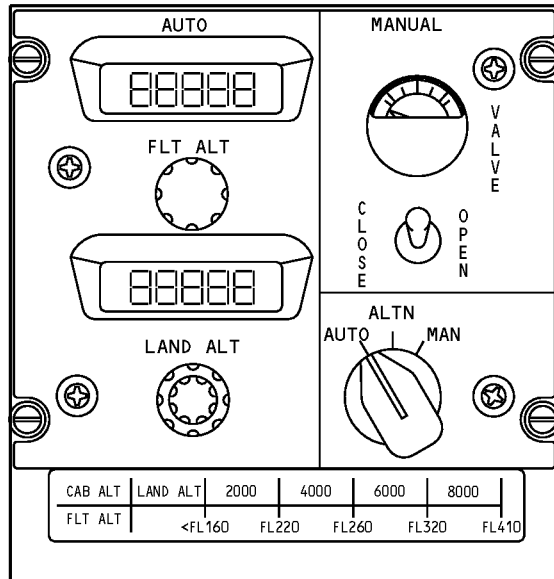
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**AIRCRAFT MAINTENANCE MANUAL**



CABIN PRESSURE CONTROL MODULE  
SEE (A)

**FLIGHT COMPARTMENT**



**CABIN PRESSURE CONTROL MODULE**

(A)

**Cabin Pressure Control System Test  
Figure 501 (Sheet 1 of 3)/21-31-00-990-801**

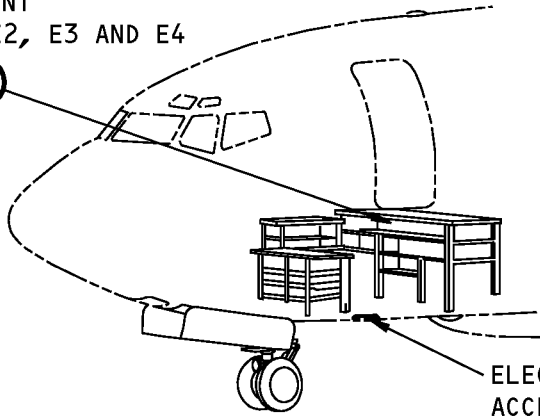
EFFECTIVITY  
HAP 001-013, 015-026, 028-030

**21-31-00**

**AIRCRAFT MAINTENANCE MANUAL**

ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

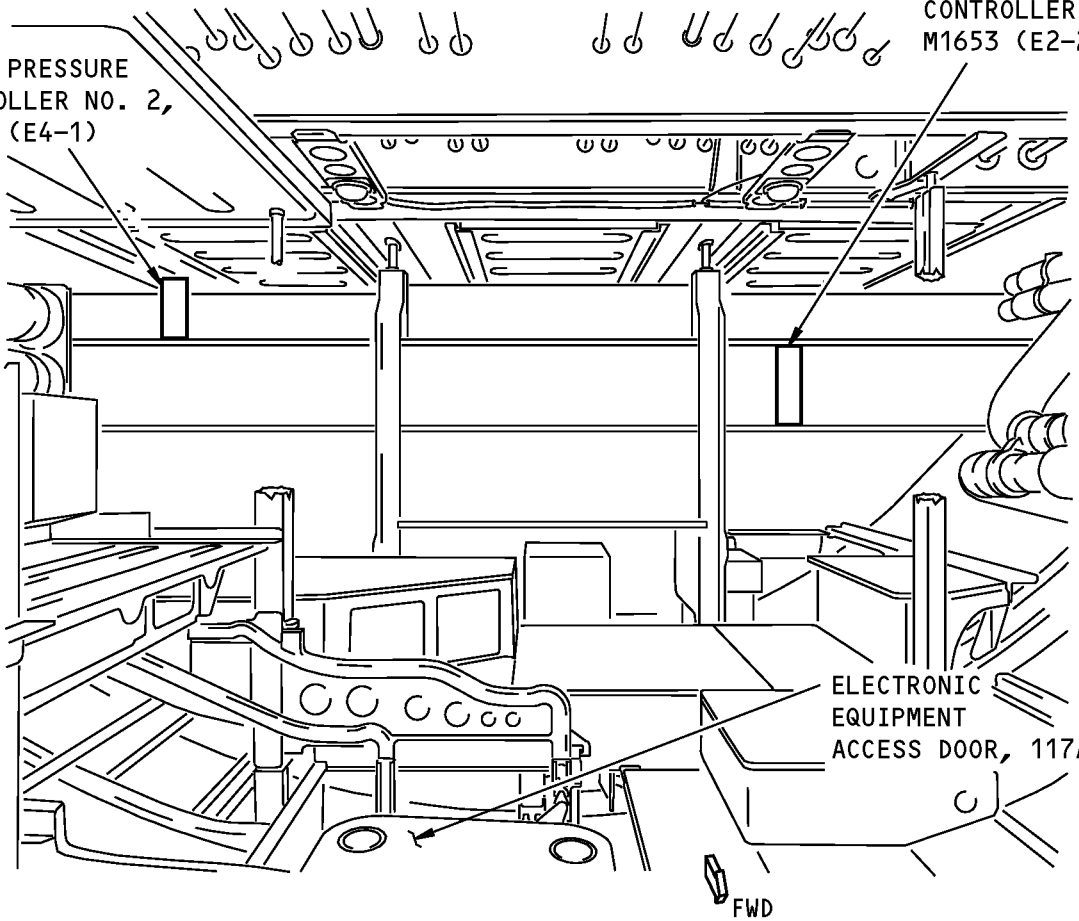
SEE (B)



ELECTRONIC EQUIPMENT  
ACCESS DOOR, 117A

CABIN PRESSURE  
CONTROLLER NO. 1,  
M1653 (E2-2)

CABIN PRESSURE  
CONTROLLER NO. 2,  
M1654 (E4-1)



ELECTRONIC  
EQUIPMENT  
ACCESS DOOR, 117A

**ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4**

(B)

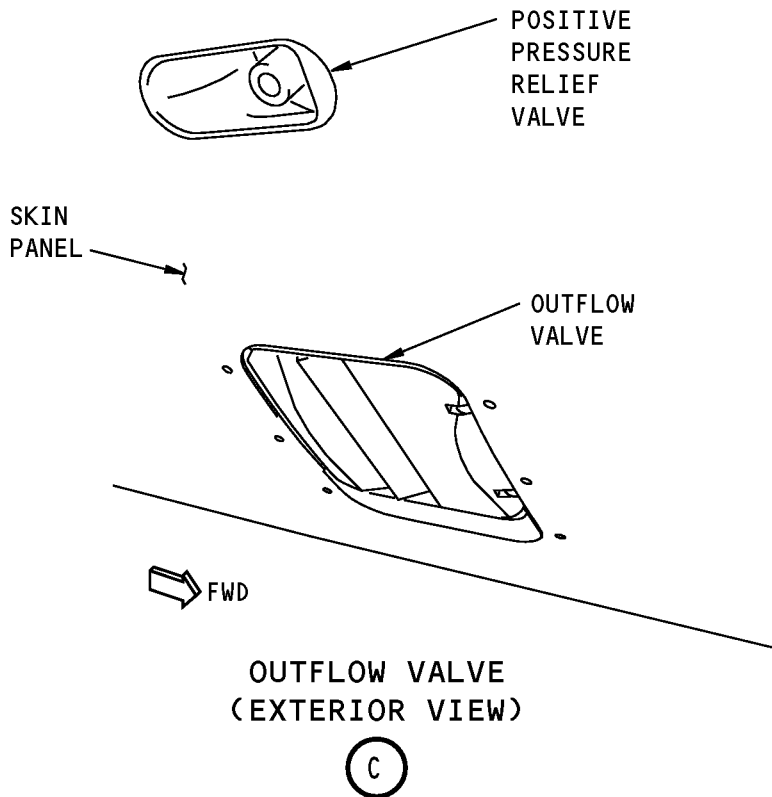
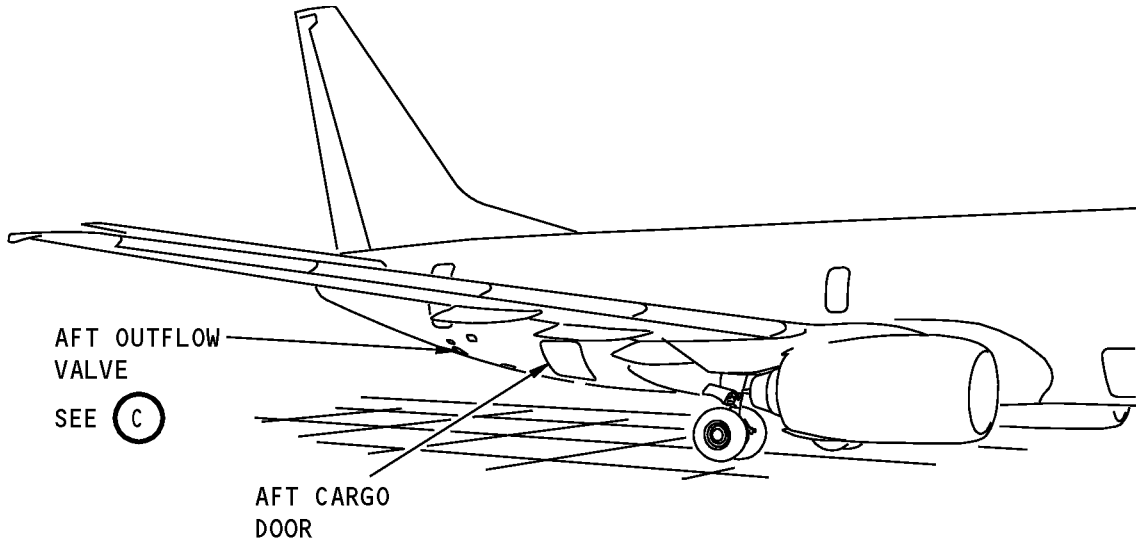
**Cabin Pressure Control System Test  
Figure 501 (Sheet 2 of 3)/21-31-00-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-030

**21-31-00**



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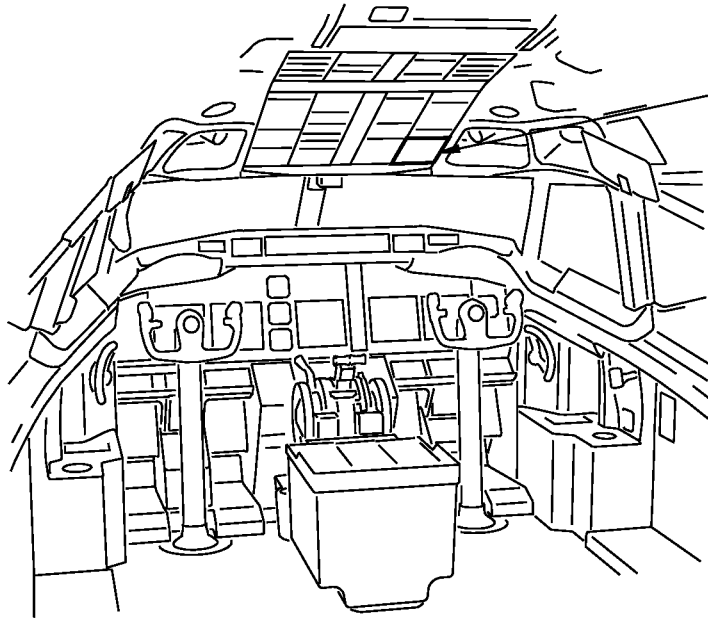


**Cabin Pressure Control System Test  
Figure 501 (Sheet 3 of 3)/21-31-00-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-030

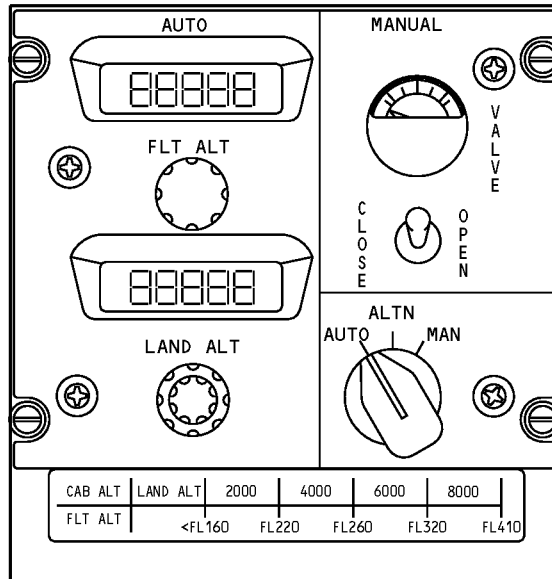
**21-31-00**

**AIRCRAFT MAINTENANCE MANUAL**



CABIN PRESSURE CONTROL MODULE  
SEE (A)

**FLIGHT COMPARTMENT**



**CABIN PRESSURE CONTROL MODULE**

(A)

**Cabin Pressure Control System Test**  
**Figure 502 (Sheet 1 of 4)/21-31-00-990-802**

EFFECTIVITY  
HAP 031-054, 101-999

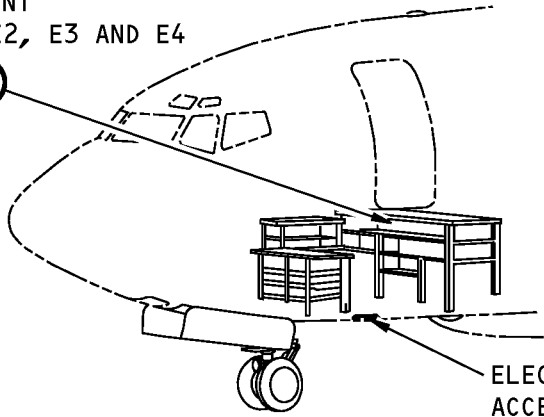
**21-31-00**

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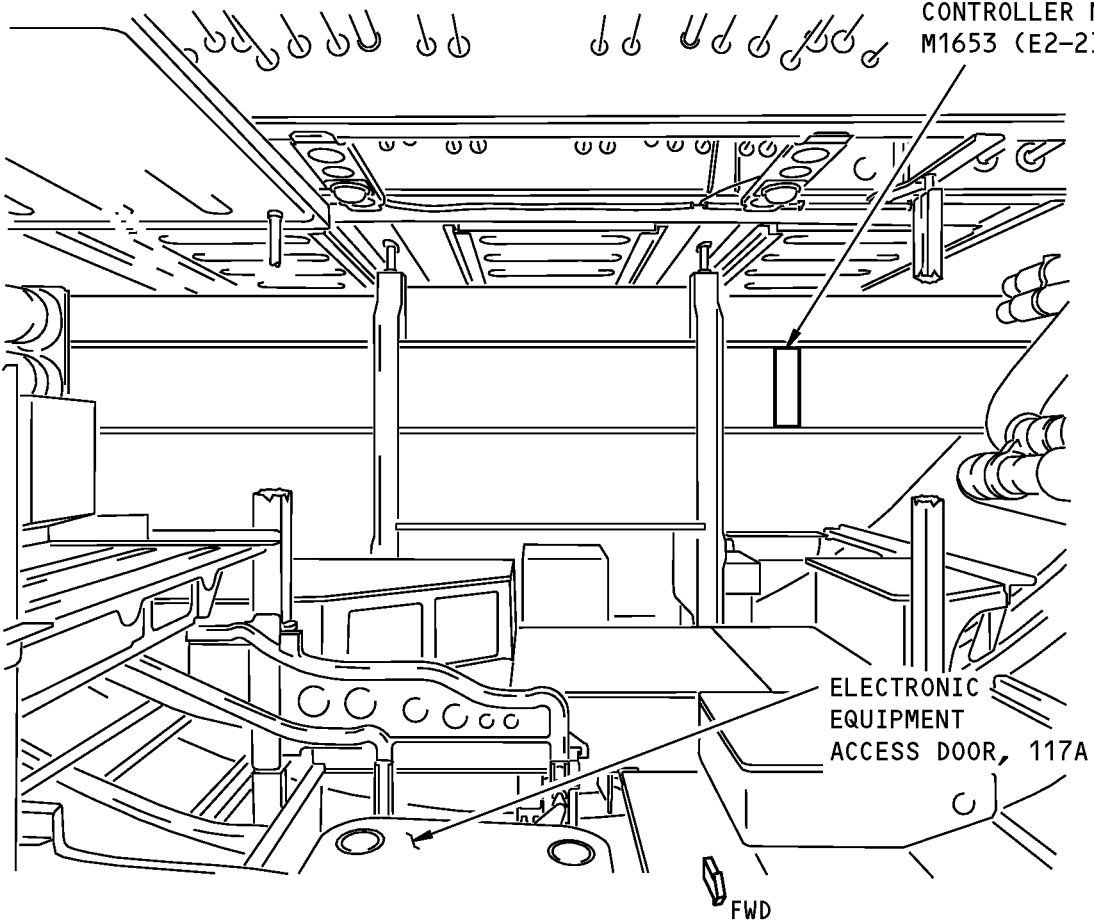
ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

SEE (B)



ELECTRONIC EQUIPMENT  
ACCESS DOOR, 117A

CABIN PRESSURE  
CONTROLLER NO. 1,  
M1653 (E2-2)



ELECTRONIC  
EQUIPMENT  
ACCESS DOOR, 117A

**ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4**

(B)

**Cabin Pressure Control System Test  
Figure 502 (Sheet 2 of 4)/21-31-00-990-802**

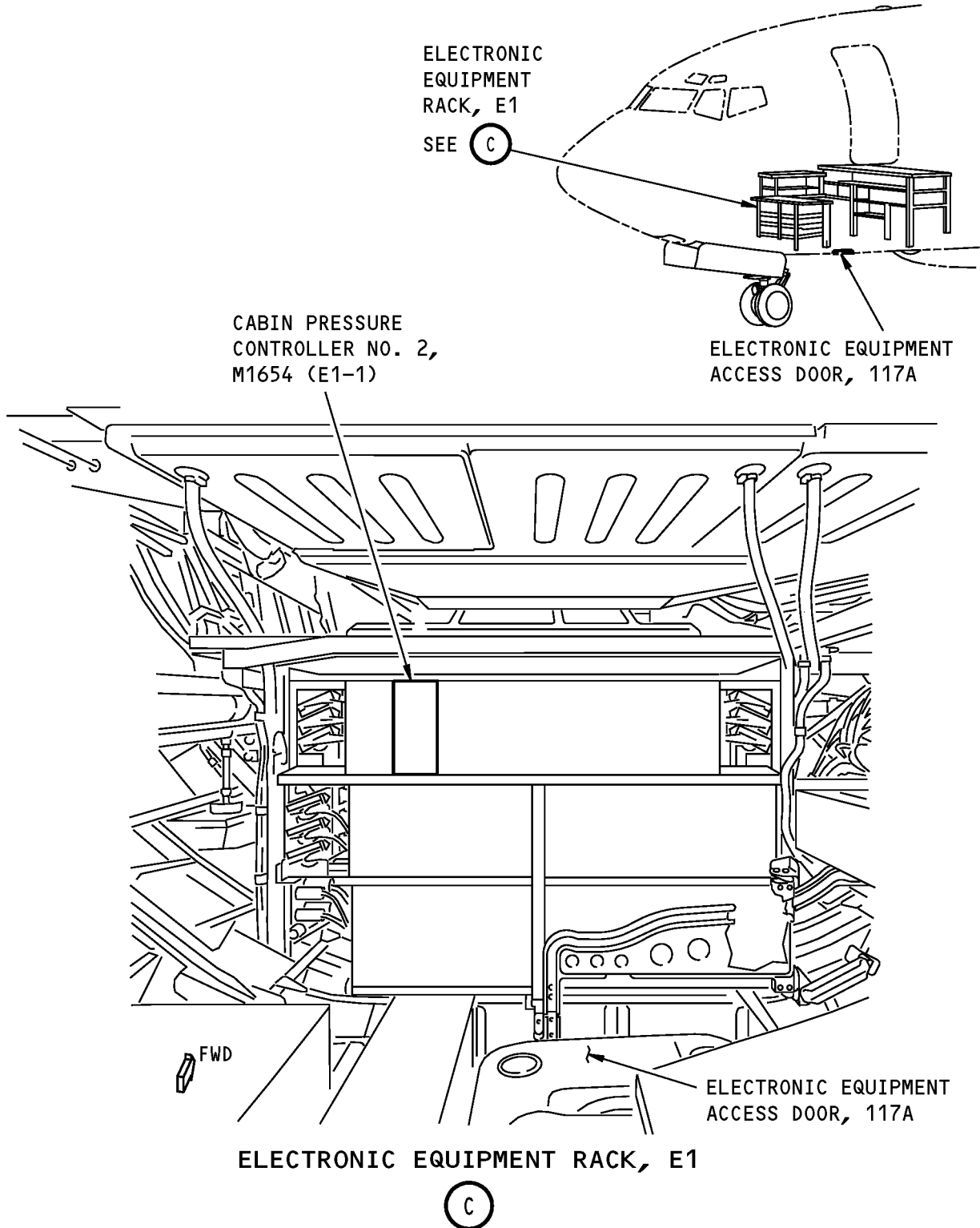
EFFECTIVITY  
HAP 031-054, 101-999

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**Cabin Pressure Control System Test  
Figure 502 (Sheet 3 of 4)/21-31-00-990-802**

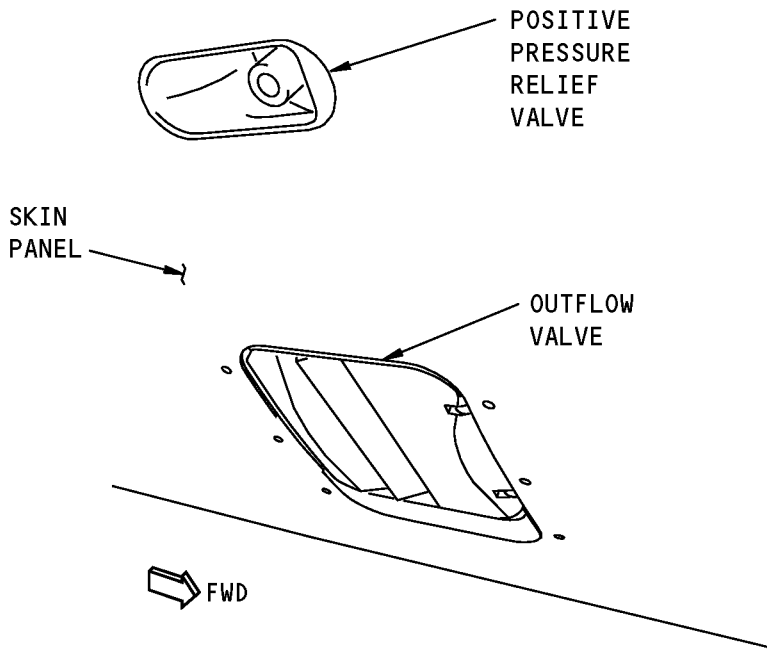
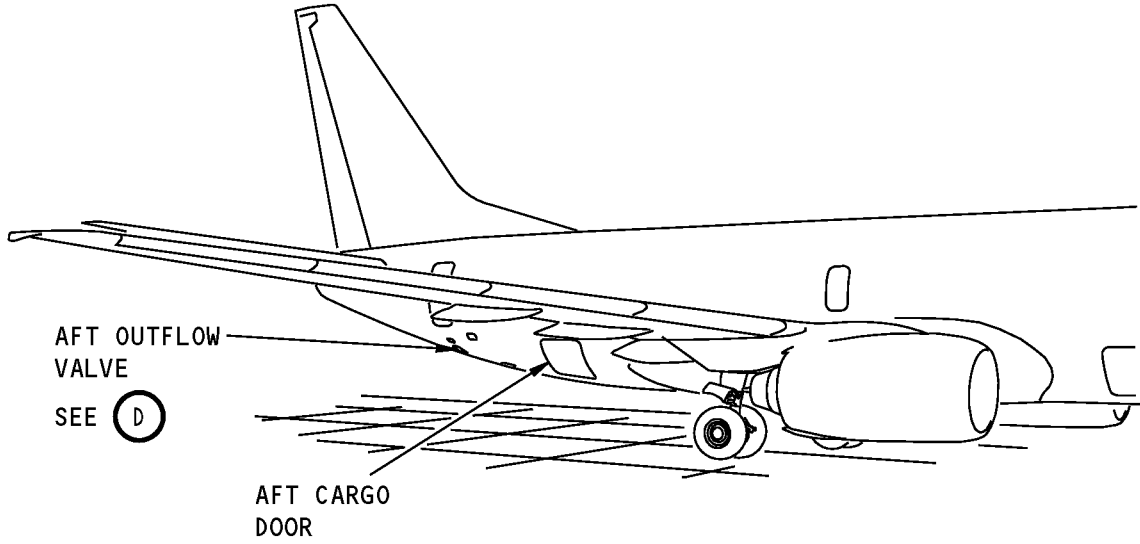
EFFECTIVITY  
HAP 031-054, 101-999

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**AIRCRAFT MAINTENANCE MANUAL**



**OUTFLOW VALVE  
(EXTERIOR VIEW)**

(D)

**Cabin Pressure Control System Test  
Figure 502 (Sheet 4 of 4)/21-31-00-990-802**

EFFECTIVITY  
HAP 031-054, 101-999

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**HAP 028-054, 101-999; HAP 001-013, 015-026 POST SB 737-21-1135**

**TASK 21-31-00-710-802**

**3. 750 Feet Per Minute Descent With Cargo Fire Mode Test**

(Figure 501 or Figure 502)

**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**

Reference	Description
STD-1231	Multimeter - Standard

**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.

SUBTASK 21-31-00-860-033

(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

**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.

EFFECTIVITY
HAP ALL

**21-31-00**



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AIRCRAFT MAINTENANCE MANUAL

HAP 028-054, 101-999; HAP 001-013, 015-026 POST SB 737-21-1135 (Continued)

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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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 multimeter, STD-1231 between Pressure Controller 1 Connector D10738B pin D7 and airplane ground.

- (a) Make sure there is less than 4.0 ohms between pin D7 and airplane ground.

SUBTASK 21-31-00-710-017

- (6) Disconnect the multimeter from pin D7 of connector D10738B.

SUBTASK 21-31-00-710-018

- (7) Connect the multimeter between Pressure Controller 1 Connector D10738B pin B10 and airplane ground.

- (a) Make sure there is less than 4.0 ohms between pin B10 and airplane ground.

SUBTASK 21-31-00-710-019

- (8) Disconnect the multimeter from pin B10 of connector D10738B.

SUBTASK 21-31-00-710-020

- (9) Connect the multimeter between Pressure Controller 2 Connector D10740B pin D7 and airplane ground.

- (a) Make sure there is less than 4.0 ohms between pin D7 and airplane ground.

SUBTASK 21-31-00-710-021

- (10) Disconnect the multimeter from pin D7 of connector D10740B.

SUBTASK 21-31-00-710-022

- (11) Connect the multimeter between Pressure Controller 2 Connector D10740B pin B10 and airplane ground.

- (a) Make sure there is less than 4.0 ohms between pin B10 and airplane ground.

SUBTASK 21-31-00-710-023

- (12) Disconnect the multimeter from pin B10 of connector D10740B.

SUBTASK 21-31-00-710-024

- (13) Release the TEST switch on the P8 Cargo Fire Control Panel.

EFFECTIVITY
HAP ALL

21-31-00



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HAP 028-054, 101-999; HAP 001-013, 015-026 POST SB 737-21-1135 (Continued)

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.

HAP ALL

END OF TASK

TASK 21-31-00-700-801

4. Master Caution Test

(Figure 501 or Figure 502)

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. 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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

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.

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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 or Figure 502)

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
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Pressurization System Ground Test (No. 1 Pressure Controller)

SUBTASK 21-31-00-860-022

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

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	15	C00426	ADIRU RIGHT EXC
C	17	C01010	ADIRU RIGHT DC

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F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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	15	C01401	LANDING GEAR AIR/GND RELAY

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT
D	1	C01444	AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST VALVE RECONFIG CONT
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

SUBTASK 21-31-00-860-030

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC
E	8	C00425	ADIRU LEFT EXC

SUBTASK 21-31-00-860-023

- (3) 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.

- (4) 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

- (5) 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:

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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?

- (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) Make sure that both SMYD-1 and -2 are ON:
  - 1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC

- (o) Push the YES button.
- (p) Make sure this message is shown on the display:

Table 507/21-31-00-993-807

OFV CLEAR?

- (q) 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:** Eight digits will come on below the word "TESTING" at intervals of approximately 12 seconds.

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:

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

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- 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).
- (r) Make sure that all of the eight digits are on for pressure controller No. 1.
- (s) 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

SYSTEM
OK
SYSTEM TEST
& CLEAR

- (t) Push the YES button on the BITE module on pressure controller No. 1 (M1653).
- (u) Push the ON/OFF button on the BITE module on pressure controller No. 1 (M1653).

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#### D. Pressurization System Ground Test (No. 2 Pressure Controller)

SUBTASK 21-31-00-860-025

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

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
C	14	C01008	ADIRU RIGHT AC
C	15	C00426	ADIRU RIGHT EXC
C	17	C01010	ADIRU RIGHT DC

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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	15	C01401	LANDING GEAR AIR/GND RELAY

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT
D	1	C01444	AIR CONDITIONING OVERBOARD EXHAUST VALVE CONT
D	2	C01445	AIR CONDITIONING OVERBOARD EXHAUST VALVE RECONFIG CONT
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2

SUBTASK 21-31-00-860-031

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC
E	8	C00425	ADIRU LEFT EXC

SUBTASK 21-31-00-860-026

(3) Put the mode selector switch on the P5-6 pressure control module to AUTO.

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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.

- (4) 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

- (5) 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:

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.

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- (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) Make sure that both SMYD-1 and -2 are ON:
  - 1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC

- (o) Push the YES button.
- (p) Make sure this message is shown on the display:

Table 520/21-31-00-993-820

OFV CLEAR?
------------

- (q) 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:** Eight digits will come on below the word "TESTING" at intervals of approximately 12 seconds.

Table 521/21-31-00-993-821

TESTING
---------

- 3) Do these steps on the BITE module on pressure controller No. 1:
  - a) Push the ON/OFF button on the front of pressure controller No. 1 (M1653).

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- 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).
- (r) Make sure that all of the eight digits on pressure controller No. 2 are on.
- (s) 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

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(Continued)

SYSTEM
OK
SYSTEM TEST
& CLEAR

(t) Push the YES button on the BITE module on pressure controller No. 2 (M1654).

(u) 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

- (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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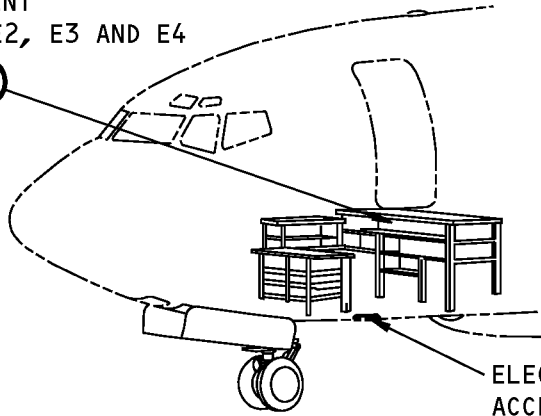
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**AIRCRAFT MAINTENANCE MANUAL**

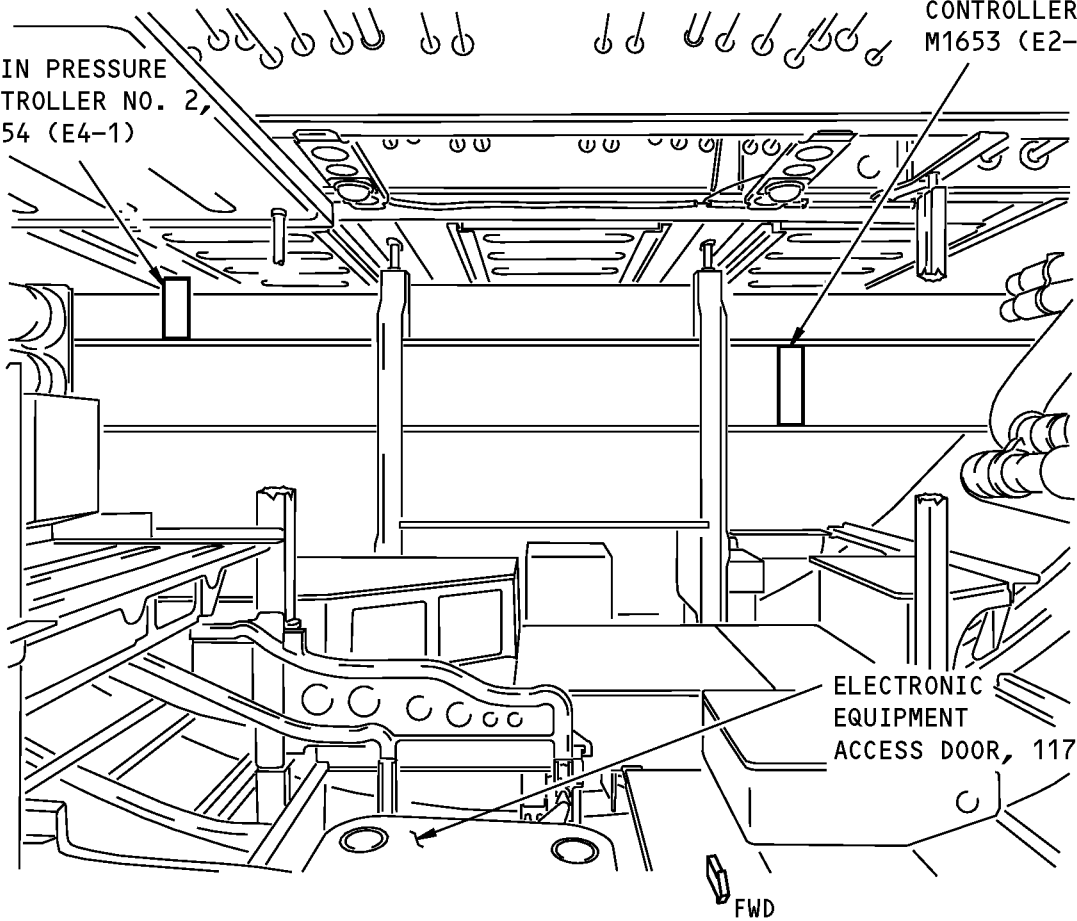
ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

SEE (A)



[2] CABIN PRESSURE  
CONTROLLER NO. 1,  
M1653 (E2-2)

[1] CABIN PRESSURE  
CONTROLLER NO. 2,  
M1654 (E4-1)



**ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4**

(A)

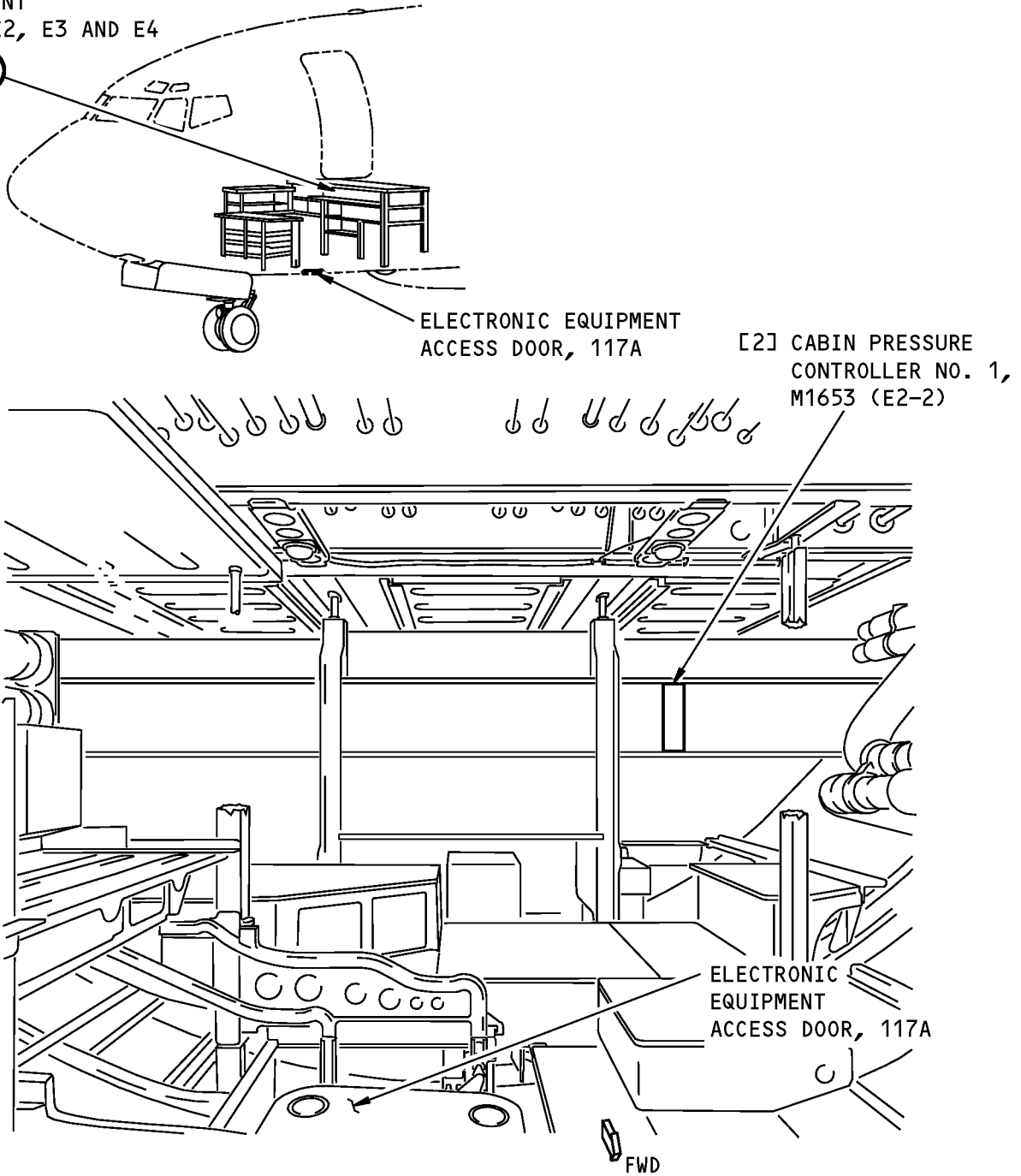
**Cabin Pressure Controller Installation**  
**Figure 401/21-31-01-990-801**

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**21-31-01**

ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

SEE (A)



**ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4**

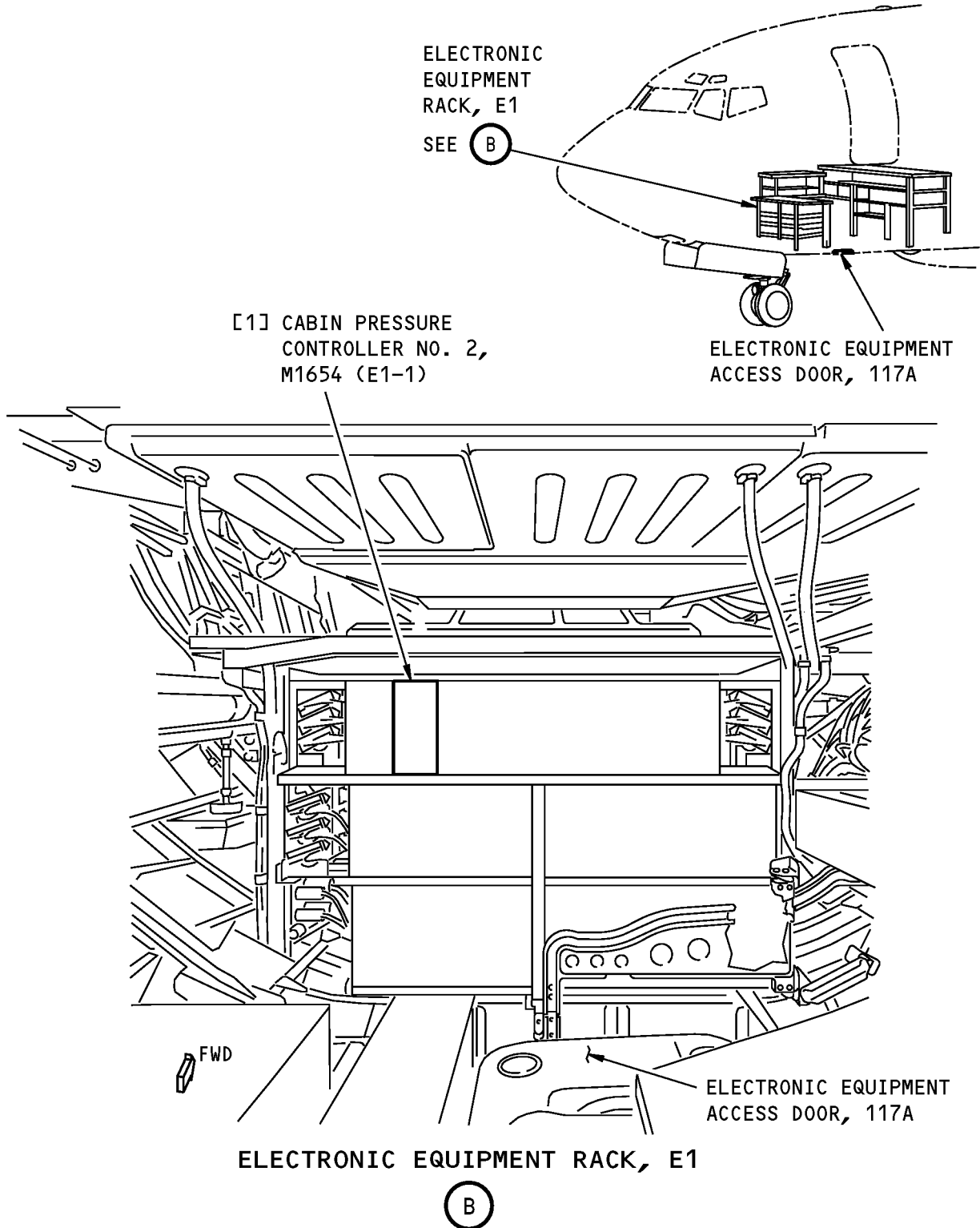
(A)

**Cabin Pressure Controller Installation**  
**Figure 402 (Sheet 1 of 2)/21-31-01-990-803**

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**Cabin Pressure Controller Installation  
Figure 402 (Sheet 2 of 2)/21-31-01-990-803**

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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. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Pressure controller No. 2	21-31-01-03-010	HAP 031-054, 101-999
		21-31-02-01-005	HAP 001-011
		21-31-02-03-005	HAP 012, 013, 015-026, 028-030
2	Pressure controller No. 1	21-31-01-02-010	HAP 001-011
		21-31-01-02A-010	HAP 012, 013, 015-026, 028-030
		21-31-01-02B-010	HAP 031-054, 101-999
		21-31-02-04-010	HAP 001-013, 015-026, 028-030, 041, 043, 101

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. Cabin Pressure Controller (CTC) Installation

SUBTASK 21-31-01-420-002

- (1) Make sure the shipping plug is removed from the static pressure port on the faceplate of the controller.

SUBTASK 21-31-01-420-001

- (2) 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

- (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

EFFECTIVITY

HAP ALL

21-31-01





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AIRCRAFT MAINTENANCE MANUAL**

**F. 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.

**G. Put the Airplane Back to Its Usual Condition**

SUBTASK 21-31-01-410-001

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

————— **END OF TASK** —————

EFFECTIVITY  
HAP ALL

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AIRCRAFT MAINTENANCE MANUAL

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. Location Zones

Table with 2 columns: Zone, Area. Rows: 211 Flight Compartment - Left, 212 Flight Compartment - Right

B. Cabin Pressure Control Module Removal

SUBTASK 21-31-02-860-001

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

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Rows: 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

- (2) 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

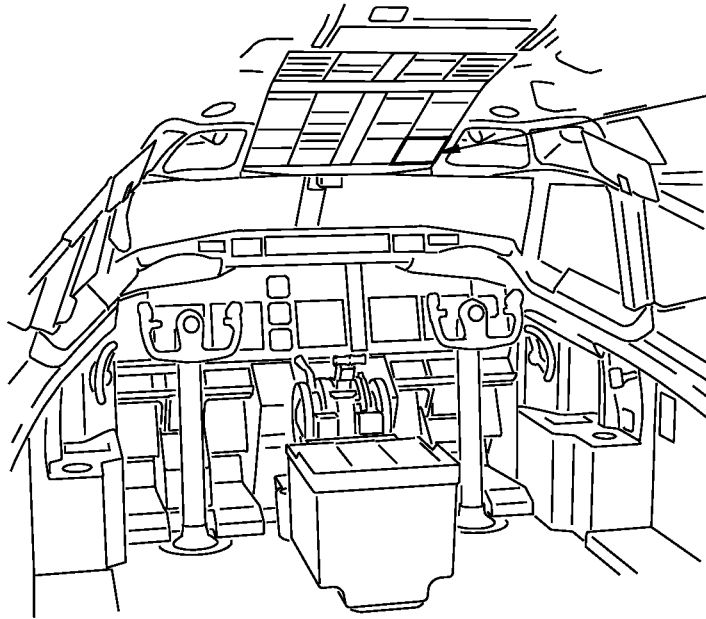
- (3) Remove the P5-6 cabin pressure control module [1] from the P5 forward overhead panel as follows:
(a) Disconnect the electrical connectors at the back of the module.
WARNING: HOLD THE PRESSURE CONTROL MODULE WHEN YOU LOOSEN THE 1/4-TURN FASTENERS. IF THE MODULE FALLS, INJURY TO PERSONNEL AND DAMAGE 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.
(c) Remove the cabin pressure control module [1].

END OF TASK

EFFECTIVITY HAP ALL

21-31-02

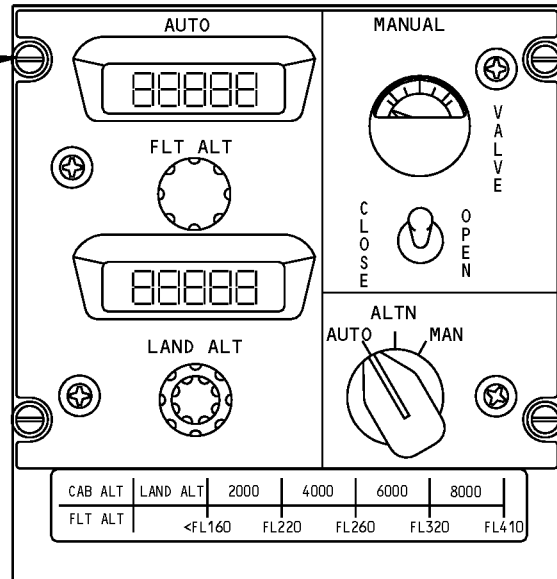
**AIRCRAFT MAINTENANCE MANUAL**



CABIN PRESSURE  
CONTROL MODULE  
SEE (A)

**FLIGHT COMPARTMENT**

1/4-TURN  
FASTENER  
(4 LOCATIONS)



**[1] CABIN PRESSURE CONTROL MODULE**

(A)

**Cabin Pressure Control Module Installation  
Figure 401/21-31-02-990-801**

EFFECTIVITY  
HAP ALL

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### AIRCRAFT MAINTENANCE MANUAL

#### 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)
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	21-31-02-05-020	HAP 031-054, 101-999

#### C. Location Zones

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

#### D. Cabin Pressure Control Module Installation

SUBTASK 21-31-02-010-002

(1) If it has not already been done, lower the P5 forward overhead panel.

SUBTASK 21-31-02-420-001

(2) 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

(3) Lift the P5 forward overhead panel to the closed position and turn the 1/4-turn fasteners.

SUBTASK 21-31-02-860-002

(4) 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	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

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------------------------

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**AIRCRAFT MAINTENANCE MANUAL**

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	6	C01269	PRESSURIZATION CONTROL MANUAL

SUBTASK 21-31-02-710-001

- (3) Do a pressurization system ground test for the applicable controller. To do this task, do this task: Pressurization System Ground Test, TASK 21-31-00-700-802.

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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HAP ALL

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# AIRCRAFT MAINTENANCE MANUAL

## 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.

### HAP ALL; OUTFLOW VALVES WITH JAGGED GATES

- C. If antiskating foil is removed, repair the antiskating foil per the vendor component maintenance manual at the next convenient maintenance opportunity.

### HAP ALL

#### 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

SUBTASK 21-31-03-020-001

- (1) 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

- (2) Remove the nut [7] and the washer [8] that attach the bonding jumper [9] to the aft outflow valve [1].

SUBTASK 21-31-03-020-003

- (3) Disconnect the bonding jumper [9] from the aft outflow valve [1].

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HAP ALL	

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# AIRCRAFT MAINTENANCE MANUAL

## HAP ALL; OUTFLOW VALVES WITH STRAIGHT EDGED GATES

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.

(4) Do these steps to close the aft outflow valve [1]:

(a) Close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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) Put the aft outflow valve [1] in the full closed position 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 in the full closed position.

## HAP ALL

SUBTASK 21-31-03-860-003

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	6	C01269	PRESSURIZATION CONTROL MANUAL

SUBTASK 21-31-03-020-004

(6) 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].

————— **END OF TASK** —————

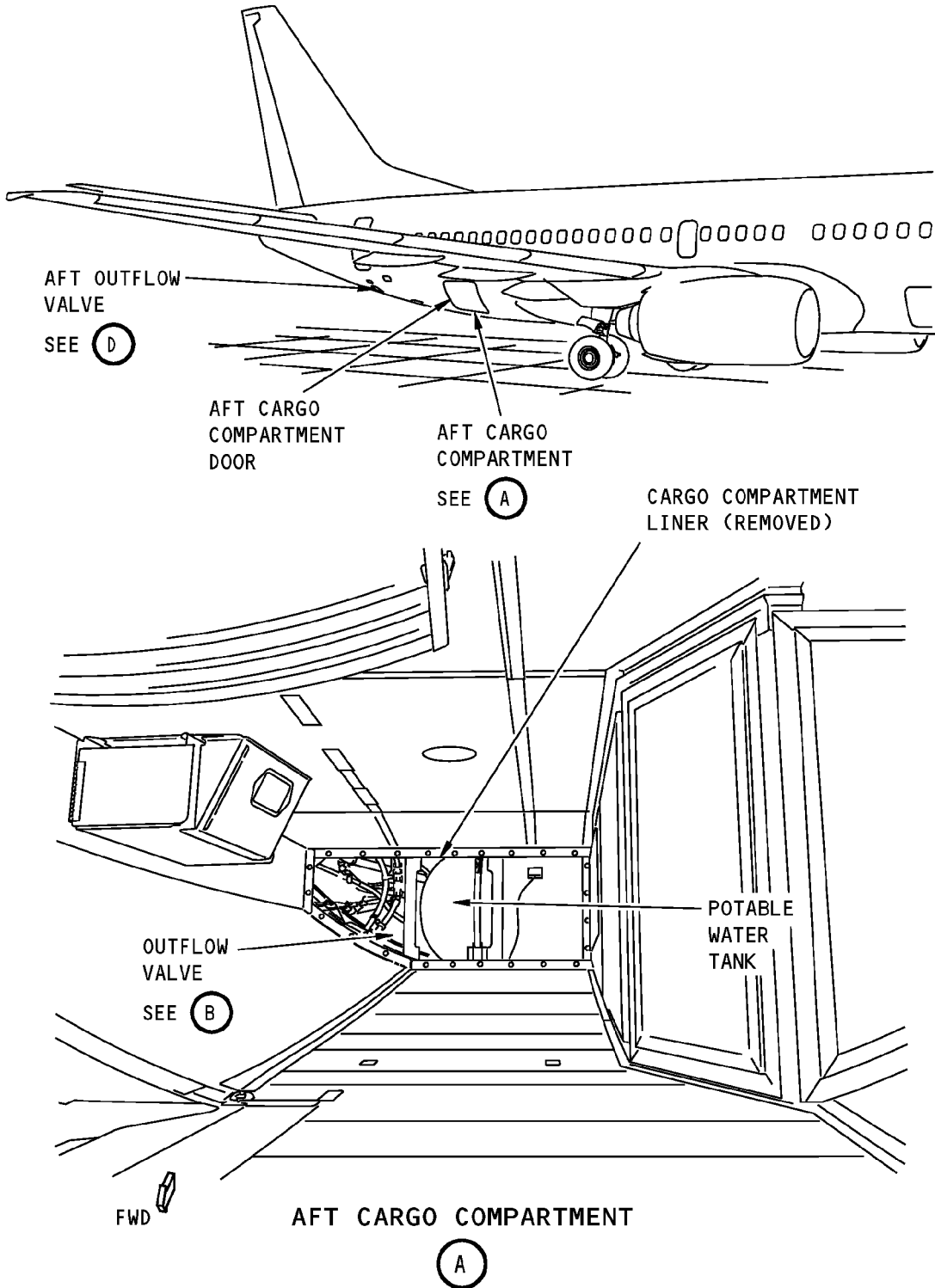
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**Aft Outflow Valve Installation  
Figure 401 (Sheet 1 of 3)/21-31-03-990-801**

EFFECTIVITY  
HAP ALL

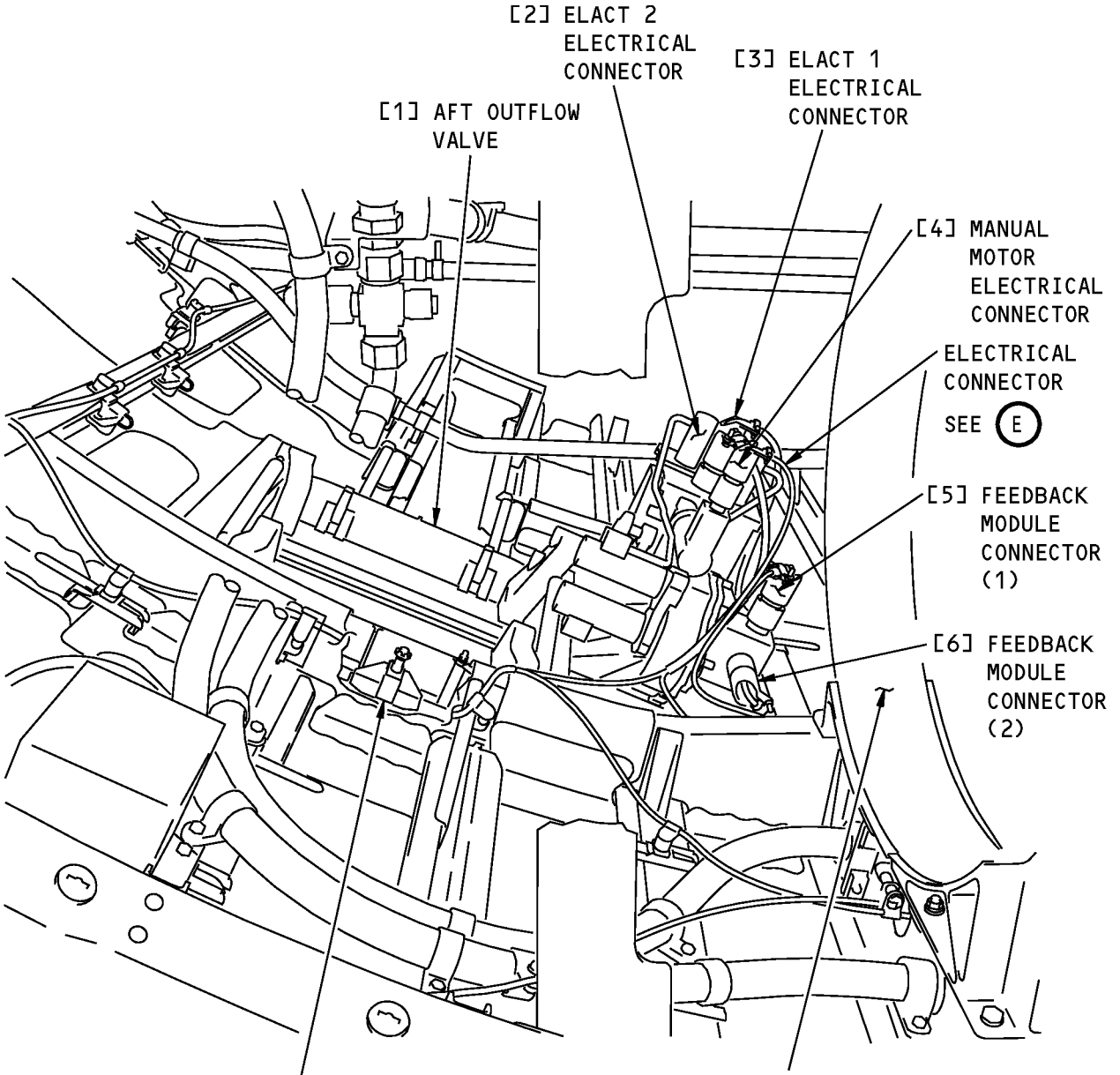
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**AIRCRAFT MAINTENANCE MANUAL**



FWD 

ATTACHMENT  
FITTING  
(6 LOCATIONS)

SEE (C)

POTABLE  
WATER TANK  
(REMOVED FOR  
CLARITY)

OUTFLOW VALVE

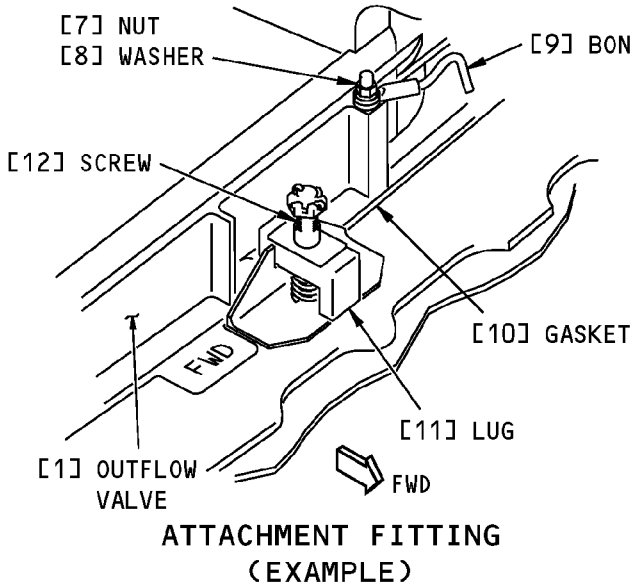
(B)

**Aft Outflow Valve Installation**  
**Figure 401 (Sheet 2 of 3)/21-31-03-990-801**

EFFECTIVITY  
HAP ALL

**21-31-03**

**AIRCRAFT MAINTENANCE MANUAL**

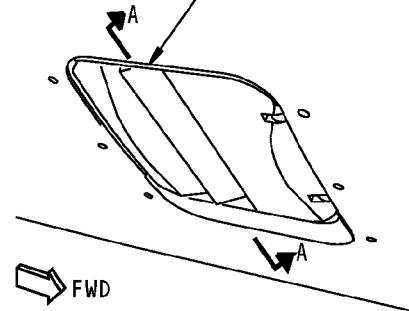


(C)

POSITIVE PRESSURE  
RELIEF VALVE

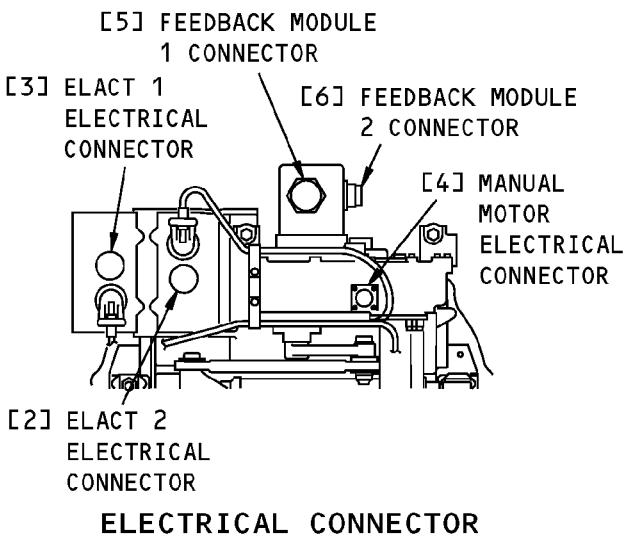


[1] OUTFLOW  
VALVE

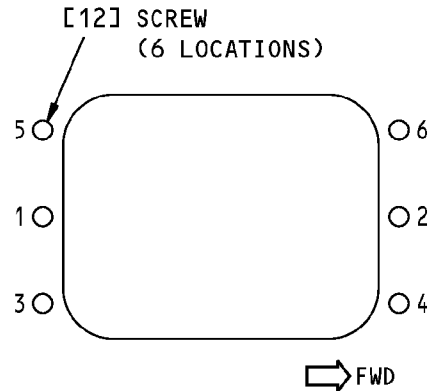


**OUTFLOW VALVE  
(EXTERIOR VIEW)**

(D)



(E)



1 TIGHTEN THE SCREWS [12] IN  
THE NUMERICAL SEQUENCE SHOWN.

**Aft Outflow Valve Installation**  
**Figure 401 (Sheet 3 of 3)/21-31-03-990-801**

EFFECTIVITY  
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### AIRCRAFT MAINTENANCE MANUAL

#### 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)

#### 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-10994	screwdriver - torque (Part #: 268P-5/16, Supplier: 03705, A/P Effectivity: 737-ALL) (Part #: SKT73008, Supplier: \$1154, A/P Effectivity: 737-ALL)
COM-10996	Bit - Screwdriver, Torq-set (Part #: 268P-5/16, Supplier: 03705, A/P Effectivity: 737-ALL) (Part #: SKT73008, Supplier: \$1154, A/P Effectivity: 737-ALL) (Part #: TS212-5/16B, Supplier: 67179, A/P Effectivity: 737-ALL)

#### C. Consumable Materials

Reference	Description	Specification
D50004	Compound - Antiseize	BMS3-28

#### D. Location Zones

Zone	Area
146	Aft Cargo Compartment Equipment Bay - Right

#### E. Outflow Valve Assembly Installation

(Figure 401)

SUBTASK 21-31-03-420-004

- (1) 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.

SUBTASK 21-31-03-640-001

- (2) 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].

#### **HAP ALL; OUTFLOW VALVES WITH STRAIGHT EDGED GATES**

SUBTASK 21-31-03-980-001

- (3) If the aft outflow valve [1] is in the open position, do these steps:

NOTE: The valve must be in the closed position when you install it in the airplane.

- (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].

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HAP ALL; OUTFLOW VALVES WITH STRAIGHT EDGED GATES (Continued)

- (c) Put the aft outflow valve [1] on a suitable support so that the valve doors will be free to close.

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

Table with 4 columns: Row, Col, Number, Name. Row 1: 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) Put the aft outflow valve [1] in the full closed position 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 in the full closed position.

- (g) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Row 1: F, 6, C01269, PRESSURIZATION CONTROL MANUAL

- (h) Disconnect the manual motor electrical connector [4] from the aft outflow valve [1].

HAP ALL; OUTFLOW VALVES WITH JAGGED GATES

SUBTASK 21-31-03-860-005

- (4) If the aft outflow is in the closed position, do these steps:

NOTE: The valve must be in the open position when you install it in the airplane.

- (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 open.

Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Row 1: F, 6, C01269, PRESSURIZATION CONTROL MANUAL

Diagram showing EFFECTIVITY and HAP ALL with a large empty box for details.

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### AIRCRAFT MAINTENANCE MANUAL

#### HAP ALL; OUTFLOW VALVES WITH JAGGED GATES (Continued)

**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) Put the mode select switch on the cabin pressure control module on the overhead P5 panel to the MAN position.
- (e) Put the aft outflow valve [1] in the full open position 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 in the full open position.
- (f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	6	C01269	PRESSURIZATION CONTROL MANUAL

- (g) Disconnect the manual motor electrical connector [4] from the aft outflow valve.

#### HAP ALL

SUBTASK 21-31-03-420-001

- (5) Do these steps to install the aft outflow valve [1]:
  - (a) Install the gasket [10] in its position on the airplane skin opening with the thinner rubber side against the airplane (down).
  - (b) 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.
  - (c) Turn the three forward lugs [11] so that they face forward to aft.
  - (d) While you hold the three forward lugs [11], turn the three forward screws [12] clockwise just until the lugs [11] engage in their slots and can not turn.
  - (e) 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.
  - (f) Set the aft outflow valve [1] down on the inside of the airplane so that you can connect the manual motor electrical connector [4].
  - (g) Connect the manual motor electrical connector [4] to the aft outflow valve [1].
  - (h) 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.
  - (i) 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.

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HAP ALL

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- 3) Use a torque screwdriver, COM-10994 set at 55 to 65 pound-inches (6.12-7.23 newton-meters) with a torq-set screwdriver 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.

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	6	C01269	PRESSURIZATION CONTROL MANUAL

- (k) Put the mode select switch on the cabin pressure control module on the overhead P5 panel to the MAN position.
- (l) 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.
- (m) Push and hold the manual control switch to the OPEN position until the aft outflow valve [1] is in the full open position.
- (n) Open this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	6	C01269	PRESSURIZATION CONTROL MANUAL

SUBTASK 21-31-03-420-002

- (6) 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]
- (b) ELACT 2 [2]
- (c) Feedback Module 1 [5]
- (d) Feedback Module 2 [6]

SUBTASK 21-31-03-020-005

- (7) Put the bonding jumper [9] in its position on the stud of the aft outflow valve [1].

SUBTASK 21-31-03-420-003

- (8) Install the nut [7] and the washer [8] that attach the bonding jumper [9] to the aft outflow valve [1].
  - (a) Make sure that the resistance between the bonding jumper [9] and the aft outflow valve [1] is a maximum of 1 milliohm.

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SUBTASK 21-31-03-860-004

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	3	C01270	PRESSURIZATION CONTROL AUTO 1
F	5	C01271	PRESSURIZATION CONTROL AUTO 2
F	6	C01269	PRESSURIZATION CONTROL MANUAL

**F. 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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## AIRCRAFT MAINTENANCE MANUAL

### 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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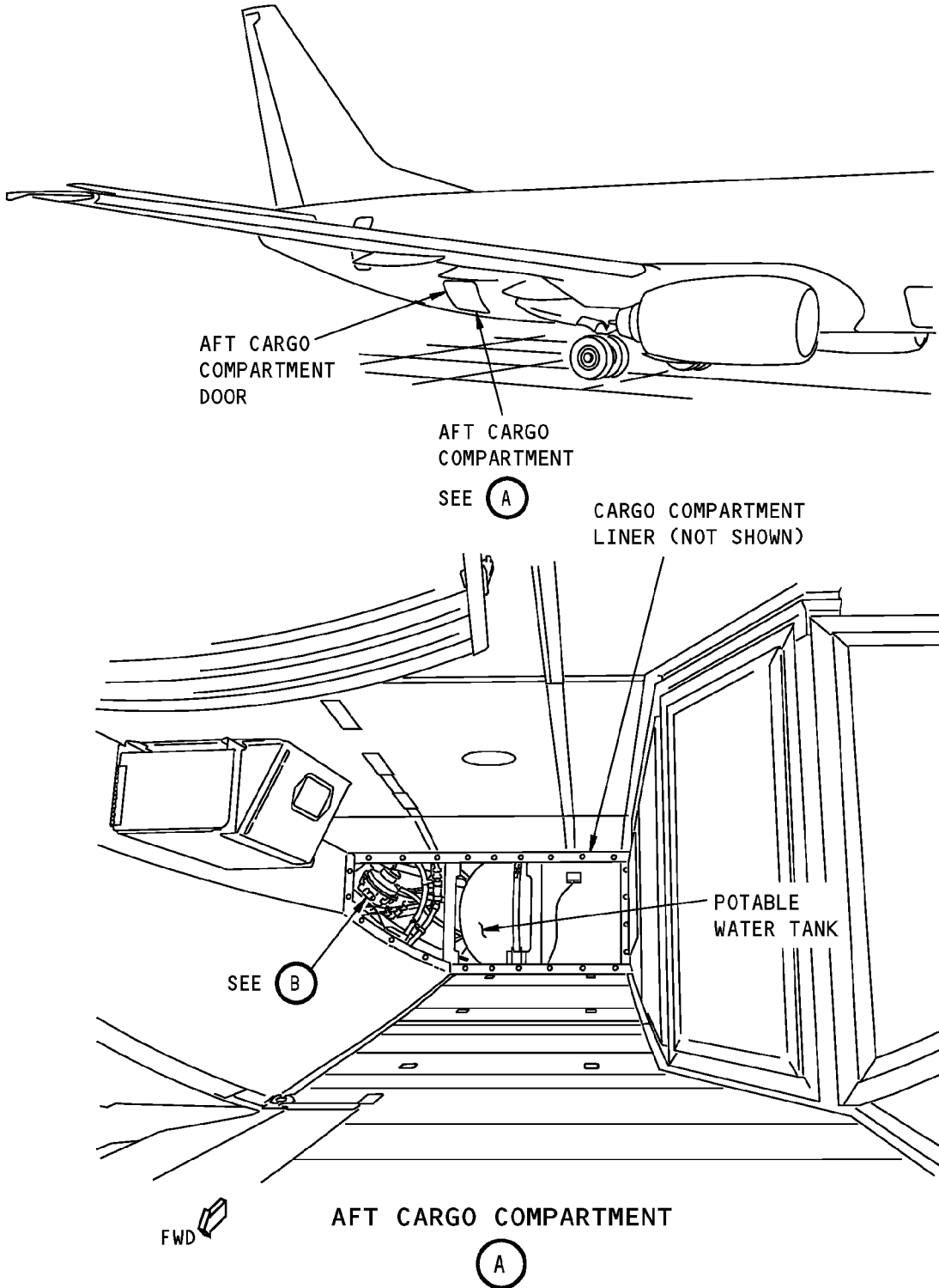
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**Positive Pressure Relief Valve Installation  
Figure 401 (Sheet 1 of 2)/21-32-01-990-802**

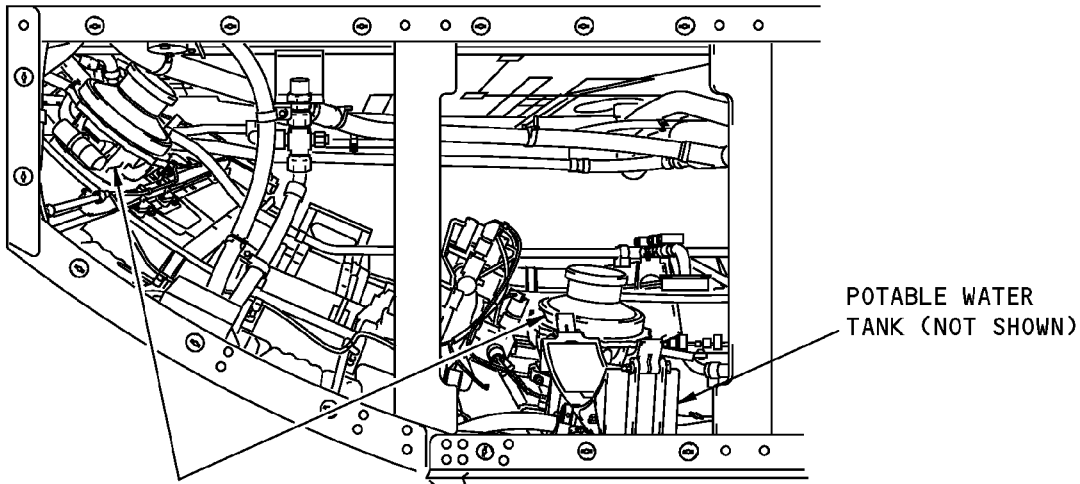
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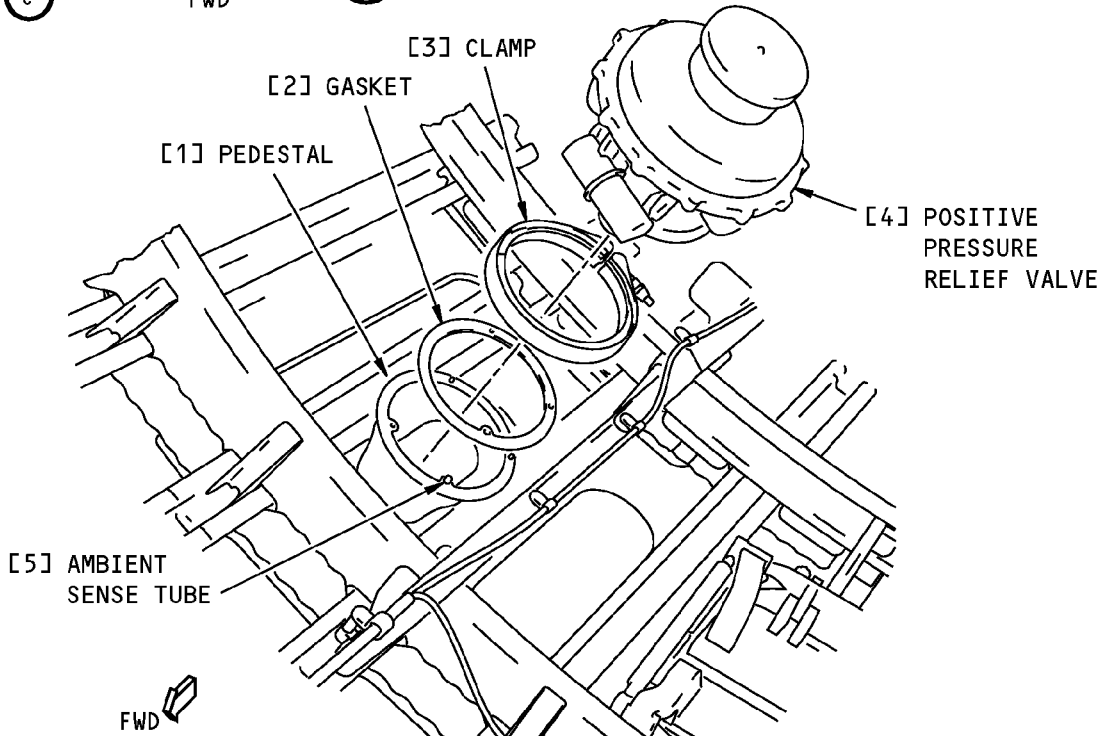


POSITIVE PRESSURE  
RELIEF VALVE

SEE (C)

FWD

(B)



POSITIVE PRESSURE RELIEF VALVE  
(EXAMPLE)

(C)

**Positive Pressure Relief Valve Installation  
Figure 401 (Sheet 2 of 2)/21-32-01-990-802**

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### AIRCRAFT MAINTENANCE MANUAL

#### 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
D00095	Lubricant - Dry Film - MS122	
D00113	Lubricant - Liquid Dispersed Solid Film Lubricant	BMS3-8, BAC 5811, TYPE VIII

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Gasket	21-32-01-01-030	HAP ALL
4	Relief valve	21-32-01-01-010	HAP 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 MS122 lubricant, D00095 or lubricant, D00113 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].

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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# AIRCRAFT MAINTENANCE MANUAL

## 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 or Figure 502)

#### A. General

- (1) This procedure is a scheduled maintenance task.

#### B. Tools/Equipment

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

Reference	Description
COM-1598	Tester - Safety Relief Valve (Part #: A21010-72, Supplier: 81205, A/P Effectivity: 737-ALL) (Part #: GS15047-1, Supplier: 99167, A/P Effectivity: 737-ALL) (Opt Part #: A21010-57, Supplier: 81205, A/P Effectivity: 737-ALL) (Opt Part #: A21010-69, Supplier: 81205, A/P Effectivity: 737-ALL) (Opt Part #: A21010-70, Supplier: 81205, A/P Effectivity: 737-ALL)
STD-1114	Air Source - Regulated, Dry, Filtered 0-150 PSIG with Pressure Gauge range 100 PSIG, 1 PSIG increment and +/-1 psi minimum accuracy

#### C. Location Zones

Zone	Area
146	Aft Cargo Compartment Equipment Bay - Right

#### D. 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 valve test tester, COM-1598.

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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 valve test tester, COM-1598.

### E. 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 valve test tester, COM-1598 on the relief valve on the fuselage.
  - (b) Put the locating crossbar on the valve test tester, COM-1598 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 valve test tester, COM-1598 to start the flow of air.
  - (d) Adjust the air pressure regulator so that the indication on the vacuum gage increases 4.5 inches Hg/minute (15.24 kPa/minute) until the vacuum gage shows 15.8 inches Hg (53.5 kPa).

**WARNING:** THE TEST FIXTURE MUST BE MANUALLY HELD AGAINST THE AIRPLANE FUSELAGE WHEN THE PRESSURE INDICATION IS 15.8 INCHES OF HG (53.5 KPA). WHEN THE VALVE OPENS, THE TEST FIXTURE CAN FALL FROM THE FUSELAGE SURFACE. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT COULD RESULT.

- (e) When the vacuum gage shows 15.8 inches Hg (53.5 kPa), manually hold the test fixture against the airplane fuselage.
- (f) When the vacuum gage shows 15.8 inches Hg (53.5 kPa), adjust the air pressure regulator to increase the vacuum in 0.1 inch Hg (.34 kPa) increments.
- (g) Stop the increase of vacuum for 10 seconds between each increase of 0.1 inch Hg (.34 kPa).
- (h) Continue the intermittent vacuum increases of 0.1 inch Hg (.34 kPa) until the valve opens.
- (i) Monitor the indication on the vacuum gage when the valve opens.
- (j) Make sure the valve opens between 17.7 to 18.5 inches Hg (8.69 to 9.09 psi) (59.92 - 62.67 kPa).

**NOTE:** When the valve opens the differential pressure will decrease to near 0 psid.

- (k) Adjust the air pressure regulator to increase the differential pressure to approximately 15.04 to 14.02 inches Hg (7.5 to 7.0 psig) (51.71 to 48.26 kPa) at a rate not more than 4.07 inches Hg/minute (2.00 psig/minute) (13.79 kPa/minute).

- 1) Make sure the relief valve closes.

**NOTE:** The indication that the relief valve has closed is seen on the vacuum gage when the gage stops and then starts to increase and then becomes stable.

- (l) Adjust the air pressure regulator to reduce the indication on the vacuum gage to 0 inches Hg (0 psig) (0 kPa) at a rate of 8.14 inches Hg/minute (4.0 psig/minute) (27.58 kPa/minute) or slower.
- (m) Close the pressure regulator on the valve test tester, COM-1598.
- (n) Remove the valve test tester, COM-1598 from the airplane.

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(o) 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 —————

#### TASK 21-32-01-700-802

### 3. Positive Pressure Relief Valve - System Test with the Use of Boeing Test Equipment

(Figure 501 or Figure 502)

#### A. General

(1) This procedure is a scheduled maintenance task.

#### B. Tools/Equipment

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

Reference	Description
COM-1598	Tester - Safety Relief Valve (Part #: A21010-72, Supplier: 81205, A/P Effectivity: 737-ALL) (Part #: GS15047-1, Supplier: 99167, A/P Effectivity: 737-ALL) (Opt Part #: A21010-57, Supplier: 81205, A/P Effectivity: 737-ALL) (Opt Part #: A21010-69, Supplier: 81205, A/P Effectivity: 737-ALL) (Opt Part #: A21010-70, Supplier: 81205, A/P Effectivity: 737-ALL)
STD-1114	Air Source - Regulated, Dry, Filtered 0-150 PSIG with Pressure Gauge range 100 PSIG, 1 PSIG increment and +/-1 psi minimum accuracy

#### C. Location Zones

Zone	Area
146	Aft Cargo Compartment Equipment Bay - Right

#### D. 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.

#### E. 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 tester, COM-1598 to the relief valve:

- (a) Make sure all the valves on the tester, COM-1598 are closed.
- (b) Connect the Regulated Dry Filtered Air Source, STD-1114 to the quick-disconnect connection on the tester, COM-1598.
- (c) Adjust the air control valve on the tester, COM-1598 until the indication on the pressure gage is 70 +/-10 psi (482.6 ± 69 kPa).

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- (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.
- 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.

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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.

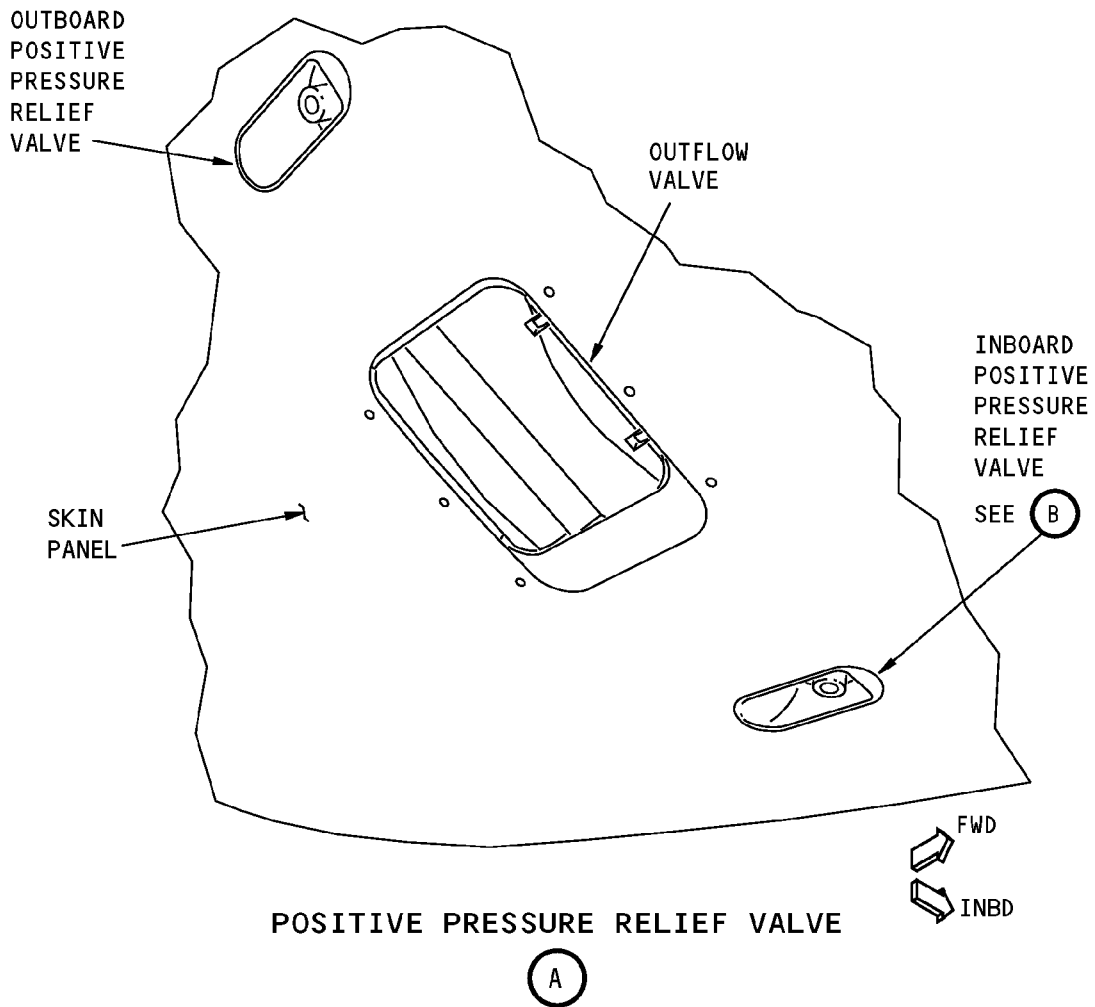
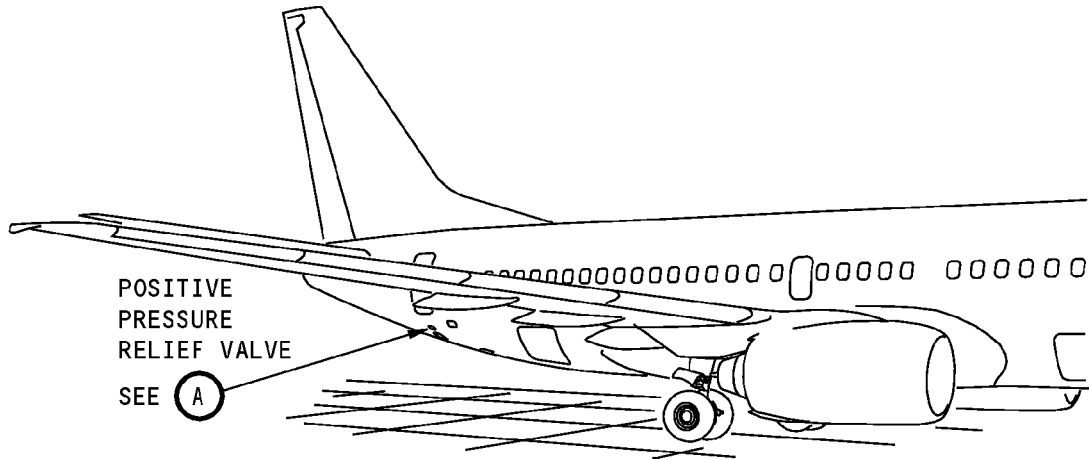
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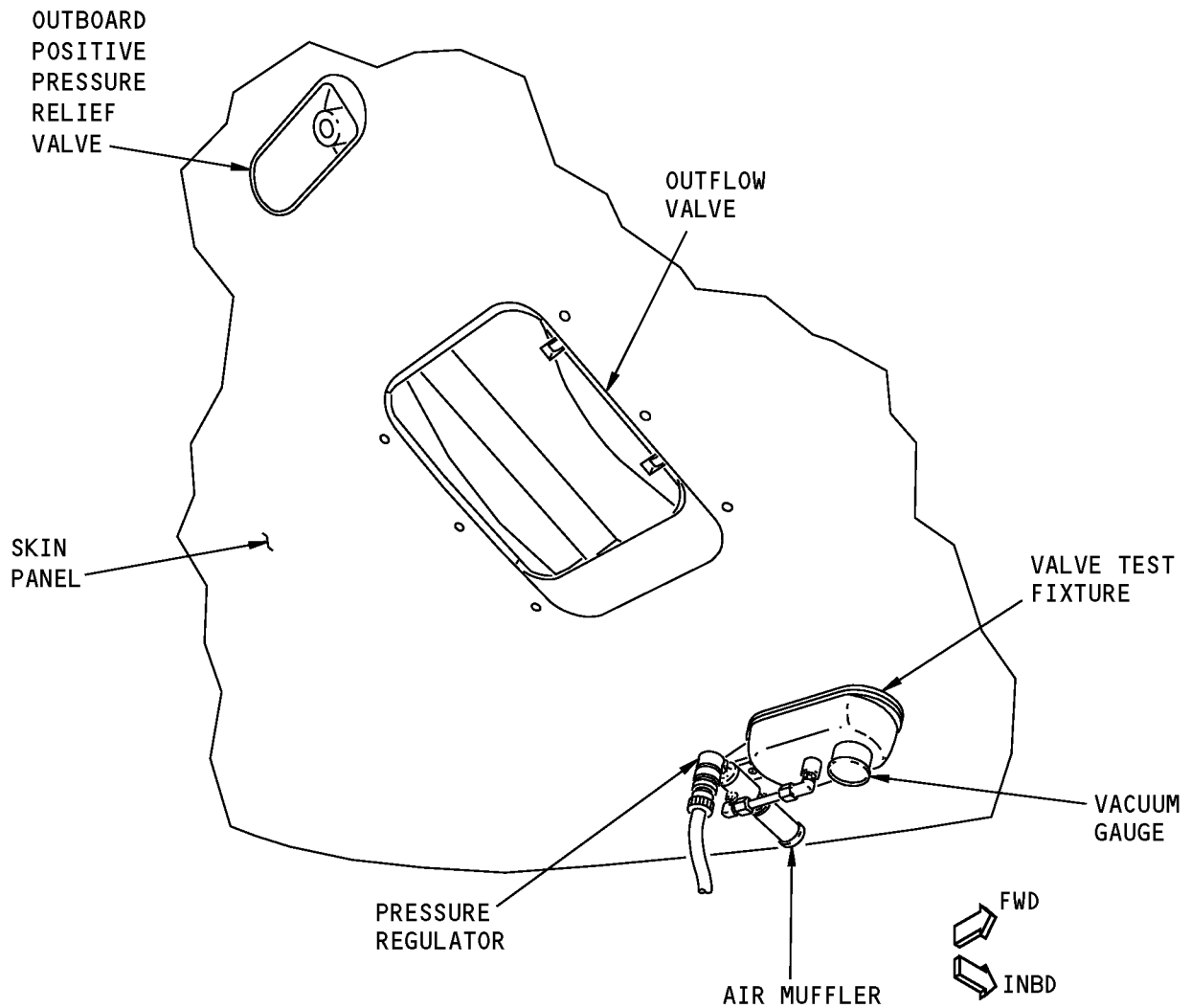
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**Positive Pressure Relief Valve Test Setup**  
**Figure 501 (Sheet 1 of 2)/21-32-01-990-801**

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**GS15047-1 POSITIVE RELIEF VALVE  
TEST FIXTURE**

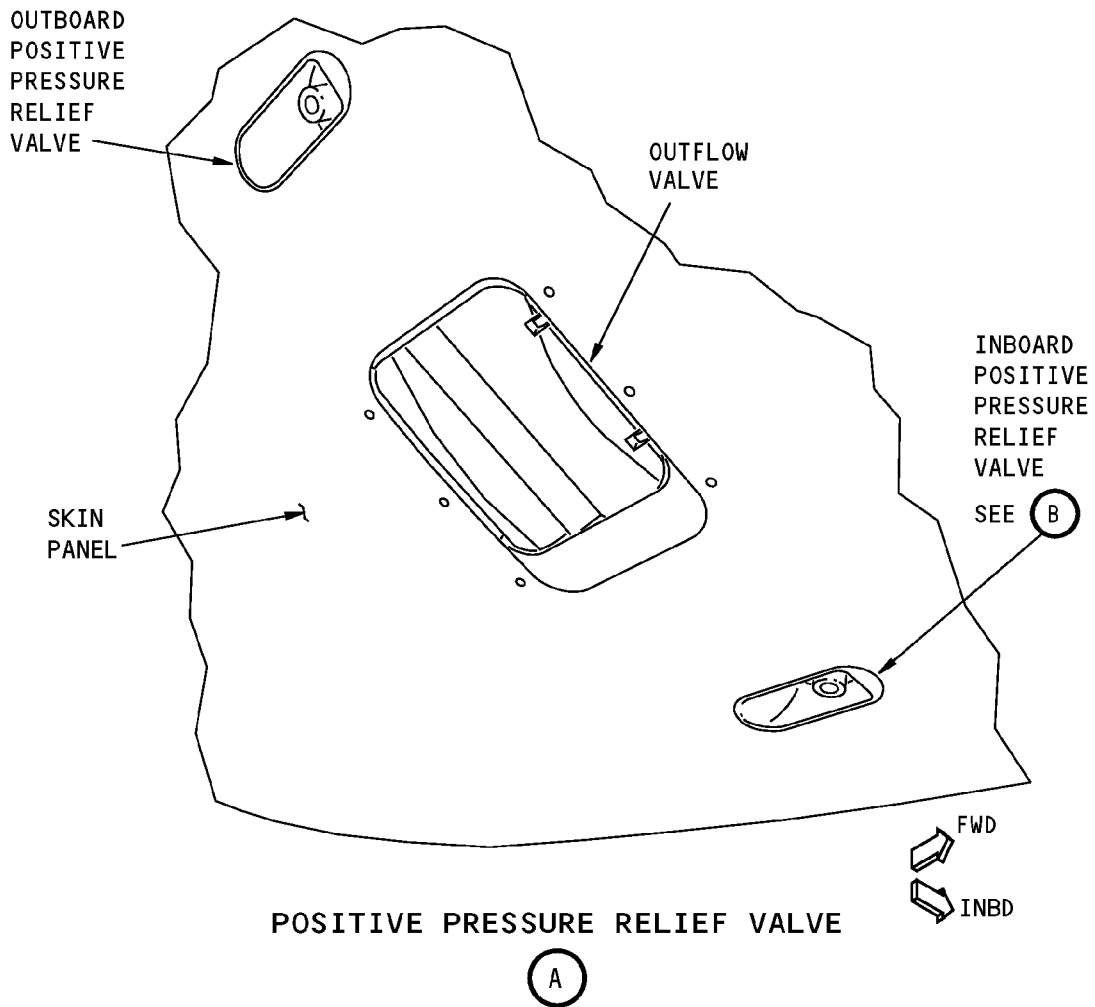
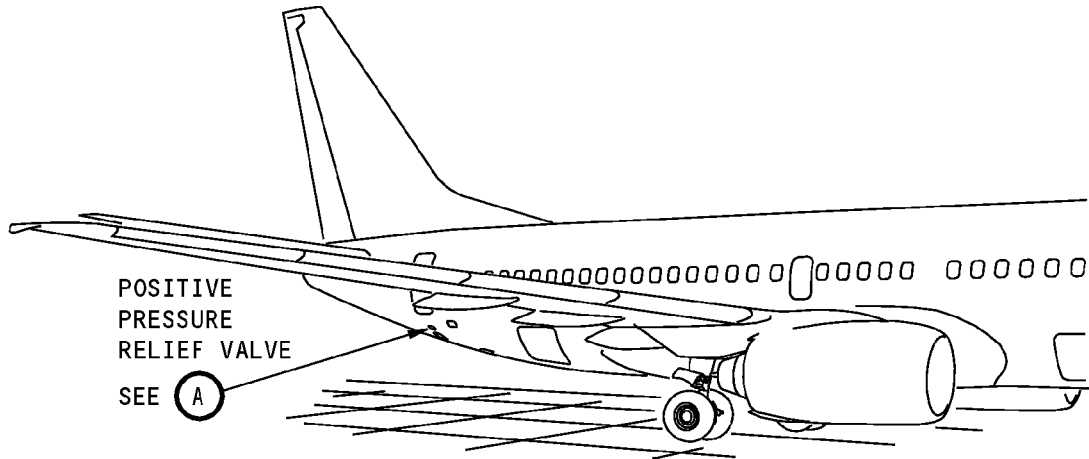
**B**

**Positive Pressure Relief Valve Test Setup  
Figure 501 (Sheet 2 of 2)/21-32-01-990-801**

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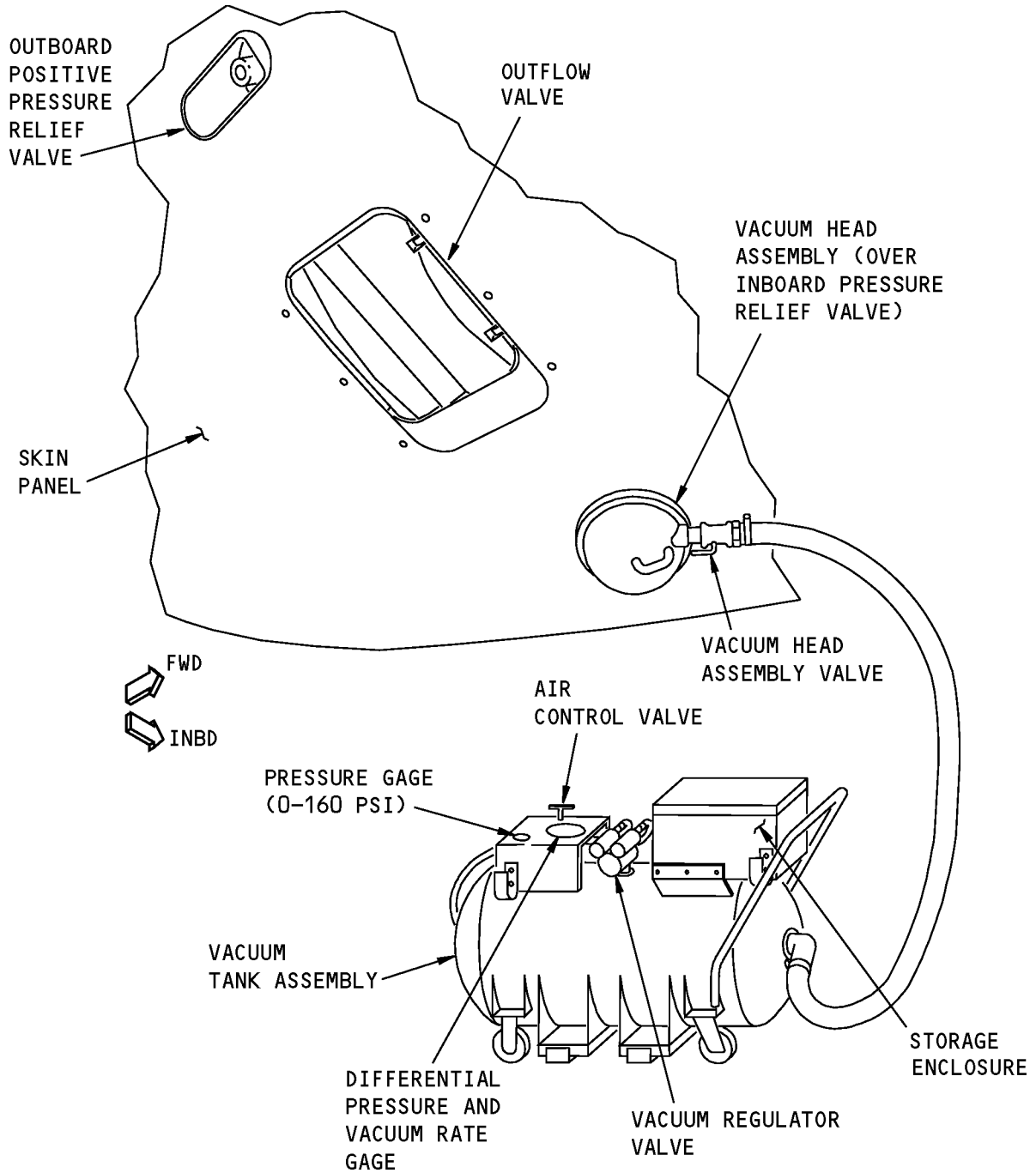
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**Positive Pressure Relief Valve Test Setup  
Figure 502 (Sheet 1 of 2)/21-32-01-990-803**

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**A21010 VACUUM TANK - RELIEF VALVE TEST**

**B**

**Positive Pressure Relief Valve Test Setup  
Figure 502 (Sheet 2 of 2)/21-32-01-990-803**

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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)

#### A. General

- (1) This procedure is a scheduled maintenance task.

#### B. 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)

#### C. Location Zones

Zone	Area
142	Aft Cargo Compartment - Right

#### D. 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).

#### E. 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** —————

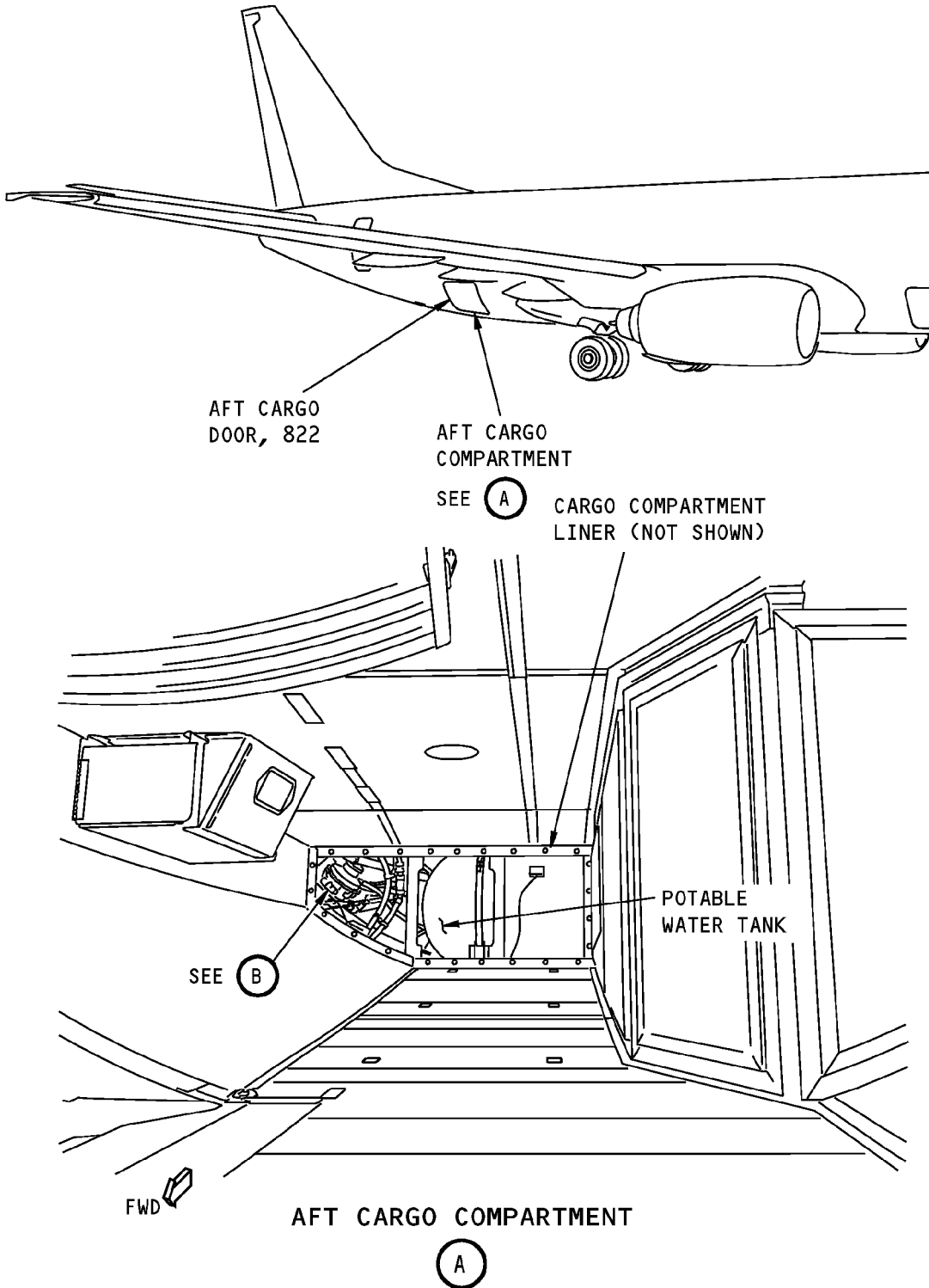
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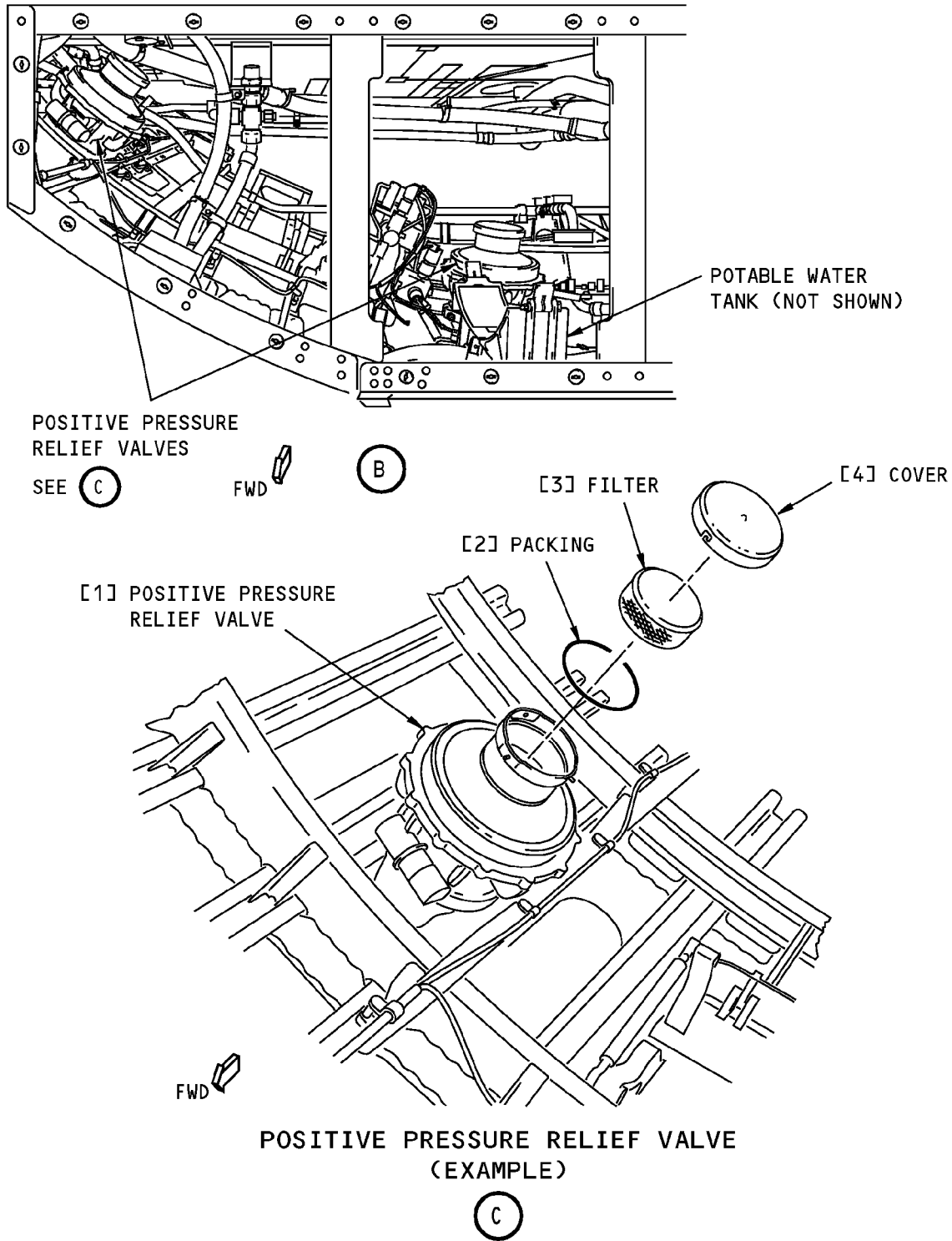
**Positive Pressure Relief Valve Filter Installation  
Figure 401 (Sheet 1 of 2)/21-32-02-990-801**

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**Positive Pressure Relief Valve Filter Installation  
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TASK 21-32-02-400-801

3. Positive Pressure Relief Valve Filter Installation

(Figure 401)

A. General

(1) This procedure is a scheduled maintenance task.

B. 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)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Packing	21-32-01-01-020	HAP ALL
3	Filter	21-32-01-01-025	HAP ALL
4	Cover	21-32-01-01-015	HAP ALL

D. Location Zones

Zone	Area
142	Aft Cargo Compartment - Right

E. 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.

F. 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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# AIRCRAFT MAINTENANCE MANUAL

## NEGATIVE PRESSURE RELIEF VENT DOOR - MAINTENANCE PRACTICES

### 1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
  - (1) Negative pressure relief vent door removal
  - (2) Negative pressure relief vent door installation
  - (3) Negative pressure relief vent door adjustment/test.

### **TASK 21-32-03-000-801**

### 2. Negative Pressure Relief Vent Door Removal

(Figure 201)

#### A. References

Reference	Title
25-52-06-000-801	Remove the Sidewall Lining for the Cargo Compartment (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: Remove the Sidewall Lining for the Cargo Compartment, TASK 25-52-06-000-801

#### D. Negative Pressure Relief Vent Door 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** —————

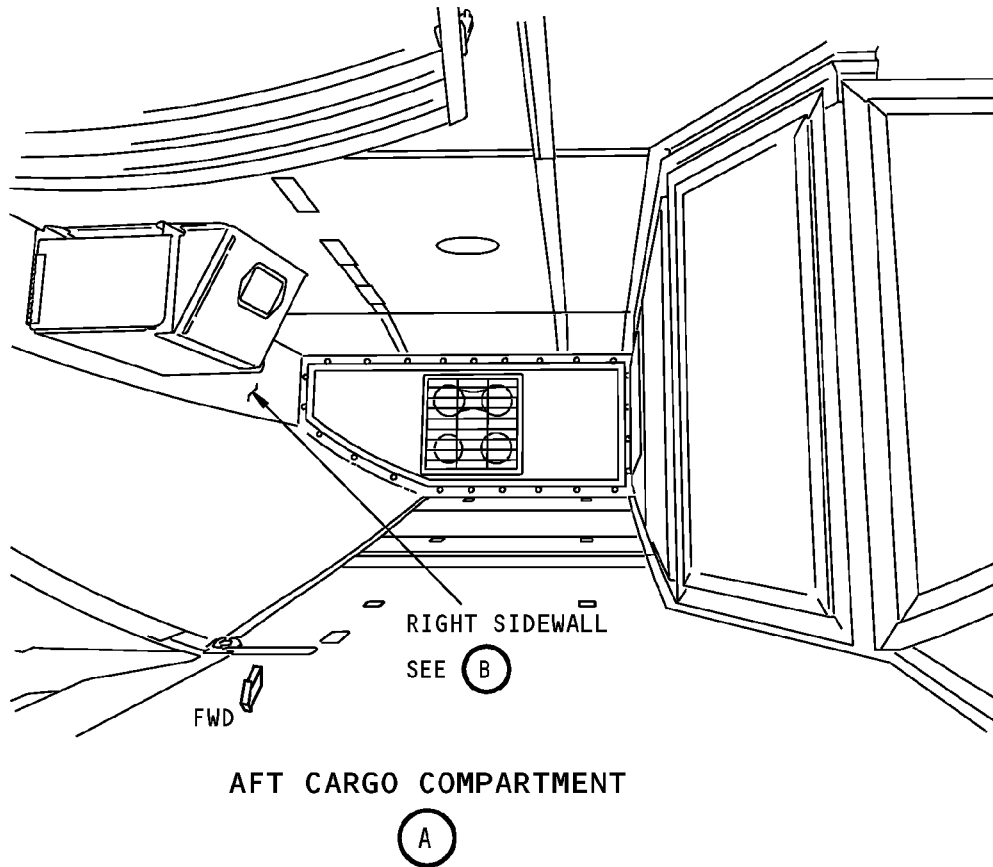
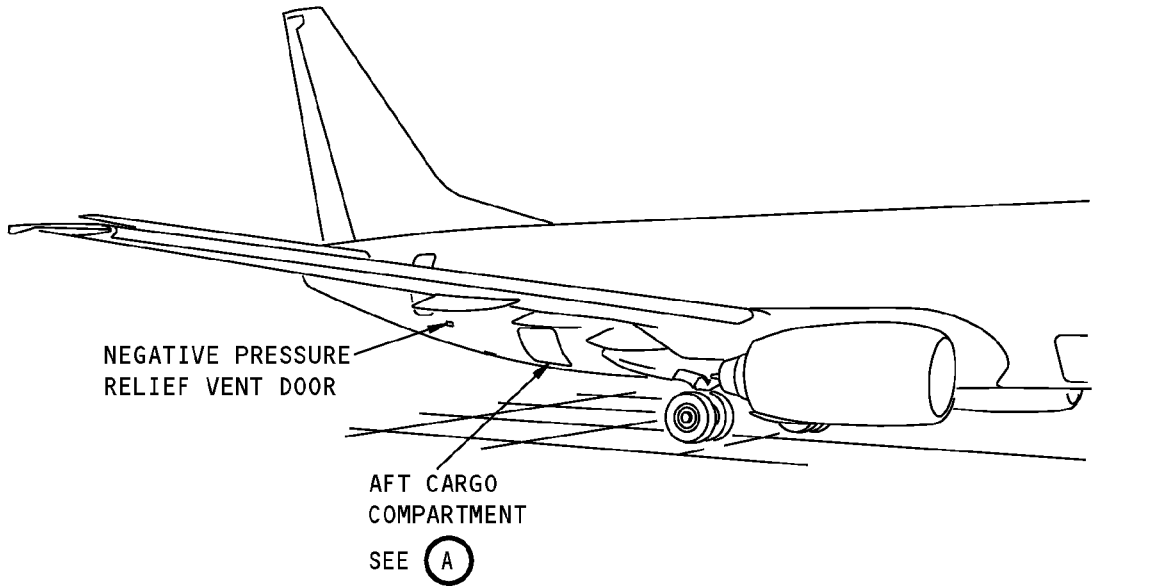
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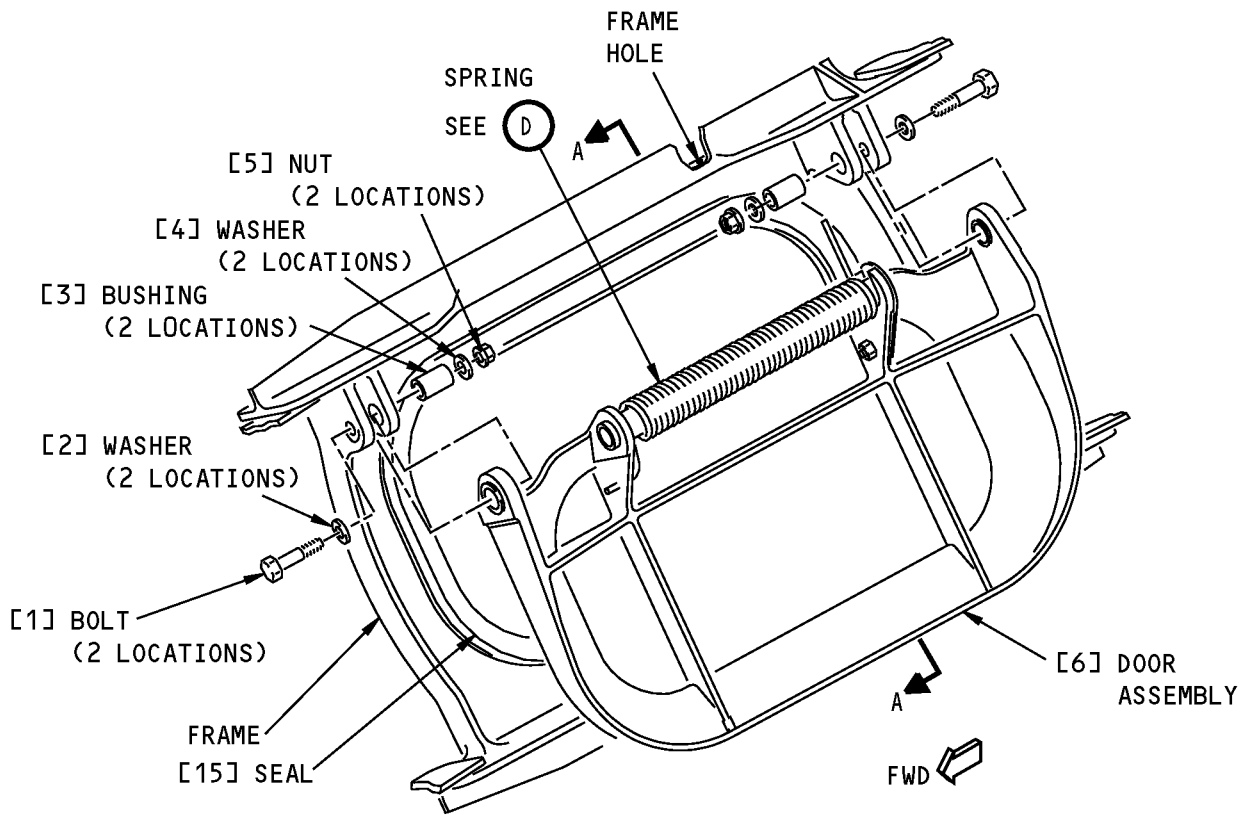
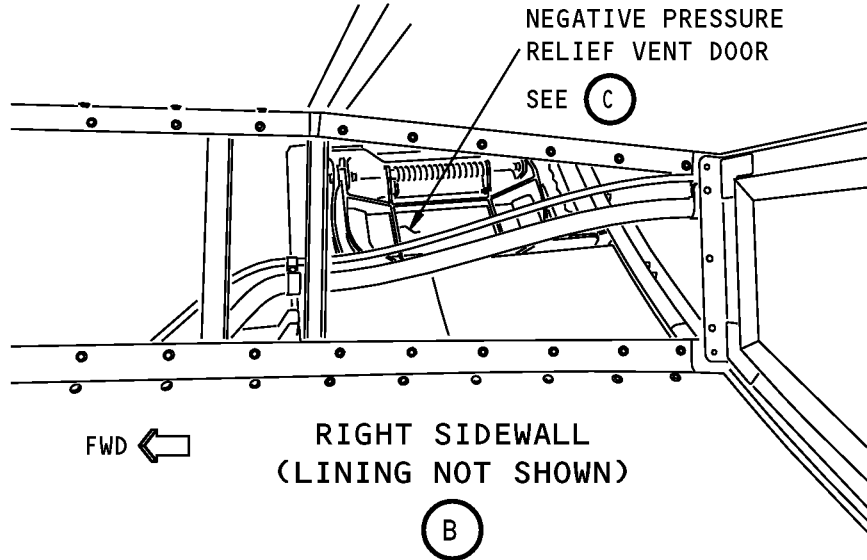


**Negative Pressure Relief Vent Door Installation  
Figure 201 (Sheet 1 of 3)/21-32-03-990-801**

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**NEGATIVE PRESSURE RELIEF VENT DOOR**

**Negative Pressure Relief Vent Door Installation**  
Figure 201 (Sheet 2 of 3)/21-32-03-990-801

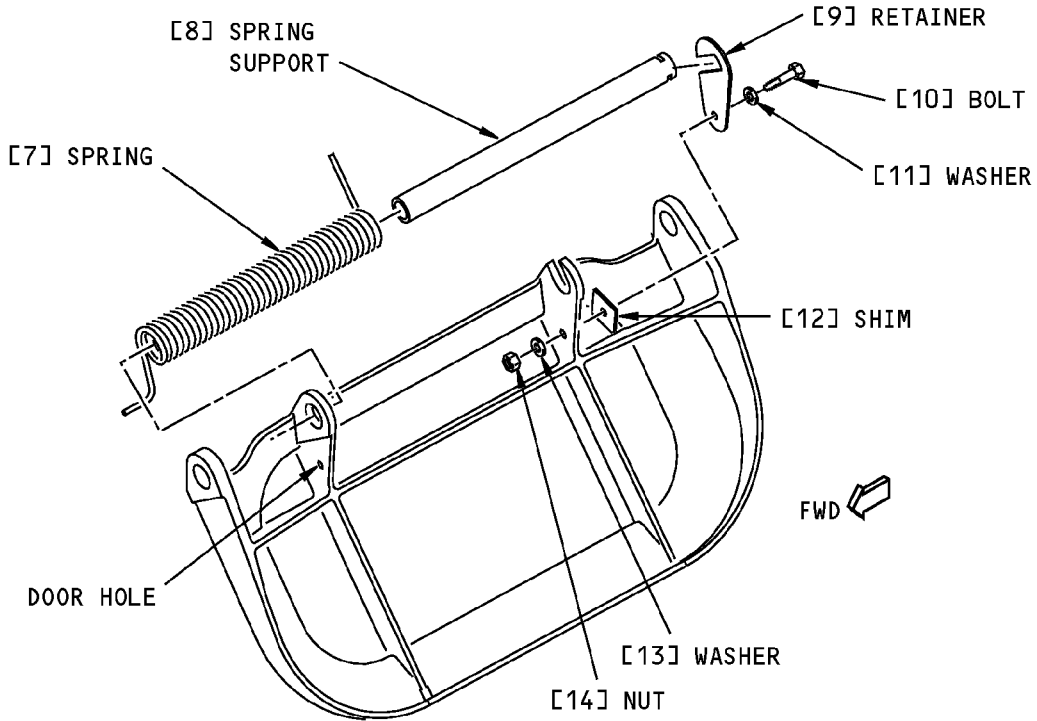
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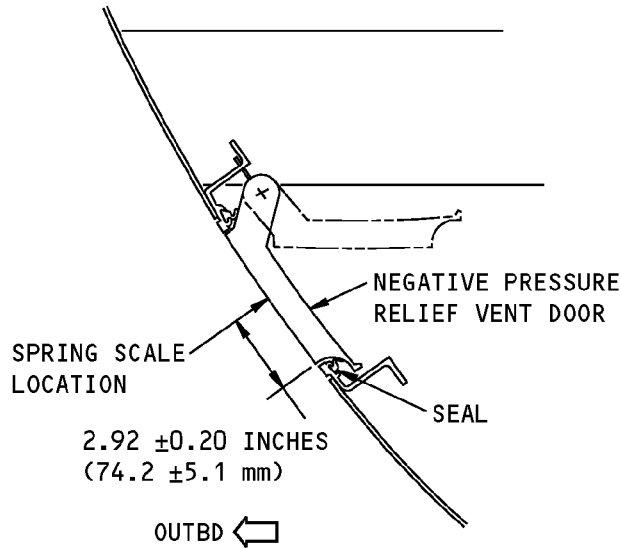
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**SPRING**



**A-A**

**Negative Pressure Relief Vent Door Installation**  
**Figure 201 (Sheet 3 of 3)/21-32-03-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

TASK 21-32-03-400-801

#### 3. Negative Pressure Relief Vent Door Installation

(Figure 201)

##### A. References

Reference	Title
25-52-06-400-801	Install the Sidewall Lining for the Cargo Compartment (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 Vent Door 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 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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# AIRCRAFT MAINTENANCE MANUAL

SUBTASK 21-32-03-720-001

(4) Do this task: Negative Pressure Relief Vent Door 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: Install the Sidewall Lining for the Cargo Compartment, TASK 25-52-06-400-801

————— END OF TASK —————

## TASK 21-32-03-700-801

### 4. Negative Pressure Relief Vent Door Adjustment/Test

A. General

(1) This procedure is a scheduled maintenance task.

B. Tools/Equipment

Reference	Description
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy

C. Location Zones

Zone	Area
142	Aft Cargo Compartment - Right

D. 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 vent door 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 vent door and  $2.92 \pm 0.20$  inches ( $74.2 \pm 5.1$  mm) above the lower edge of the relief vent 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 vent door.

(a) Keep the push/pull scale 0-25 pound (0-11 kilogram), STD-753 at approximately a 90° angle to the relief vent door.

SUBTASK 21-32-03-720-003

(3) Make sure the relief vent 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 vent 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 vent 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 vent 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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AIRCRAFT MAINTENANCE MANUAL

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

Table with 2 columns: Zone, Area. Row 1: 122, Forward Cargo Compartment - Right. Row 2: 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

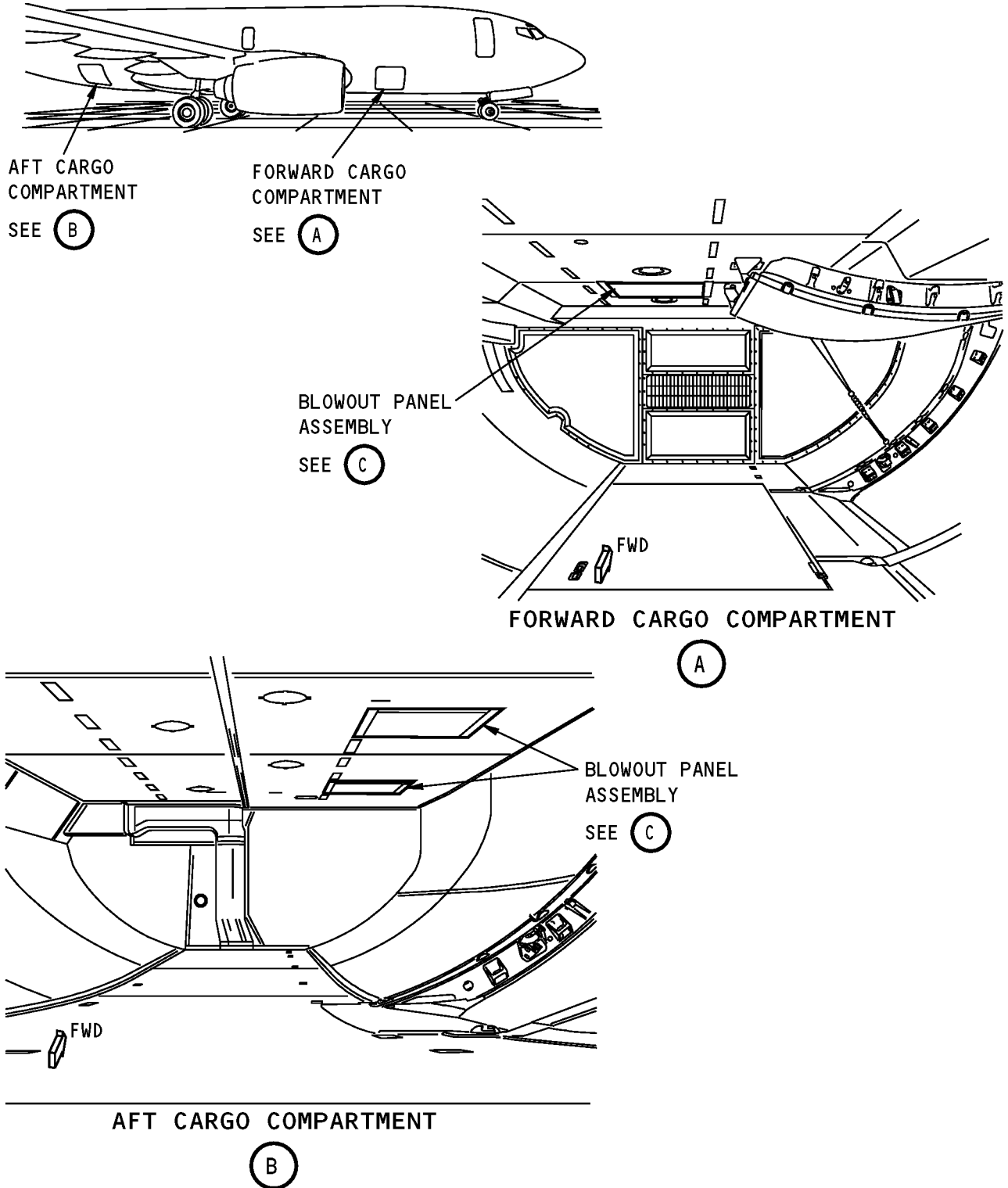
- (4) Slide out the blowout panel [1].

END OF TASK

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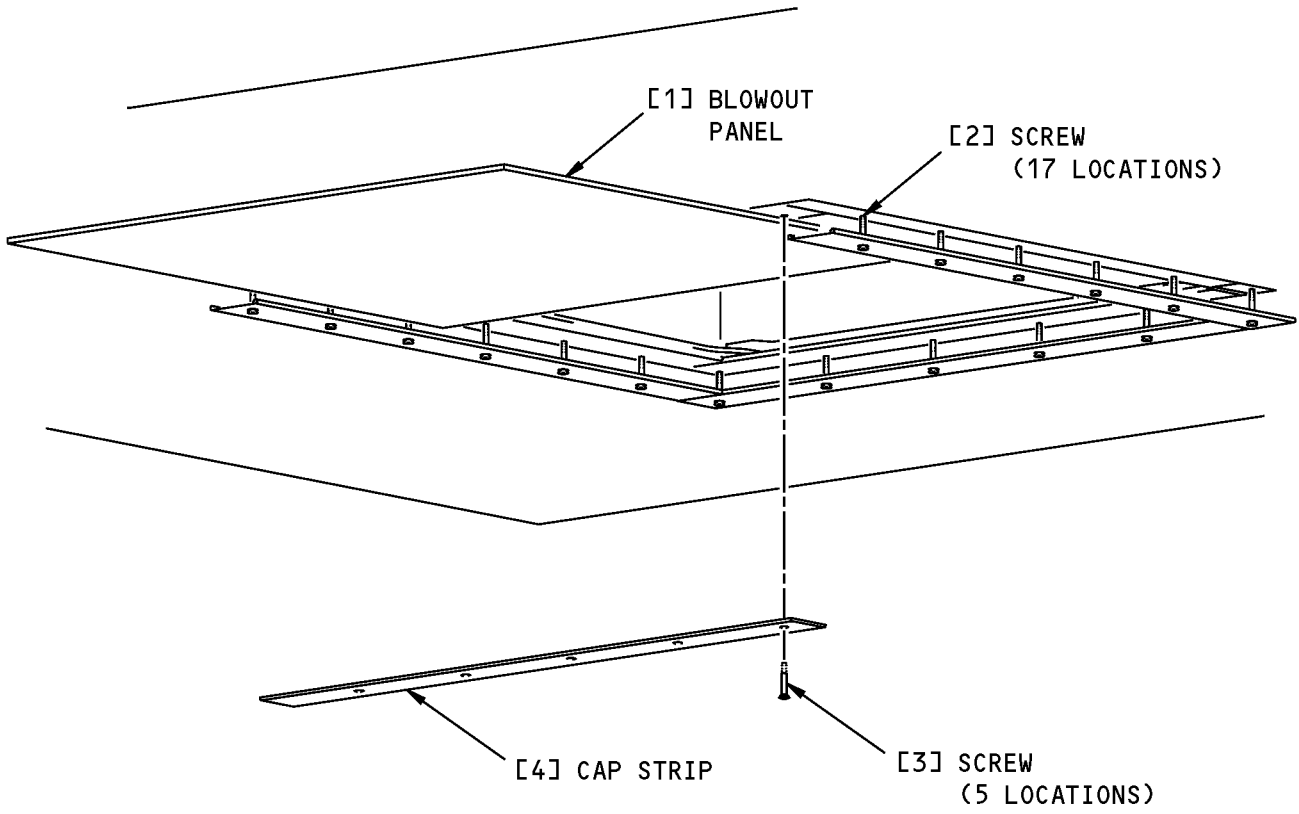
**AIRCRAFT MAINTENANCE MANUAL**



**Cargo Compartment Ceiling Blowout Panels Installation**  
Figure 401 (Sheet 1 of 2)/21-32-05-990-801

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**BLOWOUT PANEL ASSEMBLY**

(C)

**Cargo Compartment Ceiling Blowout Panels Installation  
Figure 401 (Sheet 2 of 2)/21-32-05-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

#### 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	25-52-09-01C-060	HAP 101-999
		25-52-09-02C-055	HAP 101-999
		25-52-09-04-040	HAP 001-013, 015-020
		25-52-09-04-190	HAP 021-026, 028-030
		25-52-09-04A-040	HAP 031-054
		25-52-09-06-145	HAP 001-013, 015-026, 028-030
		25-52-09-06B-175	HAP 031-054

##### 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).

##### 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 —————

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# AIRCRAFT MAINTENANCE MANUAL

## TASK 21-32-05-000-802

### 4. Cargo Compartment Bulkhead Blowout Panel Removal

(Figure 402)

#### A. References

Reference	Title
25-52-06-000-801	Remove the Sidewall Lining for the Cargo Compartment (P/B 401)

#### 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: Remove the Sidewall Lining for the Cargo Compartment, TASK 25-52-06-000-801.
  - (b) Loosten 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** —————

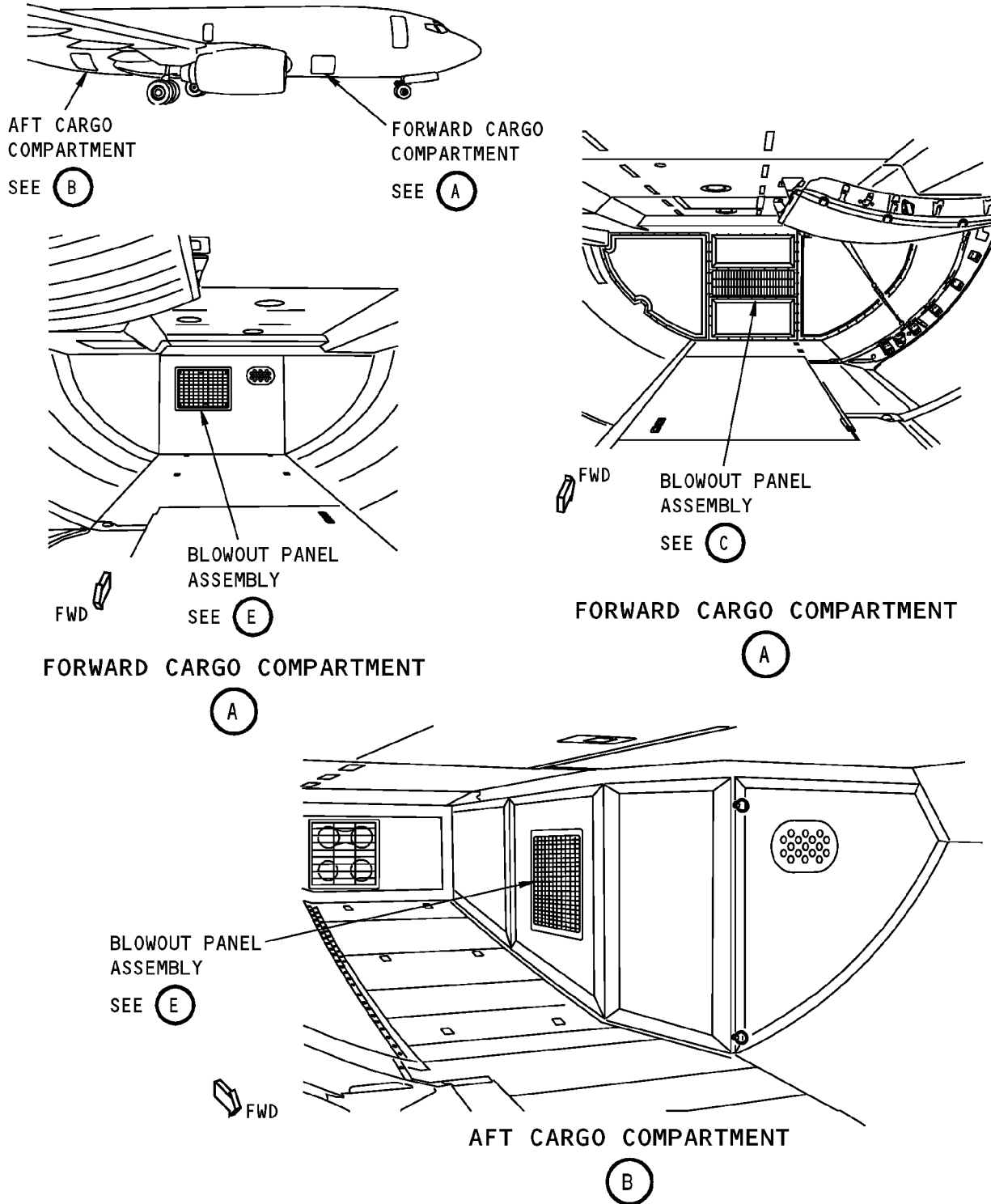
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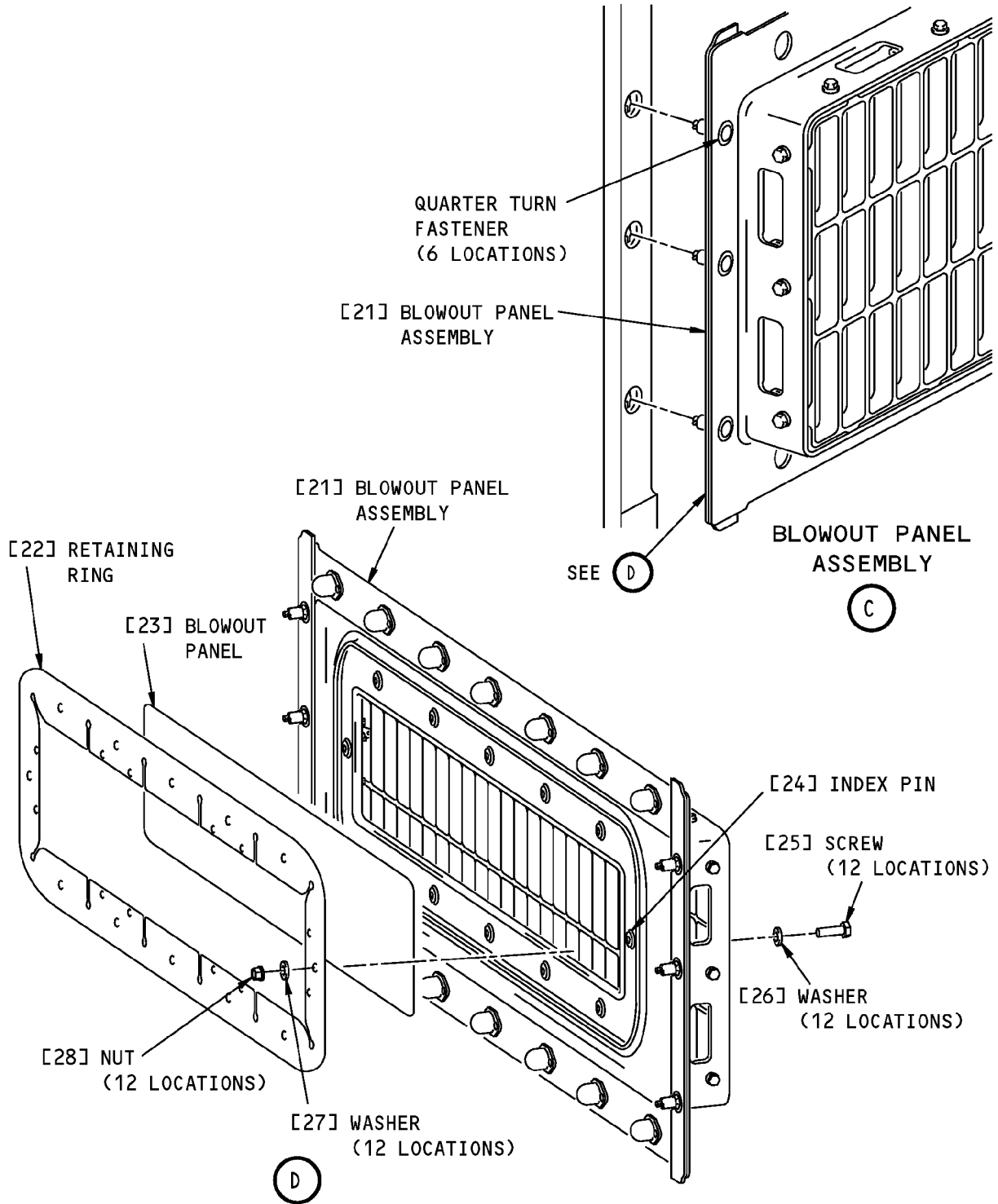
**Cargo Compartment Bulkhead Blowout Panels Installation**  
**Figure 402 (Sheet 1 of 3)/21-32-05-990-802**

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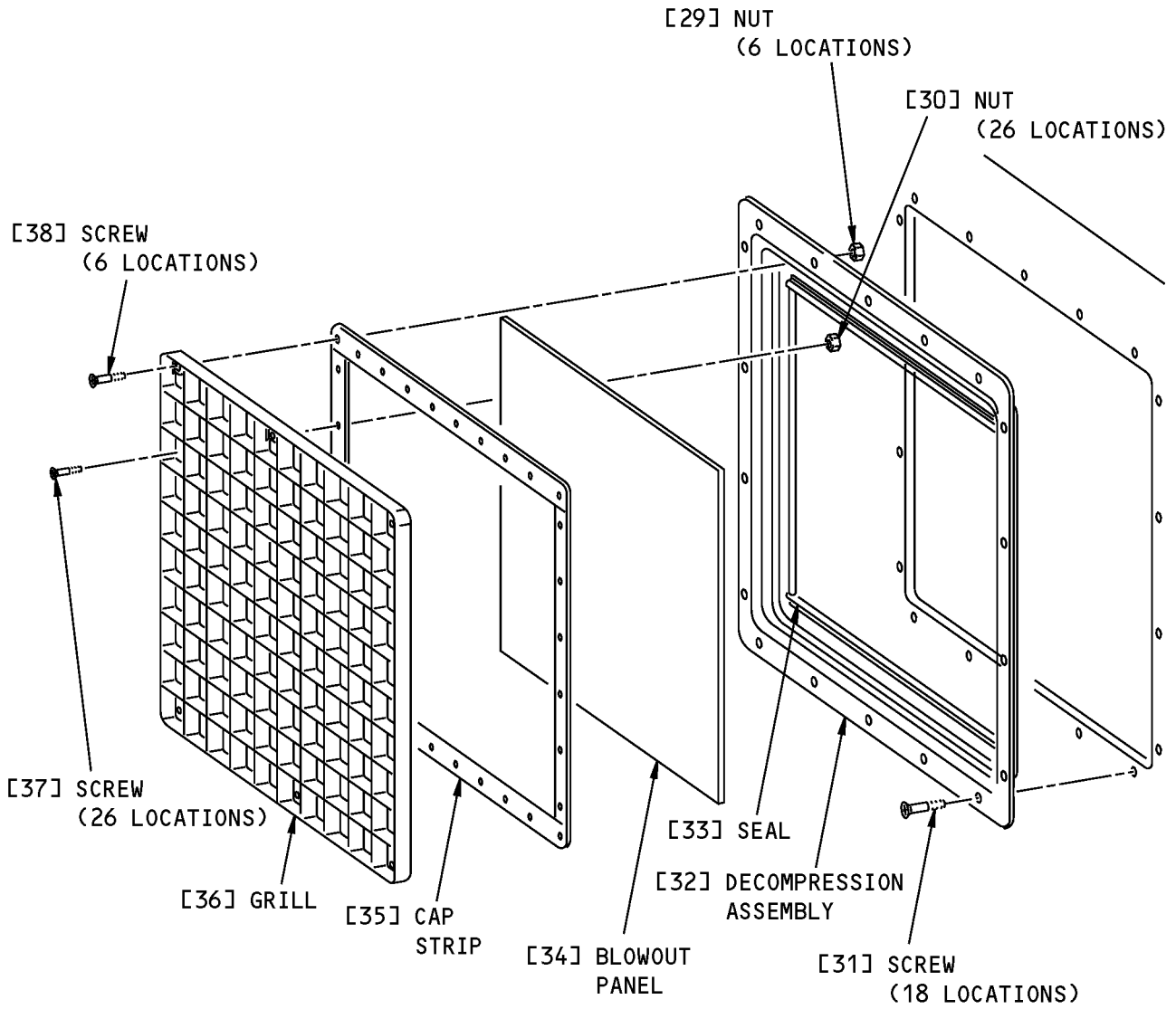
**Cargo Compartment Bulkhead Blowout Panels Installation**  
**Figure 402 (Sheet 2 of 3)/21-32-05-990-802**

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**BLOWOUT PANEL ASSEMBLY  
(EXAMPLE)**

(E)

**Cargo Compartment Bulkhead Blowout Panels Installation  
Figure 402 (Sheet 3 of 3)/21-32-05-990-802**

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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	Install the Sidewall Lining for the Cargo Compartment (P/B 401)

#### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
34	Panel	25-52-17-01B-255	HAP 101-999
		25-52-17-02-420	HAP 001-013, 015-026, 028-030
		25-52-17-02B-260	HAP 031-054
		25-52-20-01-170	HAP 001-013, 015-026, 028-030
		25-52-20-01B-160	HAP 031-054, 101-999

#### 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 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: Install the Sidewall Lining for the Cargo Compartment, 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.

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**AIRCRAFT MAINTENANCE MANUAL**

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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## AIRCRAFT MAINTENANCE MANUAL

### CABIN PRESSURE INDICATION SYSTEM - ADJUSTMENT/TEST

#### 1. General

A. This procedure contains scheduled maintenance task data.

#### **HAP 001-013, 015-026, 028-047, 054, 101-106**

B. This procedure has one task. The task is a functional test of the cabin altitude warning switch S128.

C. The cabin altitude warning switch S128 is installed in the area forward of the nose landing gear wheel well and just below the cabin floor.

#### **HAP 048-053, 107-999**

D. This procedure has one task. The task is a functional test of the cabin altitude warning switches S128 and S1153.

E. 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.

#### **HAP 047, 106**

F. Cabin altitude warning switch S1153 is installed, but it is not operational. The wiring to S1153 is capped and stowed.

#### **HAP ALL**

G. 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)

##### 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.

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# AIRCRAFT MAINTENANCE MANUAL

Reference	Description
COM-1914	<p>Test Set - Air Data Model FLMTS (Flight Line Maintenance)</p> <p>(Part #: 1891092000, Supplier: 89944, A/P Effectivity: 737-ALL)</p> <p>(Part #: 6005KTQA1-103, Supplier: 35012, A/P Effectivity: 737-ALL)</p> <p>(Part #: ADC800, Supplier: 41364, A/P Effectivity: 737-ALL)</p> <p>(Part #: ADTS405F, Supplier: U0427, A/P Effectivity: 737-ALL)</p> <p>(Part #: ADTS505, Supplier: U0427, A/P Effectivity: 737-ALL)</p> <p>(Part #: ADTS530, Supplier: U0427, A/P Effectivity: 737-ALL)</p> <p>(Part #: D60340, Supplier: K1474, A/P Effectivity: 737-ALL)</p> <p>(Part #: D60383, Supplier: K1474, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -ALL, -BBJ)</p> <p>(Part #: DPS350, Supplier: 21844, A/P Effectivity: 737-ALL)</p> <p>(Part #: DPS450, Supplier: 21844, A/P Effectivity: 737-ALL)</p> <p>(Part #: DPS500, Supplier: 21844, A/P Effectivity: 737-ALL)</p> <p>(Part #: MODEL 6300, Supplier: 0RD25, A/P Effectivity: 737-ALL)</p> <p>(Part #: MPS31C, Supplier: 48RQ2, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -ALL, -BBJ)</p> <p>(Part #: MPS34C, Supplier: 48RQ2, A/P Effectivity: 737-100, -200, -200C, -300, -400, -500, -600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -ALL, -BBJ)</p> <p>(Part #: TES9463, Supplier: 88277, A/P Effectivity: 737-ALL)</p> <p>(Opt Part #: 18910480000, Supplier: 89944, A/P Effectivity: 737-ALL)</p> <p>(Opt Part #: D60302, Supplier: K1474, A/P Effectivity: 737-ALL)</p>

### C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

### D. Access Panels

Number	Name/Location
112A	Forward Access Door

### E. General

SUBTASK 21-33-00-800-001

- (1) This procedure is a scheduled maintenance task.

#### HAP 044-047, 054, 102-106

SUBTASK 21-33-00-720-008

- (2) The CABIN ALTITUDE indicator lights installed on the captains's instrument panel P1-3 and the first officer's instrument panel P3-1 have been placarded inoperative. However, these indicator lights will come on when the LIGHTS switch on the captain's instrument panel P1-3 is set to the TEST position.

#### HAP ALL

### 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.

EFFECTIVITY
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SUBTASK 21-33-00-860-002

(2) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	17	C00129	LANDING GEAR LATCH & PRESS WARN

(2) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 21-33-00-010-001

(3) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door

**G. Cabin Altitude Warning Switch Functional Test**

**HAP 048-053, 107-999**

SUBTASK 21-33-00-030-001

(1) Disconnect electrical connector D14284 from cabin altitude warning switch, S1153.

**HAP ALL**

SUBTASK 21-33-00-480-001

(2) Remove the screen port assembly from the cabin altitude warning switch, S128.

SUBTASK 21-33-00-480-002

(3) Install an adapter fitting on the cabin altitude warning switch, S128.

**NOTE:** The adapter fitting must be compatible with the MS33514-4 Style E female threads on the cabin altitude warning switch.

SUBTASK 21-33-00-480-003

(4) Connect the air data model test set, COM-1914, or equivalent, to the adapter fitting.

SUBTASK 21-33-00-780-012

(5) Slowly increase the altitude of the cabin altitude warning switch, S128, and monitor the altimeter.

**NOTE:** Do not increase the altitude at a rate more than 4,000 ft/minute.

SUBTASK 21-33-00-780-003

(6) Make sure the aural warning signal comes on at an altitude of 9000 to 11,000 feet.

**HAP 048-053, 107-999**

SUBTASK 21-33-00-720-003

(7) 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.

**HAP ALL**

SUBTASK 21-33-00-780-013

(8) Press the ALT HORN CUTOUT switch on the P5-16 Cabin Pressure Control Panel.

<p><b>EFFECTIVITY</b></p> <p><b>HAP ALL</b></p>	
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SUBTASK 21-33-00-780-014

- (9) Make sure the aural warning signal goes off.

**HAP 048-053, 107-999**

SUBTASK 21-33-00-710-001

- (10) 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.

**HAP ALL**

SUBTASK 21-33-00-780-004

- (11) Decrease the altitude on the cabin altitude warning switch, S128, to approximately 1700 feet below the altitude at which the aural warning came on.

NOTE: Do not decrease the altitude at a rate more than 4,000 ft/minute.

**HAP 048-053, 107-999**

SUBTASK 21-33-00-720-004

- (12) Make sure the CABIN ALTITUDE indicators on the captain's instrument panel P1 and the first officer's instrument panel P3 go off.

**HAP ALL**

SUBTASK 21-33-00-780-007

- (13) Increase the altitude on the cabin altitude warning switch, S128, while you monitor the altimeter.

NOTE: Do not increase the altitude at a rate more than 4,000 ft/minute.

SUBTASK 21-33-00-780-015

- (14) Make sure the aural warning signal comes on again at an altitude of 9000 to 11,000 feet.

**HAP 048-053, 107-999**

SUBTASK 21-33-00-720-005

- (15) 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.

**HAP ALL**

SUBTASK 21-33-00-780-010

- (16) Decrease the altitude on the cabin altitude warning switch, S128, to ground level.

NOTE: Do not decrease the altitude at a rate more than 4,000 ft/minute.

SUBTASK 21-33-00-780-011

- (17) Make sure the aural warning signal goes off.

**HAP 048-053, 107-999**

SUBTASK 21-33-00-720-006

- (18) 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.

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HAP ALL

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## AIRCRAFT MAINTENANCE MANUAL

HAP 048-053, 107-999 (Continued)

### HAP ALL

SUBTASK 21-33-00-080-001

- (19) Remove the air data model test set, COM-1914, or equivalent, and the adapter fitting from the cabin altitude warning switch, S128.

SUBTASK 21-33-00-410-001

- (20) Install the screen port assembly on the cabin altitude warning switch, S128.

### HAP 048-053, 107-999

SUBTASK 21-33-00-030-002

- (21) Disconnect electrical connector D776 from cabin altitude warning switch S128.

SUBTASK 21-33-00-430-001

- (22) Reconnect electrical connector D14284 to cabin altitude warning switch S1153.

SUBTASK 21-33-00-030-003

- (23) Remove the screen port assembly from the cabin altitude warning switch S1153.

SUBTASK 21-33-00-480-004

- (24) Install an adapter fitting on the cabin altitude warning switch S1153.

**NOTE:** The adapter fitting must be compatible with the MS33514-4 Style E female threads on the cabin altitude warning switch.

SUBTASK 21-33-00-480-005

- (25) Connect the air data model test set, COM-1914, or equivalent, to the adapter fitting.

SUBTASK 21-33-00-780-016

- (26) Slowly increase the altitude of the cabin altitude warning switch S1153 and monitor the altimeter.

**NOTE:** Do not increase the altitude at a rate more than 4000 ft/minute.

SUBTASK 21-33-00-720-010

- (27) Make sure the aural warning signal comes on at an altitude of 9000 to 11,000 feet.

SUBTASK 21-33-00-720-014

- (28) 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.

SUBTASK 21-33-00-860-005

- (29) Press the ALT HORN CUTOFF switch on the P5-16 Cabin Pressure Control Panel.

SUBTASK 21-33-00-720-011

- (30) Make sure the aural warning signal goes off.

SUBTASK 21-33-00-720-015

- (31) 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.

SUBTASK 21-33-00-780-017

- (32) Decrease the altitude on the cabin altitude warning switch S1153 to approximately 1700 feet below the altitude at which the aural warning came on.

**NOTE:** Do not decrease the altitude at a rate more than 4000 ft/minute.

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HAP ALL

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# AIRCRAFT MAINTENANCE MANUAL

HAP 048-053, 107-999 (Continued)

SUBTASK 21-33-00-720-016

(33) 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.

SUBTASK 21-33-00-780-018

(34) Increase the altitude on the cabin altitude warning switch S1153 while you monitor the altimeter.

NOTE: Do not increase the altitude at a rate more than 4000 ft/minute.

SUBTASK 21-33-00-720-012

(35) Make sure the aural warning signal comes on again at an altitude of 9000 to 11,000 feet.

SUBTASK 21-33-00-720-013

(36) 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.

SUBTASK 21-33-00-780-019

(37) Decrease the altitude on the cabin altitude warning switch S1153 to ground level.

NOTE: Do not decrease the altitude at a rate more than 4000 ft/minute.

SUBTASK 21-33-00-710-002

(38) Make sure the aural warning signal goes off.

SUBTASK 21-33-00-720-017

(39) 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.

SUBTASK 21-33-00-860-006

(40) If the MASTER CAUTION or AIR COND annunciator lights are on, push and release one of the two MASTER CAUTION lights.

SUBTASK 21-33-00-080-002

(41) Remove the air data model test set, COM-1914, or equivalent, and the adapter fitting from the cabin altitude warning switch S1153.

SUBTASK 21-33-00-430-002

(42) Install the screen port assembly on the cabin altitude warning switch S1153.

SUBTASK 21-33-00-430-003

(43) Reconnect electrical connector D776 to cabin altitude warning switch S128.

## HAP ALL

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-33-00-410-002

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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 —————

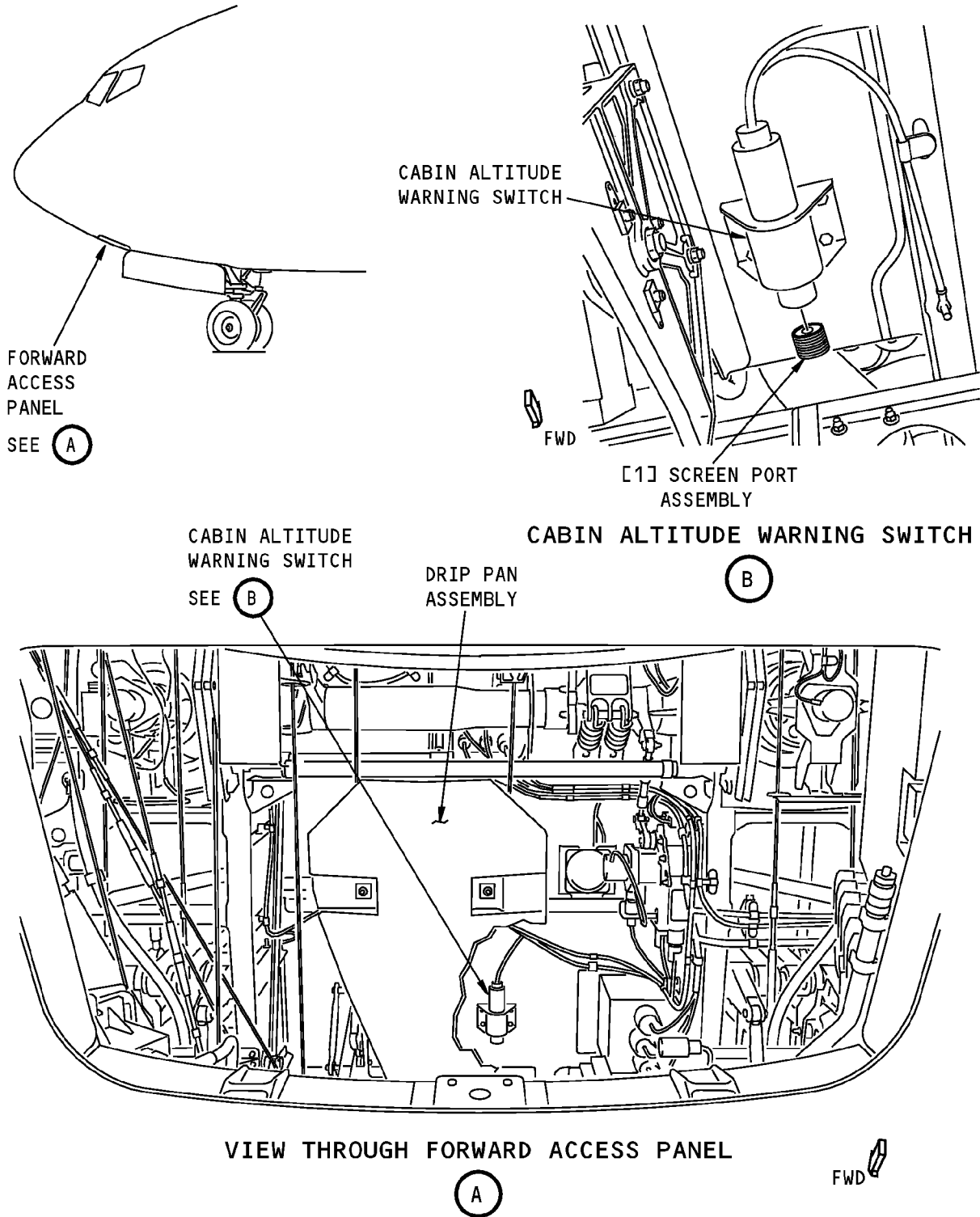
EFFECTIVITY
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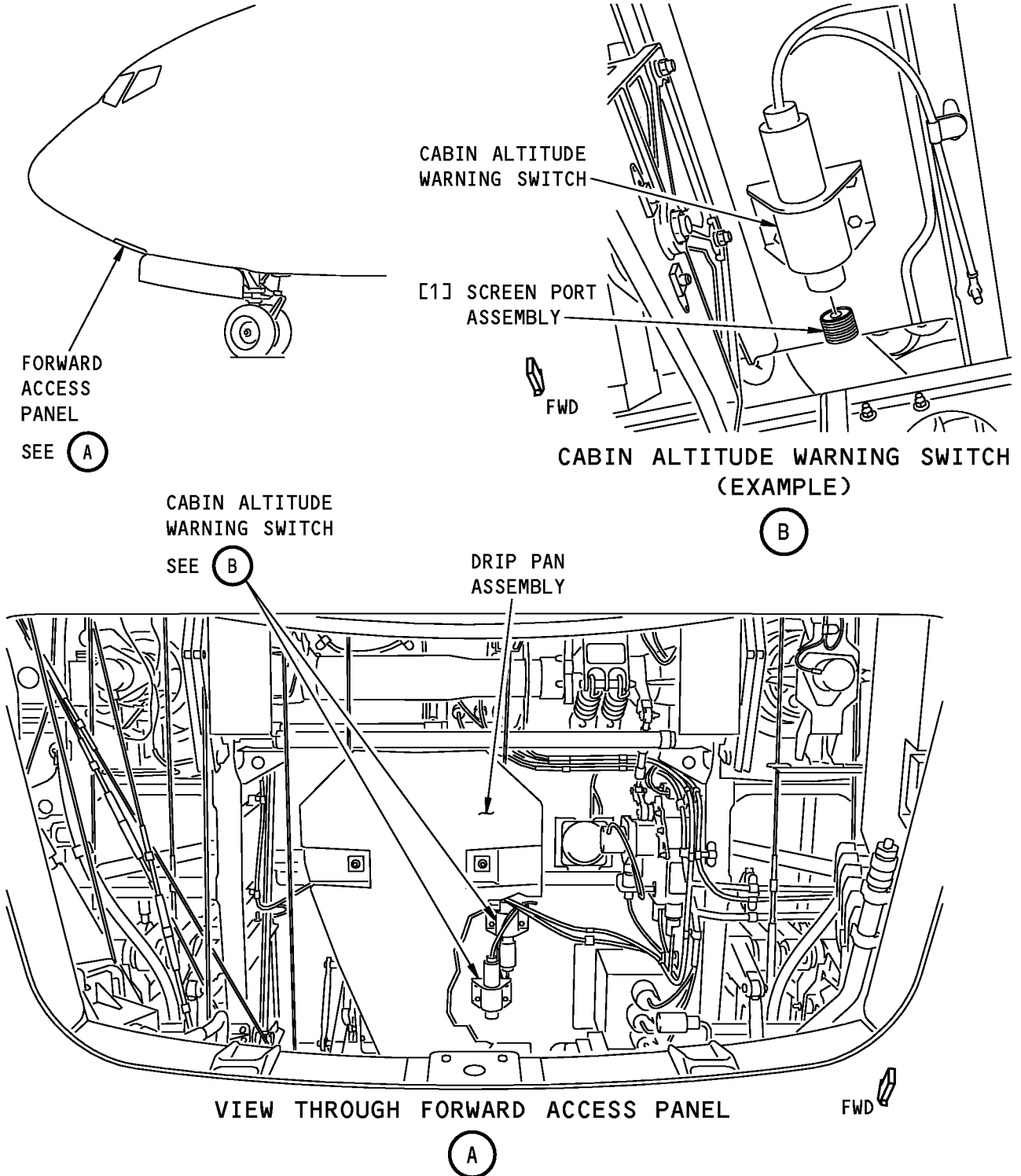




**Cabin Altitude Warning Switch Test**  
**Figure 501 (Sheet 1 of 2)/21-33-00-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-047, 054, 101-106

**21-33-00**



1553059 S0000283331\_V1

**Cabin Altitude Warning Switch Test  
Figure 501 (Sheet 2 of 2)/21-33-00-990-801**

EFFECTIVITY  
HAP 048-053, 107-999

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## AIRCRAFT MAINTENANCE MANUAL

### 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** —————

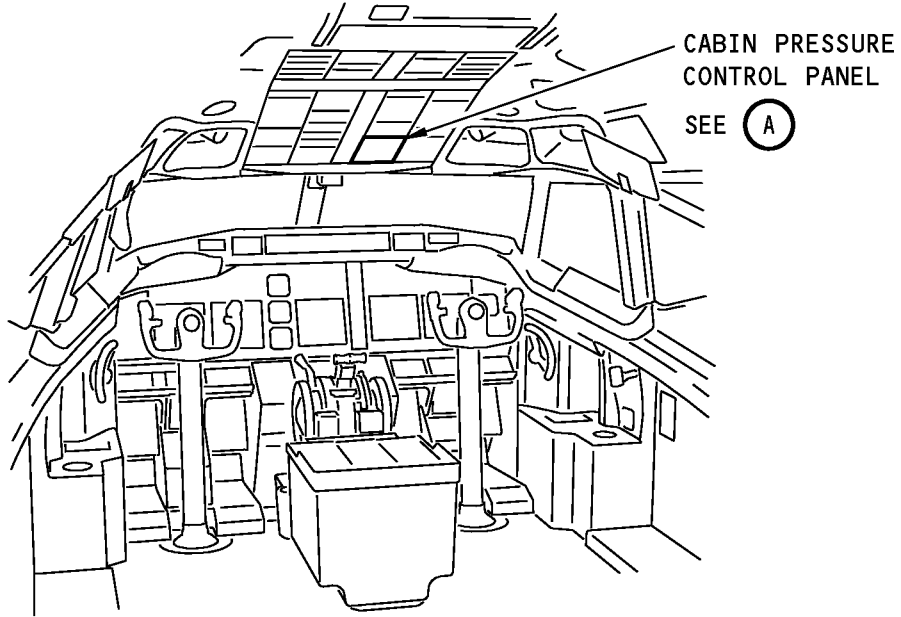
EFFECTIVITY  
HAP ALL

D633A101-HAP

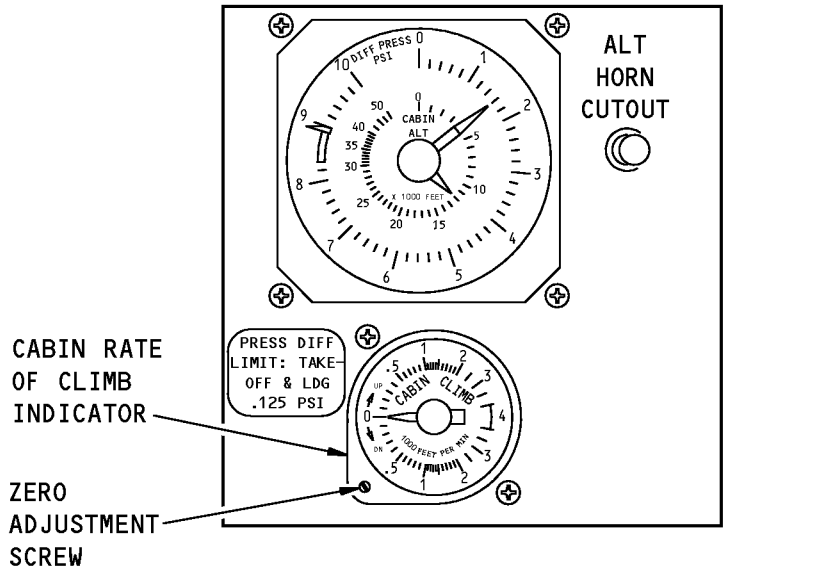
# 21-33-00

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**FLIGHT COMPARTMENT**



**CABIN PRESSURE CONTROL PANEL (P5-16)**

(A)

1823796 S0000318754\_V1

**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 Pressure Control Panel.
- C. The P5-16 Cabin Pressure Control Panel 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. Cabin Rate of Climb Indicator Removal

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.

- (1) Loosen the clamp tension screw [1].

SUBTASK 21-33-01-020-002

- (2) Carefully pull the cabin rate of climb indicator [3] out of the P5-16 panel [4].

SUBTASK 21-33-01-020-003

- (3) Disconnect the electrical connector [2] from the cabin rate of climb indicator [3].

————— **END OF TASK** —————

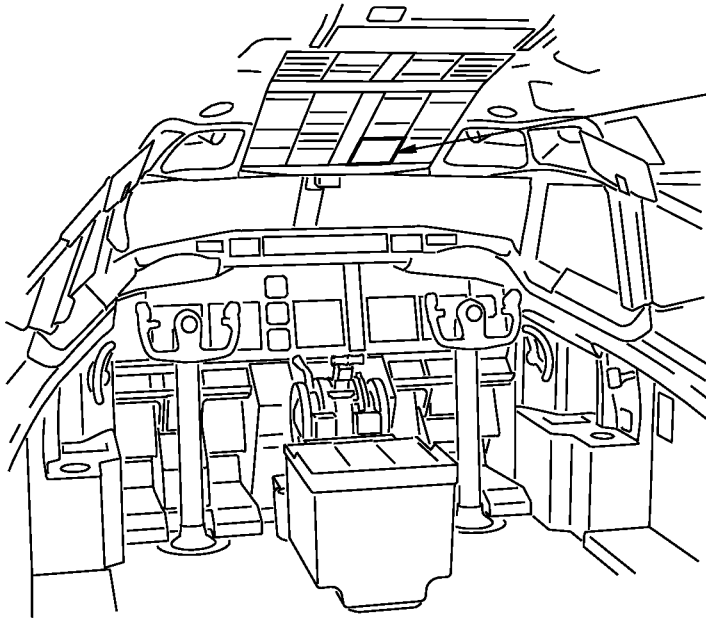
<p>EFFECTIVITY</p> <p>HAP ALL</p>	
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**AIRCRAFT MAINTENANCE MANUAL**



CABIN PRESSURE CONTROL PANEL

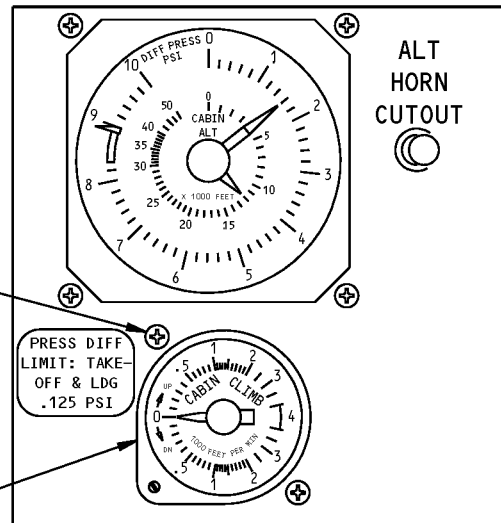
SEE (A)

**FLIGHT COMPARTMENT**

[1] CLAMP TENSION SCREW

CABIN RATE OF CLIMB INDICATOR

SEE (B)



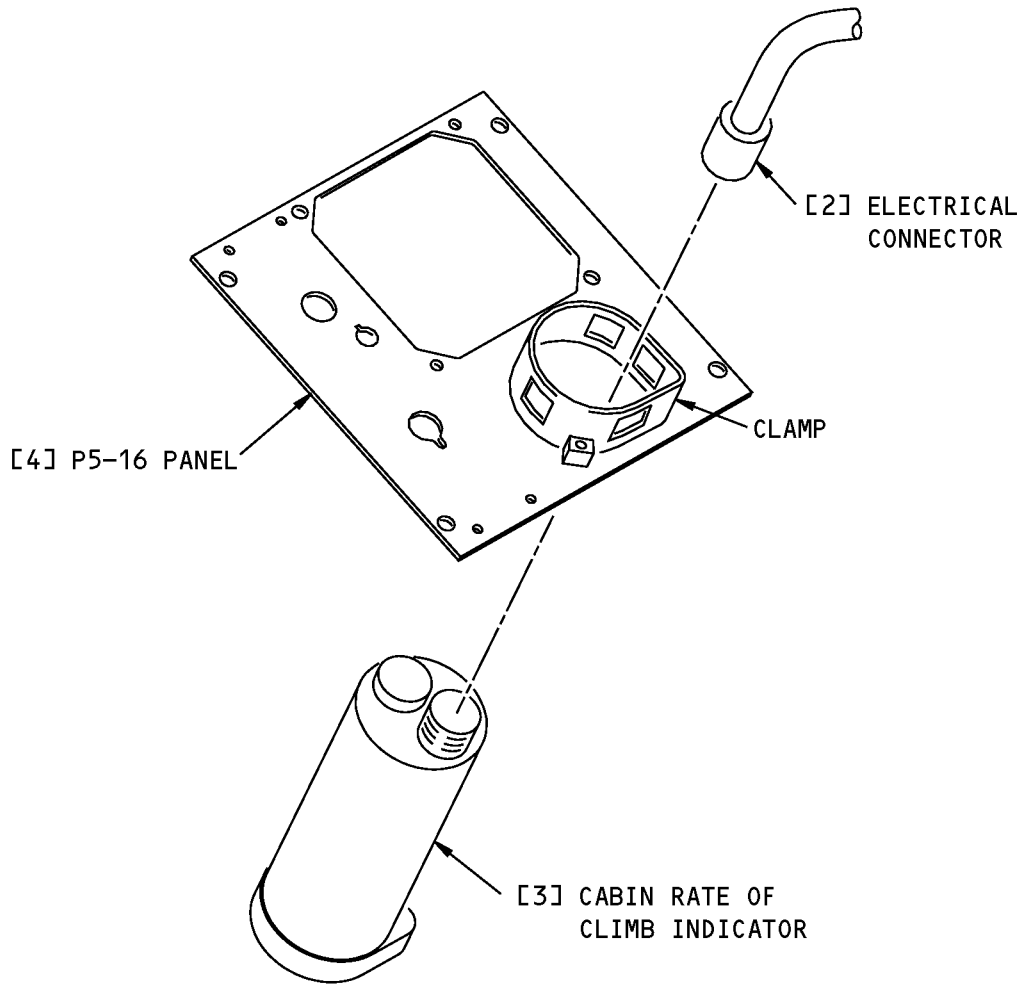
**CABIN PRESSURE CONTROL PANEL (P5-16)**

(A)

**Cabin Rate of Climb Indicator Installation  
Figure 401 (Sheet 1 of 2)/21-33-01-990-801**

EFFECTIVITY  
HAP ALL

**21-33-01**



**CABIN RATE OF CLIMB INDICATOR**

**B**

**Cabin Rate of Climb Indicator Installation  
Figure 401 (Sheet 2 of 2)/21-33-01-990-801**

EFFECTIVITY  
HAP ALL

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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	21-33-01-01B-050	HAP 001-013, 015-026, 028
		21-33-01-02-020	HAP 031-054, 101-999
		21-33-01-03-005	HAP 029, 030

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Cabin Rate of Climb Indicator Installation

SUBTASK 21-33-01-420-001

(1) Connect the electrical connector [2] to the cabin rate of climb indicator [3].

SUBTASK 21-33-01-820-001

(2) Carefully push the cabin rate of climb indicator [3] into its position in the P5-16 panel [4].

SUBTASK 21-33-01-420-002

(3) Tighten the clamp tension screw [1] 5 to 8 pound-inches (0.6 to 0.9 newton-meters).

NOTE: Hold the indicator [3] against the panel [4] while you tighten the screw [1].

SUBTASK 21-33-01-700-001

(4) 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

EFFECTIVITY
HAP ALL

21-33-01





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# AIRCRAFT MAINTENANCE MANUAL

## 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 21-33-02-020-001

**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.

- (1) Loosen the clamp tension screws [1].

SUBTASK 21-33-02-020-002

- (2) Carefully pull the cabin altitude and differential pressure indicator [6] out of the P5-16 panel [7].

SUBTASK 21-33-02-020-003

- (3) Disconnect the electrical connector [5] from the cabin altitude and differential pressure indicator [6].

SUBTASK 21-33-02-020-004

- (4) Disconnect the static pressure hose [4] from the male quick-disconnect [2].

SUBTASK 21-33-02-020-005

- (5) Remove the male quick-disconnect [2] and the packing [3] from the cabin altitude and differential pressure indicator [6].

- (a) Discard the packing [3].

————— **END OF TASK** —————

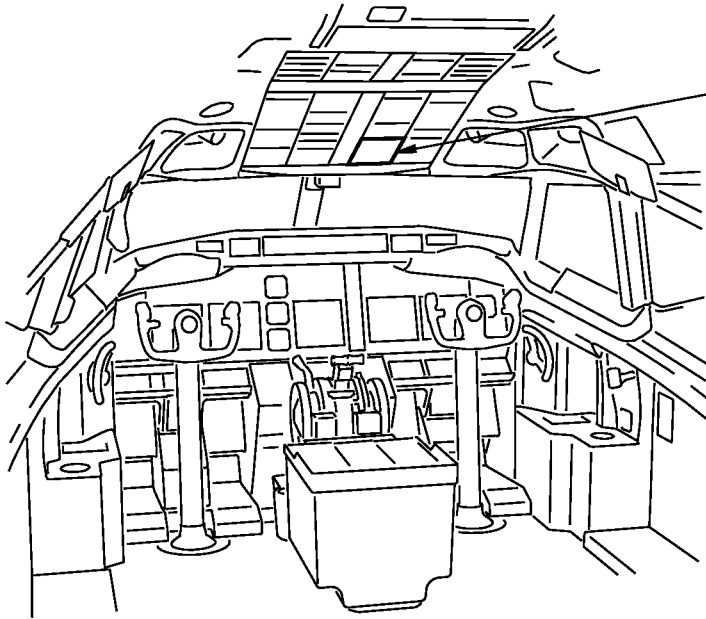
EFFECTIVITY HAP ALL
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**AIRCRAFT MAINTENANCE MANUAL**



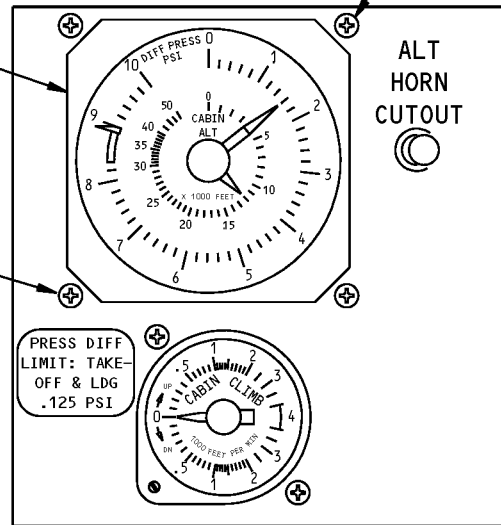
CABIN PRESSURE CONTROL PANEL  
SEE (A)

**FLIGHT COMPARTMENT**

CABIN ALTITUDE AND DIFFERENTIAL PRESSURE INDICATOR  
SEE (B)

[1] CLAMP TENSION SCREW

[1] CLAMP TENSION SCREW



**CABIN PRESSURE CONTROL PANEL (P5-16)**

(A)

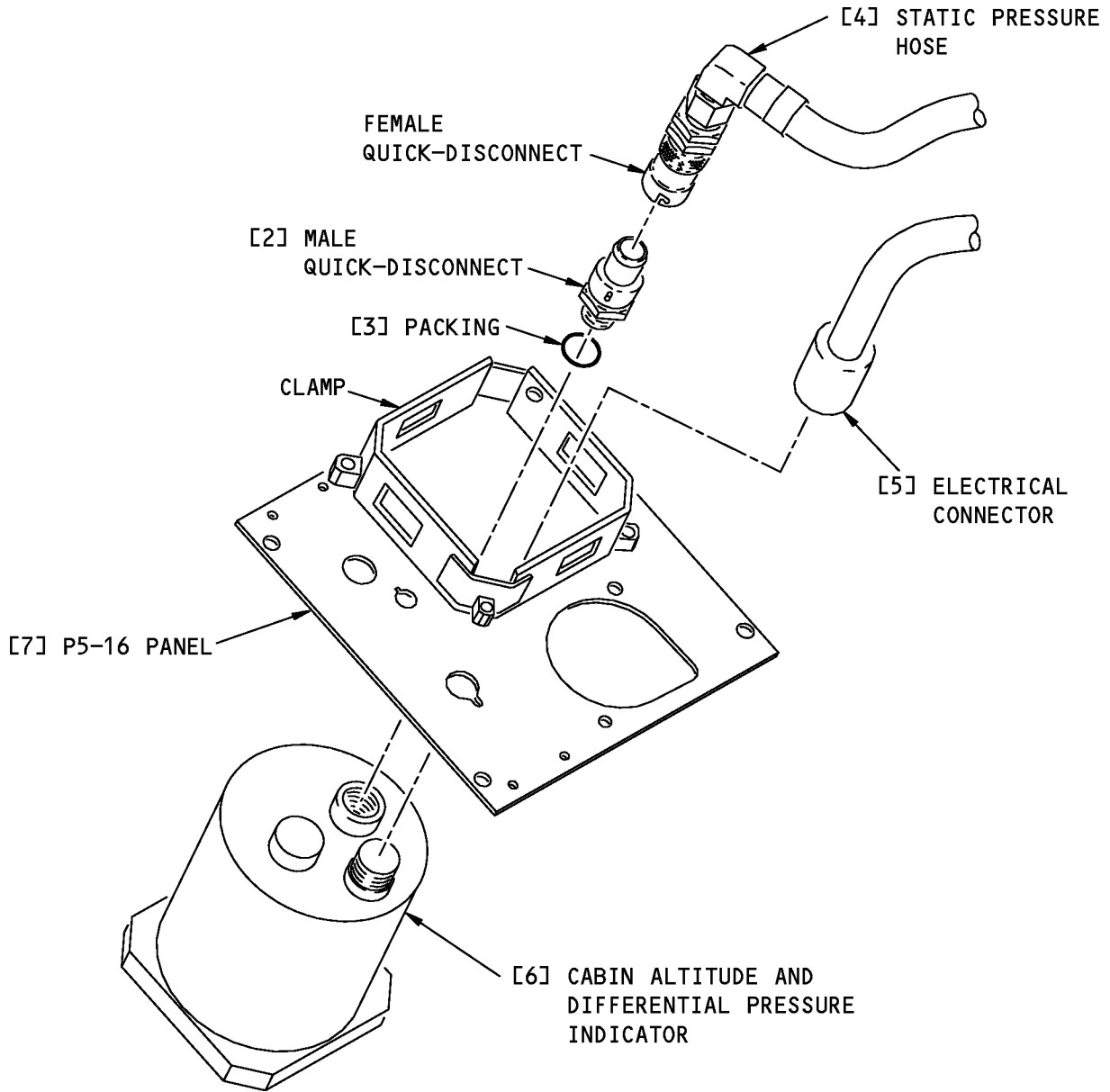
**Cabin Altitude and Differential Pressure Indicator Installation**  
**Figure 401 (Sheet 1 of 2)/21-33-02-990-801**

EFFECTIVITY  
HAP ALL

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**CABIN ALTITUDE AND DIFFERENTIAL PRESSURE INDICATOR**

**B**

G21829 S0006562835\_V2

**Cabin Altitude and Differential Pressure Indicator Installation  
Figure 401 (Sheet 2 of 2)/21-33-02-990-801**

EFFECTIVITY  
HAP ALL

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### AIRCRAFT MAINTENANCE MANUAL

#### 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. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Packing	34-11-00-02-080	HAP 001-013, 015-026, 028-030
6	Indicator	34-11-00-10-095	HAP 031-054, 101-999
		21-33-02-01-050	HAP 001-013, 015-026, 028
		21-33-02-02-020	HAP 029-054, 101-999

##### C. Location Zones

Zone	Area
212	Flight Compartment - Right

##### D. Cabin Altitude and Differential Pressure Indicator Installation

SUBTASK 21-33-02-020-010

(1) Put a new packing [3] on the male quick-disconnect [2].

SUBTASK 21-33-02-020-006

(2) Install the male quick-disconnect [2] on the cabin altitude and differential pressure indicator indicator [6].

SUBTASK 21-33-02-020-009

(3) Connect the static pressure hose [4] to the quick-disconnect [2].

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) Do this task: Alternate Static System Low-range Leak Test, TASK 34-11-00-790-808.

**END OF TASK**

EFFECTIVITY  
HAP ALL

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# AIRCRAFT MAINTENANCE MANUAL

## CABIN ALTITUDE WARNING SWITCH - REMOVAL/INSTALLATION

### 1. General

A. This procedure has these tasks:

#### **HAP 001-013, 015-026, 028-047, 054, 101-106**

- (1) Cabin altitude warning switch removal
- (2) Cabin altitude warning switch installation.

#### **HAP 048-053, 107-999**

- (3) Cabin altitude warning switches (S128 and S1153) removal
- (4) Cabin altitude warning switches (S128 and S1153) installation

#### **HAP ALL**

B. The cabin altitude warning switch is installed in the forward EE bay.

#### **HAP 048-053, 107-999**

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.

#### **HAP 047, 106**

D. Cabin altitude warning switch S1153 is installed, but it is not operational. The wiring to S1153 is capped and stowed.

#### **HAP ALL**

#### **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	HAP 048-053, 107-999

#### 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

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HAP ALL

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SUBTASK 21-33-04-862-001

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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.

**HAP 048-053, 107-999**

SUBTASK 21-33-04-020-010

(4) Disconnect the electrical connector from the cabin altitude warning switch [1], S1153.

**HAP ALL**

SUBTASK 21-33-04-020-002

(5) Remove the four screws [2] from the cabin altitude warning switch [1], S128.

**HAP 048-053, 107-999**

SUBTASK 21-33-04-030-001

(6) Remove the four screws [2] from the cabin altitude warning switch [1], S1153.

**HAP ALL**

SUBTASK 21-33-04-020-007

(7) Remove the cabin altitude warning switch [1], S128.

**HAP 048-053, 107-999**

SUBTASK 21-33-04-020-012

(8) Remove the cabin altitude warning switch [1], S1153.

**HAP ALL**

————— **END OF TASK** —————

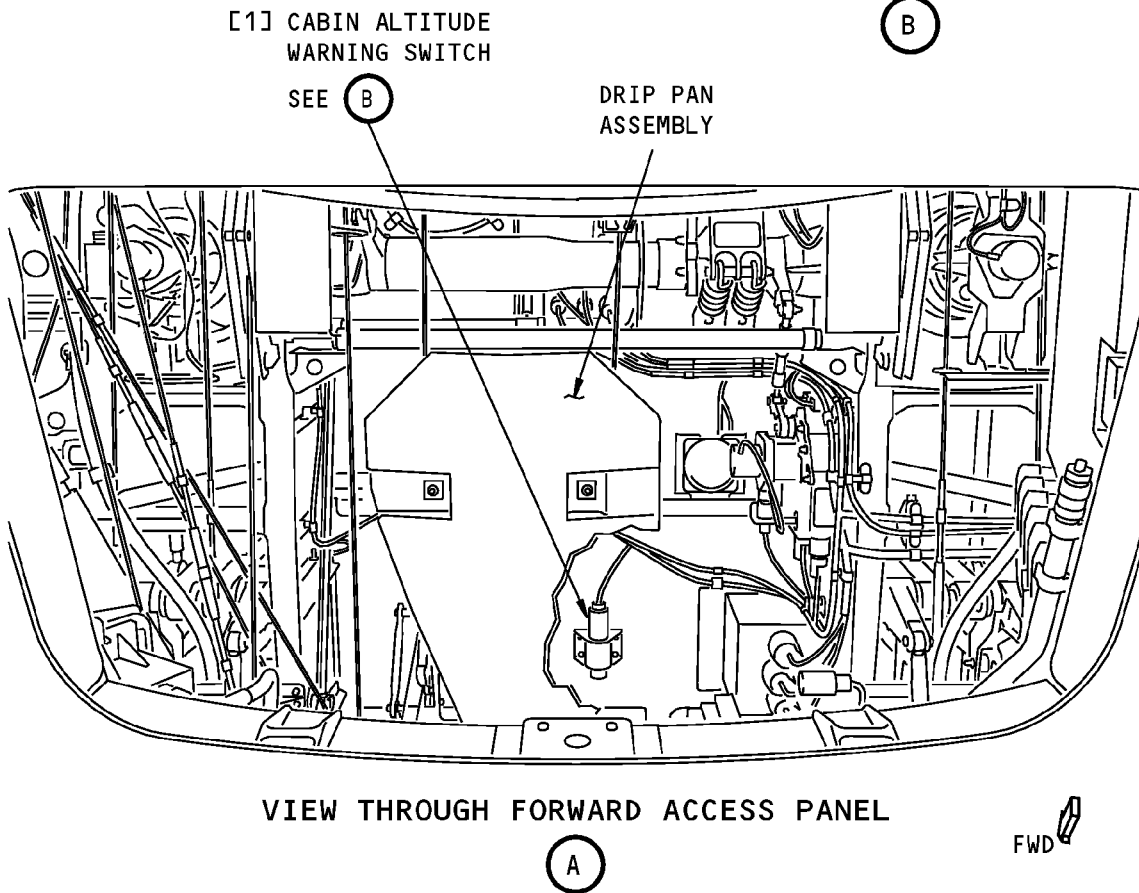
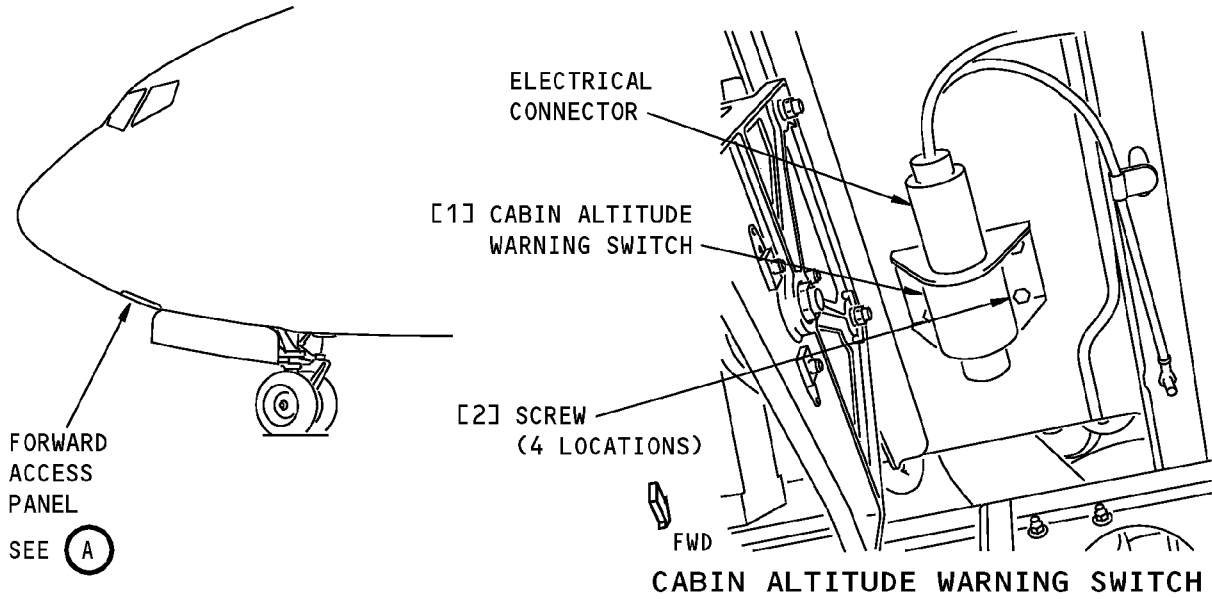
EFFECTIVITY  
**HAP ALL**

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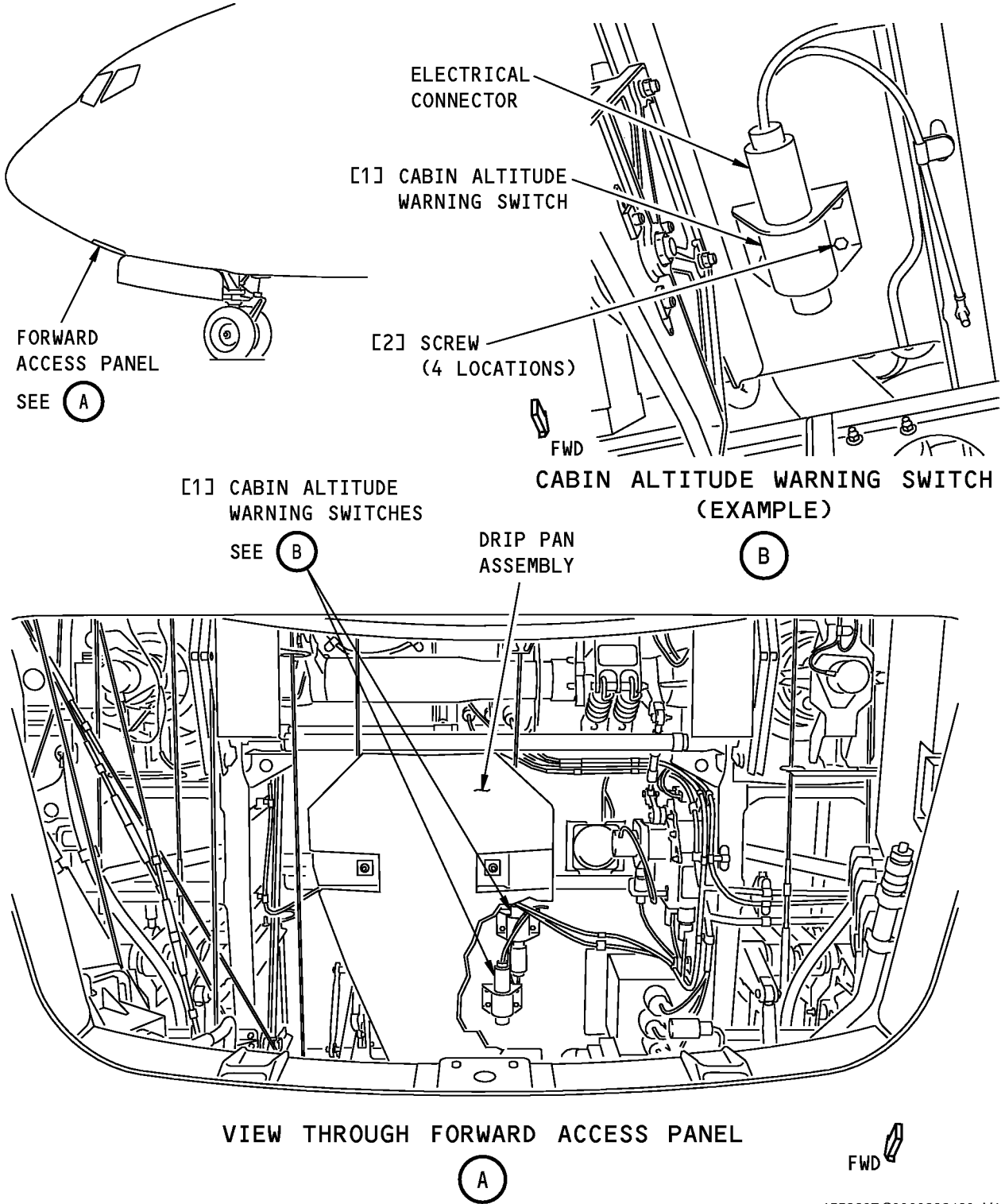


**Cabin Altitude Warning Switch Installation  
Figure 401 (Sheet 1 of 2)/21-33-04-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-047, 054, 101-106

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**Cabin Altitude Warning Switch Installation  
Figure 401 (Sheet 2 of 2)/21-33-04-990-801**

EFFECTIVITY  
HAP 048-053, 107-999

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### AIRCRAFT MAINTENANCE MANUAL

#### 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	21-33-04-01-005	HAP 001-013, 015-026, 028-030
		21-33-04-01A-010	HAP 031-046, 054, 101-105
		21-33-04-03-015	HAP 047-053, 106-999

#### 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.

#### HAP 048-053, 107-999

SUBTASK 21-33-04-420-008

(2) Put the cabin altitude warning switch [1], S1153, in its position.

#### HAP ALL

SUBTASK 21-33-04-420-001

(3) Install the four screws [2] that attach the cabin altitude warning switch [1], S128.

#### HAP 048-053, 107-999

SUBTASK 21-33-04-430-001

(4) Install the four screws [2] that attach the cabin altitude warning switch [1], S1153.

#### HAP ALL

SUBTASK 21-33-04-420-002

(5) Connect the electrical connector to the cabin altitude warning switch [1], S128.

#### HAP 048-053, 107-999

SUBTASK 21-33-04-430-002

(6) Connect the electrical connector to the cabin altitude warning switch [1], S1153.

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HAP 048-053, 107-999 (Continued)

HAP ALL

SUBTASK 21-33-04-865-001

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-33-04-410-001

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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 —————

EFFECTIVITY
HAP ALL

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## AIRCRAFT MAINTENANCE MANUAL

### 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.

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**HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-24-1147**

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.

**HAP ALL**

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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	11	C01274	AIR CONDITIONING DOOR AREA HEAT CONT

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	14	C01279	DOOR AREA HTR-AFT
A	16	C01280	DOOR AREA HTR-FWD

**HAP 037-054, 101-999**

D	7	C01279	DOOR AREA HTR-AFT
D	9	C01280	DOOR AREA HTR-FWD

**HAP ALL**

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.

<p>EFFECTIVITY</p> <p>HAP ALL</p>	
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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)
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
212	Flight Compartment - Right
<b>HAP 001-013, 015-026, 028-054</b>	
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

#### **HAP ALL**

#### C. Prepare for the Test

**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. It is possible if the ambient temperature is over 60°F (15.5°C) that the heaters will not come on for a period of time necessary to do a test by touch. If more accuracy is desired, do the tasks in AMM. You must have a minimum of two persons to do this test correctly.

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

EFFECTIVITY

**HAP ALL**

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Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	14	C01279	DOOR AREA HTR-AFT
A	16	C01280	DOOR AREA HTR-FWD
<b>HAP 037-054, 101-999</b>			
D	7	C01279	DOOR AREA HTR-AFT
D	9	C01280	DOOR AREA HTR-FWD

### HAP ALL

#### D. Emergency Exit Hatch Heater Operational Test

SUBTASK 21-45-00-200-005

- (1) Feel the surface of the emergency exit hatch lining along the vertical edges.
  - (a) Make sure the temperature of the lining is approximately the same as the ambient air temperature.

SUBTASK 21-45-00-200-006

- (2) Feel the surface of the trim strips of the emergency exit hatch doorway.
  - (a) Make sure the temperature of the trim strips is approximately the same as the ambient air temperature.

SUBTASK 21-45-00-200-001

- (3) Feel the surface of the closeout panel.
  - (a) Make sure the temperature of the closeout panel is approximately the same as the ambient air temperature.

SUBTASK 21-45-00-860-011

- (4) 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.

- (5) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 21-45-00-860-012

- (6) 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 21-45-00-200-007

- (7) Feel the surface of the emergency exit hatch lining along the vertical edges.
  - (a) Make sure the temperature of the lining becomes warm.

SUBTASK 21-45-00-200-008

- (8) Feel the surface of the trim strips for the emergency exit hatch doorway.
  - (a) Make sure the temperature of the trim strips becomes warm.

SUBTASK 21-45-00-200-009

- (9) Feel the surface of the closeout panel.
  - (a) Make sure the temperature of the closeout panel becomes warm.

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HAP ALL

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### E. 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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HAP ALL

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## AIRCRAFT MAINTENANCE MANUAL

### 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.

#### **HAP 001-013, 015-026, 028-054**

- (b) Make sure the L RECIRC FAN and the R RECIRC FAN switches, on the P5-10 air conditioning panel, are set to OFF.

#### **HAP 101-999**

- (c) Make sure the RECIRC FAN switch, on the P5-10 air conditioning panel, is set to OFF.

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**HAP 101-999 (Continued)**

**HAP ALL**

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:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	16	C01280	DOOR AREA HTR-FWD

**HAP 037-054, 101-999**

D	9	C01280	DOOR AREA HTR-FWD
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**HAP ALL**

(c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	14	C01279	DOOR AREA HTR-AFT

**HAP 037-054, 101-999**

D	7	C01279	DOOR AREA HTR-AFT
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**HAP ALL**

(c) At the forward attendant panel, set the switch for the entry lights to the OFF position and attach a DO-NOT-OPERATE tag.

EFFECTIVITY
HAP ALL

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**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] from around the insulation [4].

SUBTASK 21-45-01-020-004

(4) Remove and discard the tape from the insulation [4].

SUBTASK 21-45-01-020-005

(5) Remove the insulation [4] from the door area heater [3].

SUBTASK 21-45-01-020-006

(6) 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

(7) Remove the door area heater [3] from the flex ducts.

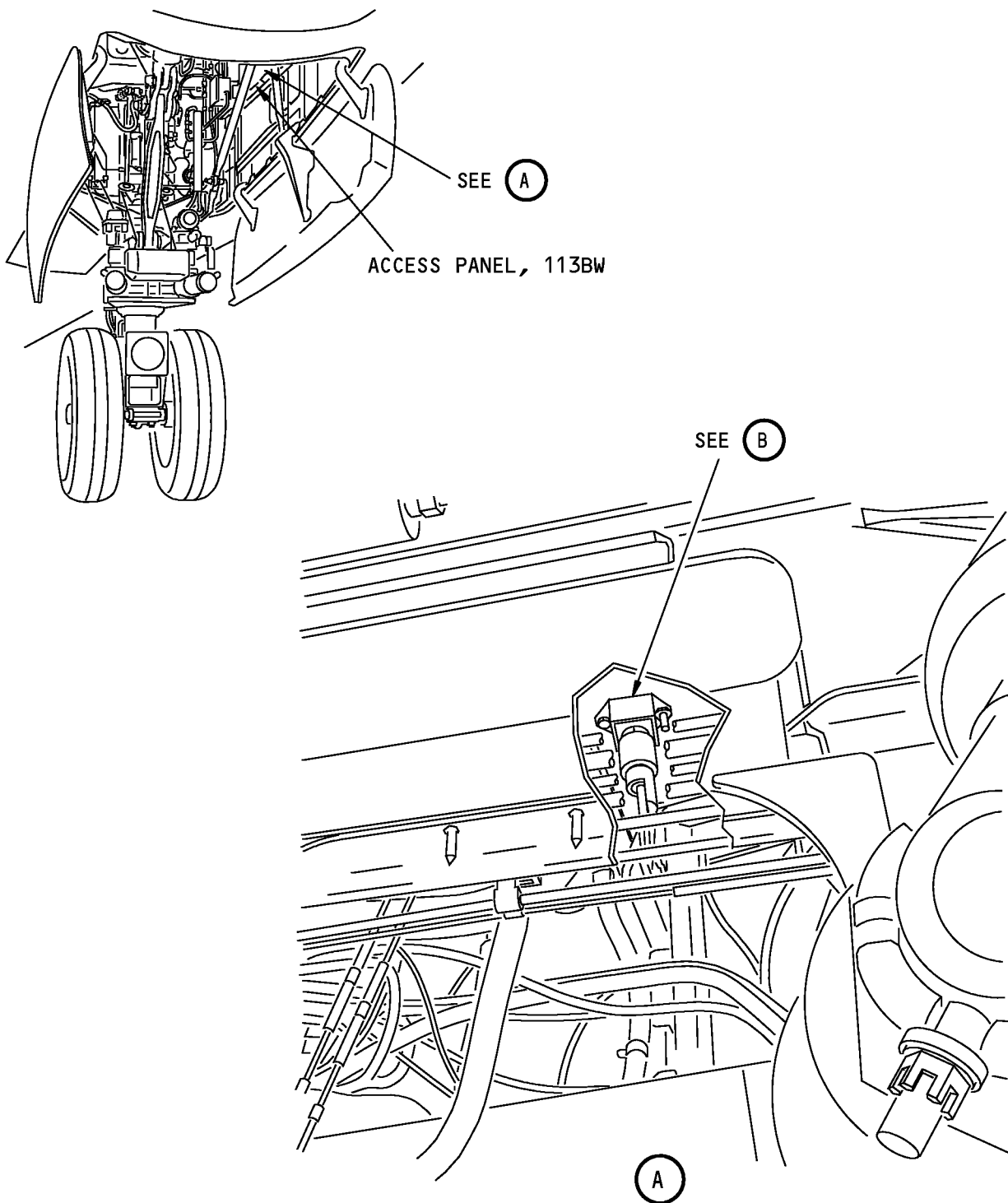
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EFFECTIVITY  
HAP ALL

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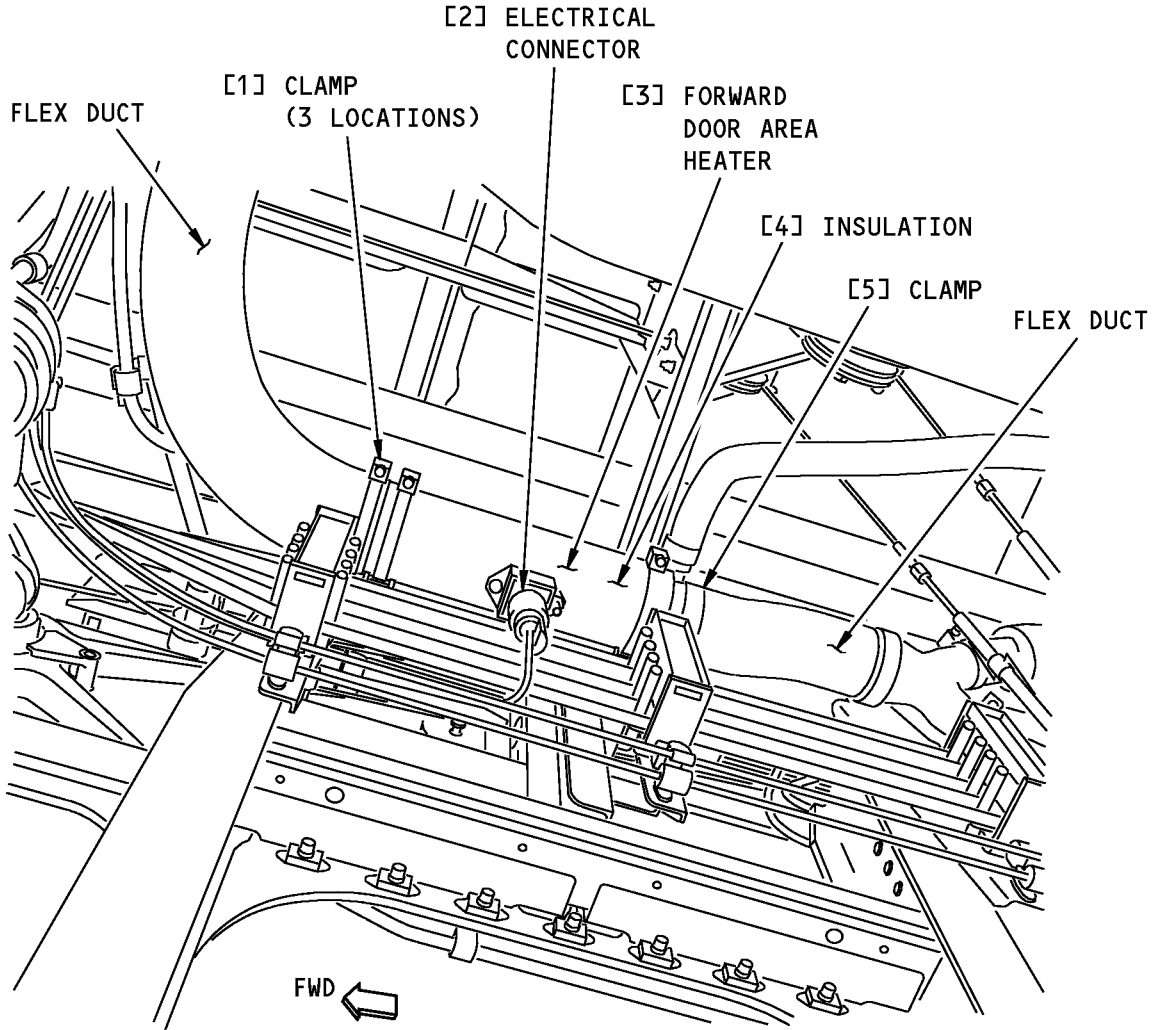
**Forward Door Area Heater Installation  
Figure 401 (Sheet 1 of 2)/21-45-01-990-804**

EFFECTIVITY  
HAP ALL

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**21-45-01**

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**VIEW THROUGH ACCESS PANEL, 113BW**

**B**

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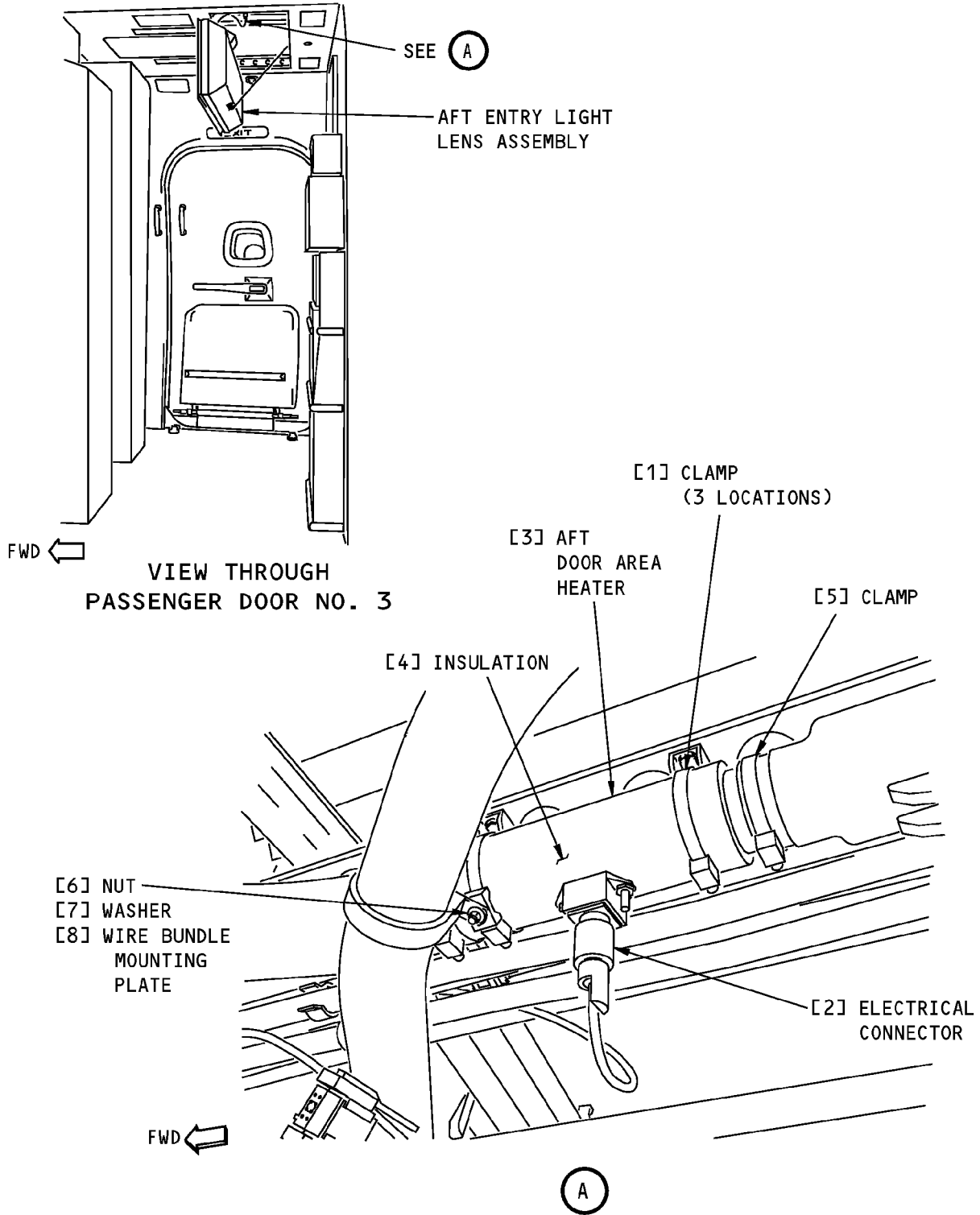
**Forward Door Area Heater Installation  
Figure 401 (Sheet 2 of 2)/21-45-01-990-804**

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**Aft Door Area Heater Installation**  
**Figure 402/21-45-01-990-801**

EFFECTIVITY  
HAP ALL

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### AIRCRAFT MAINTENANCE MANUAL

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, G50449, BMS8-385, is the preferred foam insulation material that meets the flame propagation requirement.
- (4) Air conditioning ducts with polyimide foam, G02470 must be wrapped with tape, G50327 to meet the flammability/flame propagation requirements. Wrap the tape, G50327 across 100% of the brown hypalon insulation surface on the polyimide foam, 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.

##### 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 IV Grade 1

##### D. 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

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## E. Access Panels

Number	Name/Location
113BW	Forward Nose Wheel Well Panel
117A	Electronic Equipment Access Door

## F. 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 21-45-01-420-004

- (3) Install the insulation [4] onto the door area heater [3].

SUBTASK 21-45-01-420-008

- (4) Install new tape, G50327 on the seam of the insulation [4].

SUBTASK 21-45-01-420-006

- (5) Install the two clamps [1] around the insulation [4].

SUBTASK 21-45-01-420-007

- (6) Connect the electrical connector [2] to the door area heater [3].

SUBTASK 21-45-01-840-002

- (7) If you installed the forward door area heater, do this step:
  - (a) Remove the safety tags and close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
<b>HAP 001-013, 015-026, 028-036</b>			
A	16	C01280	DOOR AREA HTR-FWD

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HAP 001-013, 015-026, 028-036 (Continued)

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 037-054, 101-999</b>			
D	9	C01280	DOOR AREA HTR-FWD

#### HAP ALL

SUBTASK 21-45-01-410-001

- (8) 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 tags and close these circuit breakers:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	14	C01279	DOOR AREA HTR-AFT
<b>HAP 037-054, 101-999</b>			
D	7	C01279	DOOR AREA HTR-AFT

#### HAP ALL

#### G. Door Area Heater Installation Test

SUBTASK 21-45-01-860-001

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

#### HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-24-1147

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.

#### HAP ALL

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.

#### H. 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.

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AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 21-45-01-410-002

(2) If you installed the forward door area heater, then close this access panel:

<u>Number</u>	<u>Name/Location</u>
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.

**HAP 001-013, 015-026, 028-054**

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.

**HAP 101-999**

SUBTASK 21-45-01-860-008

(6) Make sure the RECIRC FAN switch, on the P5-10 air conditioning panel, is set to AUTO.

**HAP ALL**

SUBTASK 21-45-01-840-004

(7) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

SUBTASK 21-45-01-840-005

(8) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

————— **END OF TASK** —————

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# AIRCRAFT MAINTENANCE MANUAL

## 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
<b>HAP 001-013, 015-026, 028-054</b>	
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

#### **HAP ALL**

#### C. Prepare for the Removal

SUBTASK 21-45-02-840-001

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
-----	-----	--------	------

#### **HAP 001-013, 015-026, 028-036**

A	16	C01280	DOOR AREA HTR-FWD
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#### **HAP 037-054, 101-999**

D	9	C01280	DOOR AREA HTR-FWD
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#### **HAP ALL**

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SUBTASK 21-45-02-010-001

(2) Open the emergency exit door.

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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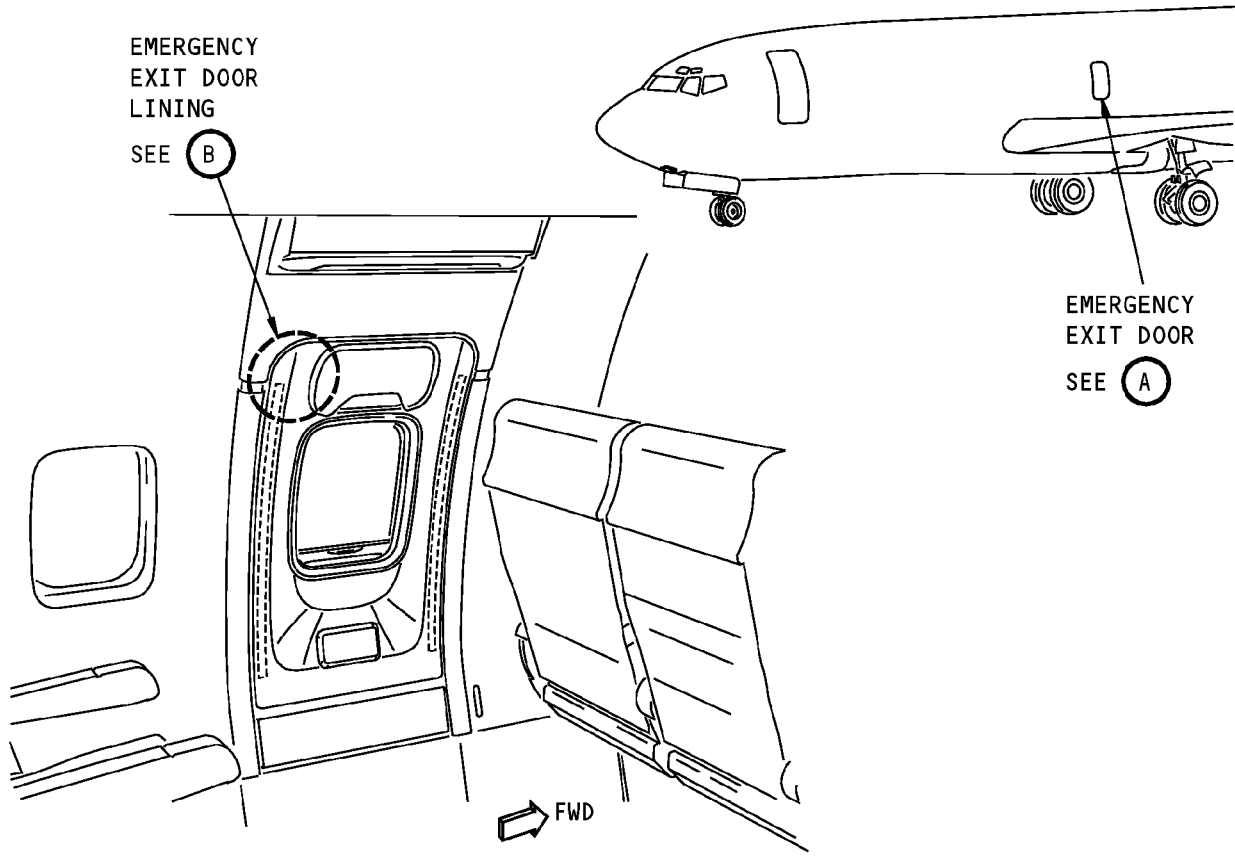
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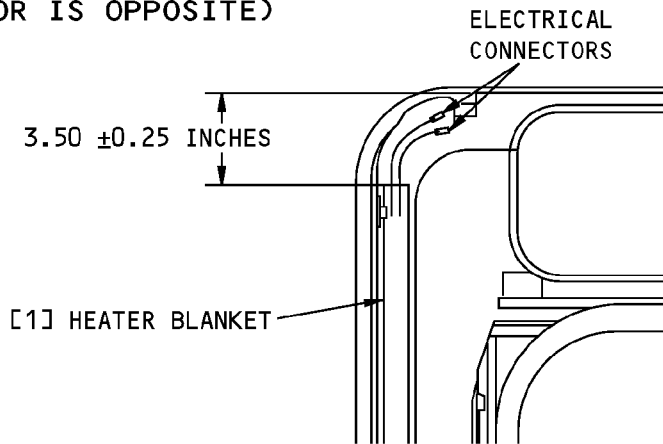
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**LEFT EMERGENCY EXIT DOOR  
(RIGHT EMERGENCY EXIT DOOR IS OPPOSITE)**

(A)



**EMERGENCY EXIT DOOR LINING  
(SHOWN REMOVED)**

(B)

**Emergency Exit Door Heater Blanket Installation  
Figure 401/21-45-02-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

TASK 21-45-02-400-801

#### 3. Emergency Exit Door Heater Blanket Installation

(Figure 401)

##### A. References

Reference	Title
25-21-20-400-801	Emergency Exit Doorway Lining Installation (P/B 401)

##### B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - Aliphatic Naphtha (For Acrylic Plastics)	TT-N-95 Type II, ASTM D-3735 Type III

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Heater blanket	52-21-12-12-255	HAP 001-009
		52-21-12-12A-255	HAP 010-013, 015-026, 028-030
		52-21-12-12B-295	HAP 031-054, 101-999
		52-21-12-51F-365	HAP 031-054

##### D. Location Zones

Zone	Area
212	Flight Compartment - Right
<b>HAP 001-013, 015-026, 028-054</b>	
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

##### **HAP ALL**

##### 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.

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SUBTASK 21-45-02-010-004

(5) Close the emergency exit door.

SUBTASK 21-45-02-840-002

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	16	C01280	DOOR AREA HTR-FWD
<b>HAP 037-054, 101-999</b>			
D	9	C01280	DOOR AREA HTR-FWD

**HAP ALL**

————— **END OF TASK** —————

**TASK 21-45-02-000-802**

**4. Emergency Exit Door Surround Panel Heater Blanket Removal**

(Figure 402)

A. References

<u>Reference</u>	<u>Title</u>
25-21-20-000-801	Emergency Exit Doorway Lining Removal (P/B 401)

B. Location Zones

<u>Zone</u>	<u>Area</u>
212	Flight Compartment - Right
<b>HAP 001-013, 015-026, 028-054</b>	
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

**HAP ALL**

C. Prepare for the Removal

SUBTASK 21-45-02-840-003

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	16	C01280	DOOR AREA HTR-FWD
<b>HAP 037-054, 101-999</b>			
D	9	C01280	DOOR AREA HTR-FWD

**HAP ALL**

SUBTASK 21-45-02-010-005

(2) Open the emergency exit door.

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### 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].

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** —————

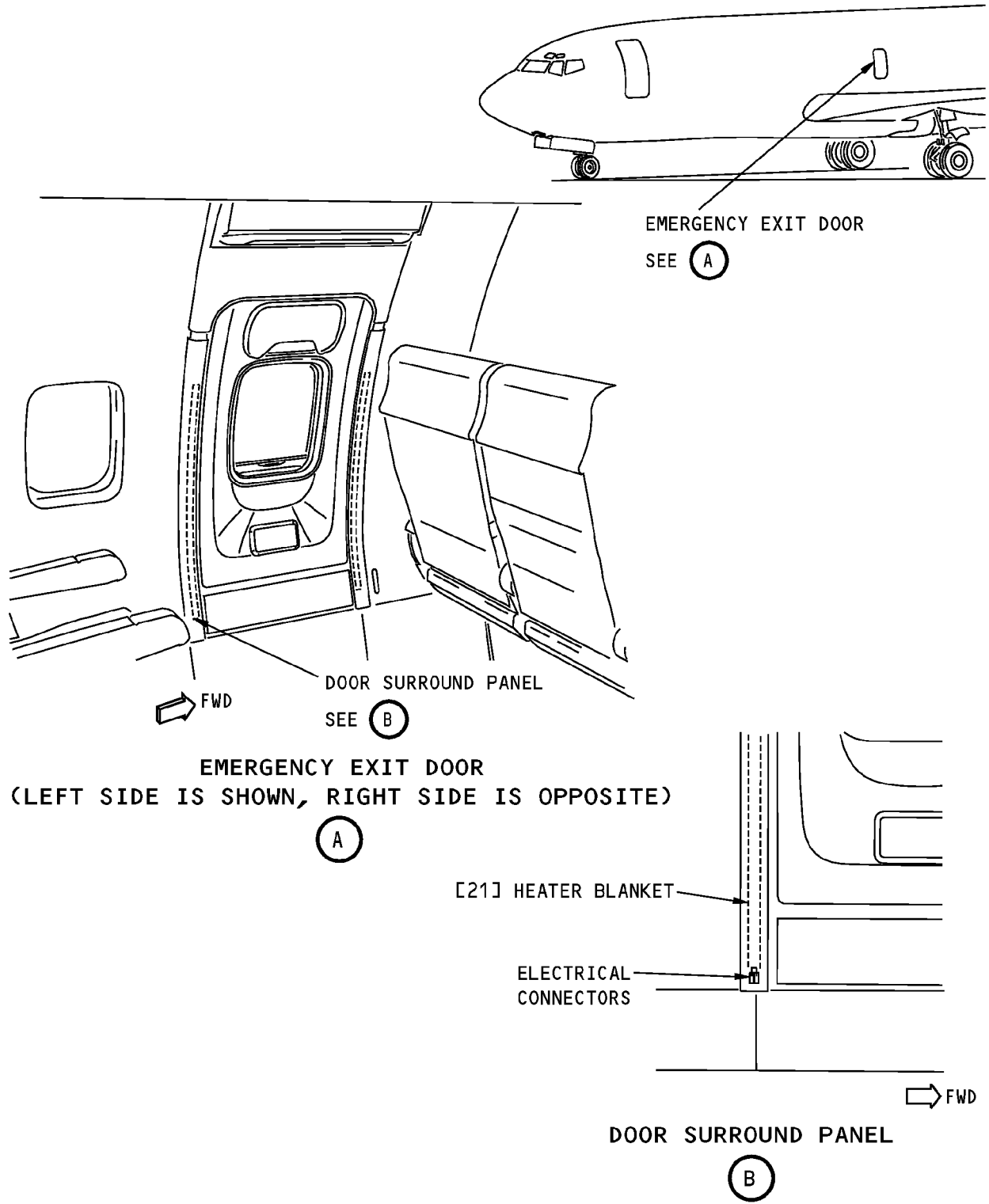
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**Emergency Exit Door Surround Panel Heater Blanket Installation  
Figure 402/21-45-02-990-802**

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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
25-21-20-400-801	Emergency Exit Doorway Lining Installation (P/B 401)

### B. Consumable Materials

Reference	Description	Specification
B00083	Solvent - Aliphatic Naphtha (For Acrylic Plastics)	TT-N-95 Type II, ASTM D-3735 Type III

### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Heater blanket	52-21-12-11B-260	HAP 031-043, 054
		52-21-12-12-255	HAP 001-009
		52-21-12-12A-255	HAP 010-013, 015-026, 028-030
		52-21-12-12A-295	HAP 010-013, 015-026, 028-030
		52-21-12-12B-295	HAP 031-054, 101-999
		52-21-12-12B-315	HAP 031-054, 101-999
		52-21-12-12B-335	HAP 031-054, 101-999
		52-21-12-12B-355	HAP 031-054, 101-999

### D. Location Zones

Zone	Area
212	Flight Compartment - Right
<b>HAP 001-013, 015-026, 028-054</b>	
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

### HAP ALL

### 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].

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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.

SUBTASK 21-45-02-840-004

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	16	C01280	DOOR AREA HTR-FWD
<b>HAP 037-054, 101-999</b>			
D	9	C01280	DOOR AREA HTR-FWD
<b>HAP ALL</b>			

————— END OF TASK —————

**TASK 21-45-02-000-803**

## 6. Emergency Exit Door Closeout Panel Heater Blanket Removal

(Figure 403)

### A. Location Zones

<u>Zone</u>	<u>Area</u>
212	Flight Compartment - Right
<b>HAP 001-013, 015-026, 028-054</b>	
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

**HAP ALL**

### B. Prepare for the Removal

SUBTASK 21-45-02-840-005

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	16	C01280	DOOR AREA HTR-FWD
<b>HAP 037-054, 101-999</b>			
D	9	C01280	DOOR AREA HTR-FWD
<b>HAP ALL</b>			

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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.

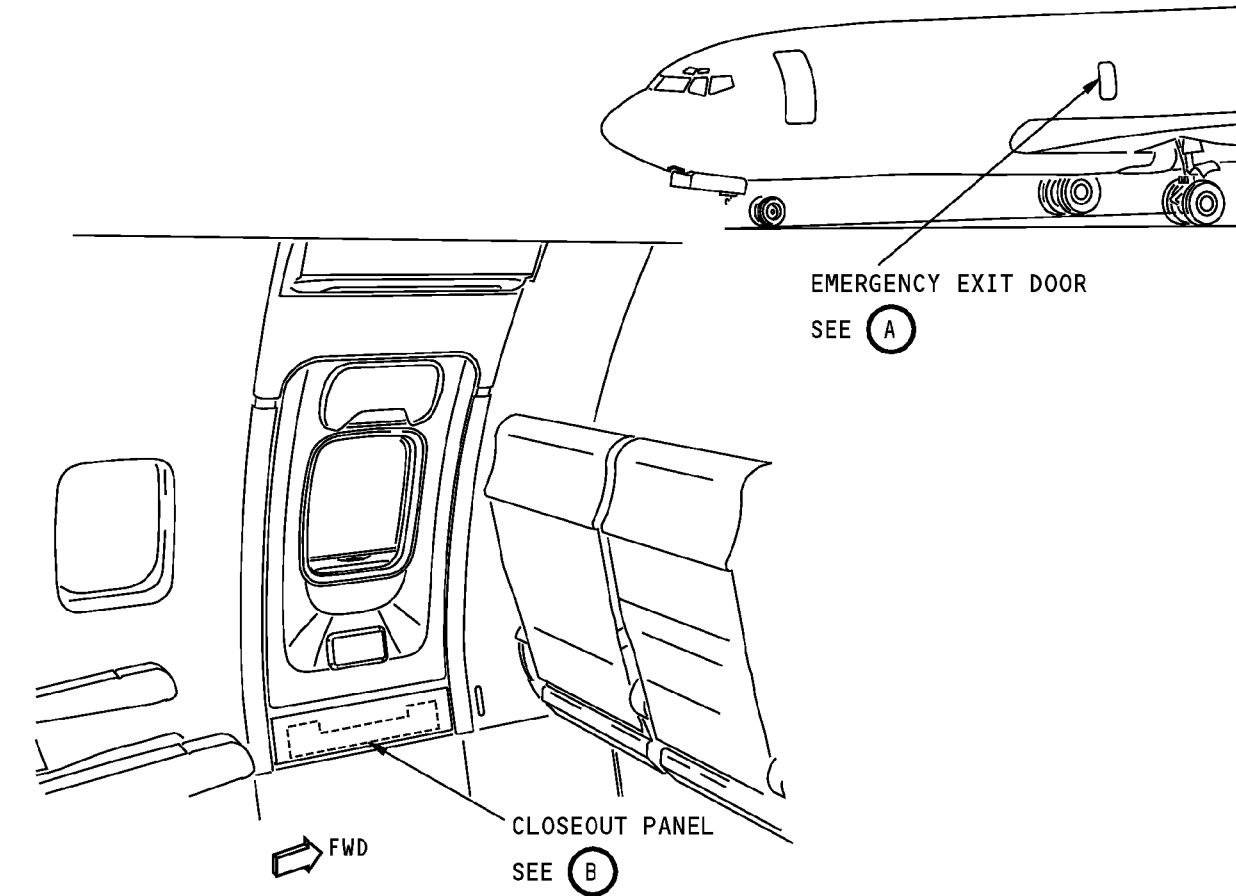
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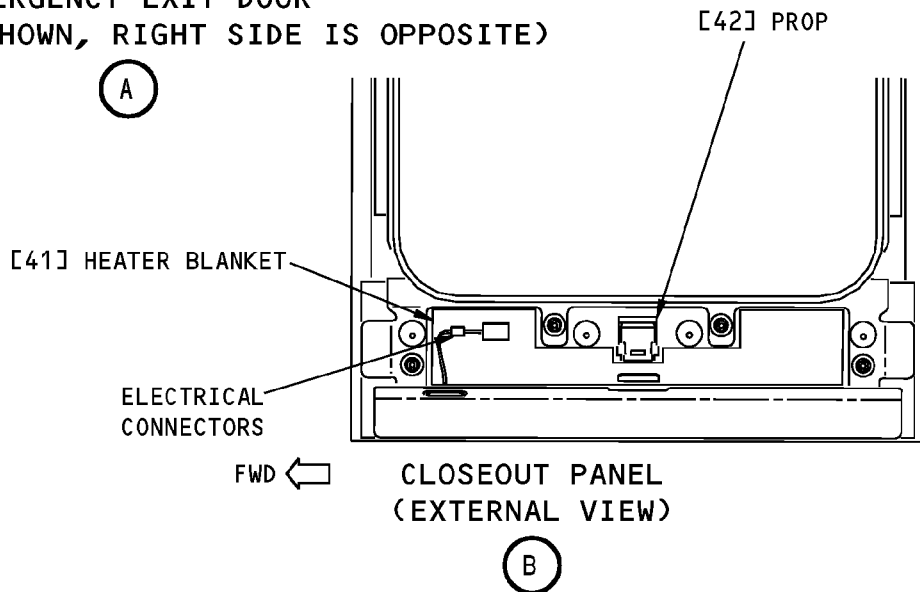
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**EMERGENCY EXIT DOOR  
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)**



**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. Consumable Materials

Reference	Description	Specification
A00188	Adhesive - Urethane, Two Component	BMS5-105 Type V
B00083	Solvent - Aliphatic Naphtha (For Acrylic Plastics)	TT-N-95 Type II, ASTM D-3735 Type III

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
41	Heater blanket	52-21-12-11-320	HAP 001-013, 015-026, 028-043
		52-21-12-11B-385	HAP 031-043, 054
		52-21-12-12-355	HAP 001-013, 015-026, 028-038
		52-21-12-12A-480	HAP 010-013, 015-026, 028-030
		52-21-12-12B-455	HAP 031-054, 101-999

C. Location Zones

Zone	Area
212	Flight Compartment - Right
<b>HAP 001-013, 015-026, 028-054</b>	
832	Left Forward Emergency Exit
833	Left Emergency Exit (STA 627.5)
842	Right Forward Emergency Exit
843	Right Emergency Exit (STA 627.5)

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D. 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.

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SUBTASK 21-45-02-010-012

(7) Close the emergency exit door.

SUBTASK 21-45-02-840-006

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 001-013, 015-026, 028-036</b>			
A	16	C01280	DOOR AREA HTR-FWD
<b>HAP 037-054, 101-999</b>			
D	9	C01280	DOOR AREA HTR-FWD

————— **END OF TASK** —————

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HAP ALL

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**AIRCRAFT MAINTENANCE MANUAL**

**PACK FLOW CONTROL AND PACK COOLING SYSTEM - ADJUSTMENT/TEST**

**1. General**

A. This procedure has these tasks:

**HAP 101-999**

- (1) 35 Degree F System BITE Test.

**HAP 001-013, 015-026, 028-054**

- (2) Pack/Zone Temperature Controller BITE Test

**HAP ALL**

- (3) Pack Flow Control Valve Operational Test.

**HAP 101-999**

**TASK 21-51-00-700-801**

**2. Low Limit 35 Degree F BITE Test**

(Figure 501)

A. General

- (1) This task does a BITE test of the Low Limit 35 Degree F Control System.
- (2) The BITE test does a check of the following components:
  - (a) Low Limit 35 Degree F Controller.
  - (b) Low Limit 35 Degree F Temperature Sensor.
  - (c) Low Limit 35 Degree F 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)

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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

E. Procedure

SUBTASK 21-51-00-860-001

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

EFFECTIVITY
HAP ALL

**21-51-00**

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# AIRCRAFT MAINTENANCE MANUAL

## HAP 101-999 (Continued)

SUBTASK 21-51-00-860-002

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00344	AIR CONDITIONING TEMP CONTROL 35 DEG F LEFT
B	1	C00345	AIR CONDITIONING TEMP CONTROL 35 DEG F RIGHT

SUBTASK 21-51-00-860-003

(3) Put the L PACK and R PACK switches to the OFF position.

SUBTASK 21-51-00-010-001

(4) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-00-010-002

(5) Open these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-00-710-001

(6) Get access to the left pack and right pack low limit controllers.

SUBTASK 21-51-00-740-001

(7) Do these steps to do a BITE test on the low limit controller:

- (a) Push the GO and the NO GO lights on the controller.
  - 1) Make sure the lights come on when you push them.
- (b) Put the TEST SWITCH to position 1.
  - 1) Make sure the GO light comes on.
- (c) Put the TEST SWITCH to position 2.
  - 1) Make sure the GO light comes on.
  - 2) Make sure the low limit valve goes to the full open position.
- (d) Put the TEST SWITCH to position 3.
  - 1) Make sure the GO light comes on.
- (e) Put the TEST SWITCH to position 4.
  - 1) Make sure the GO light comes on.
  - 2) Make sure the low limit valve goes to the full closed position.
- (f) Put the TEST SWITCH to position 5.
  - 1) Make sure the GO light comes on.
- (g) Put the TEST SWITCH to the FLIGHT position.

EFFECTIVITY	
HAP ALL	

# 21-51-00





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AIRCRAFT MAINTENANCE MANUAL

HAP 101-999 (Continued)

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-00-410-001

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-00-410-002

- (2) Close these panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-00-860-004

- (3) Put the L PACK and R PACK switches to the AUTO position.

SUBTASK 21-51-00-860-005

- (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 —————

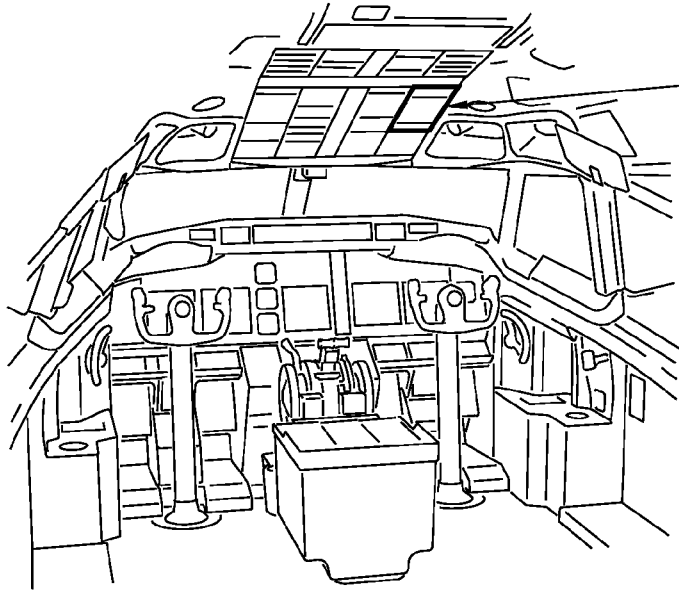
EFFECTIVITY  
HAP ALL

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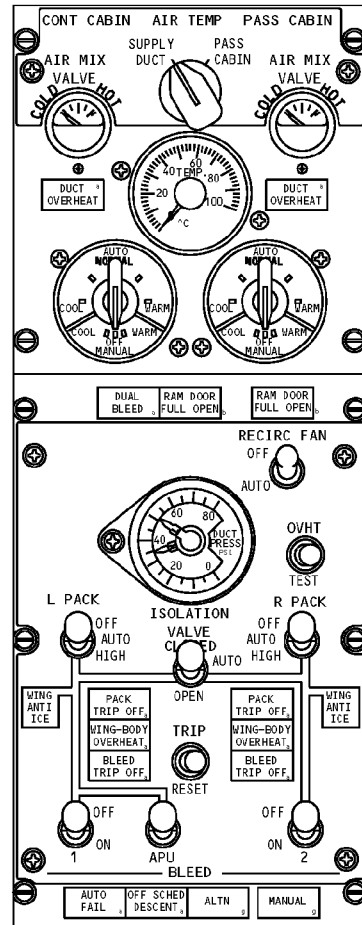
**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**



AIR CONDITIONING  
MODULE

SEE (A)

**FLIGHT COMPARTMENT**



**AIR CONDITIONING  
MODULE**

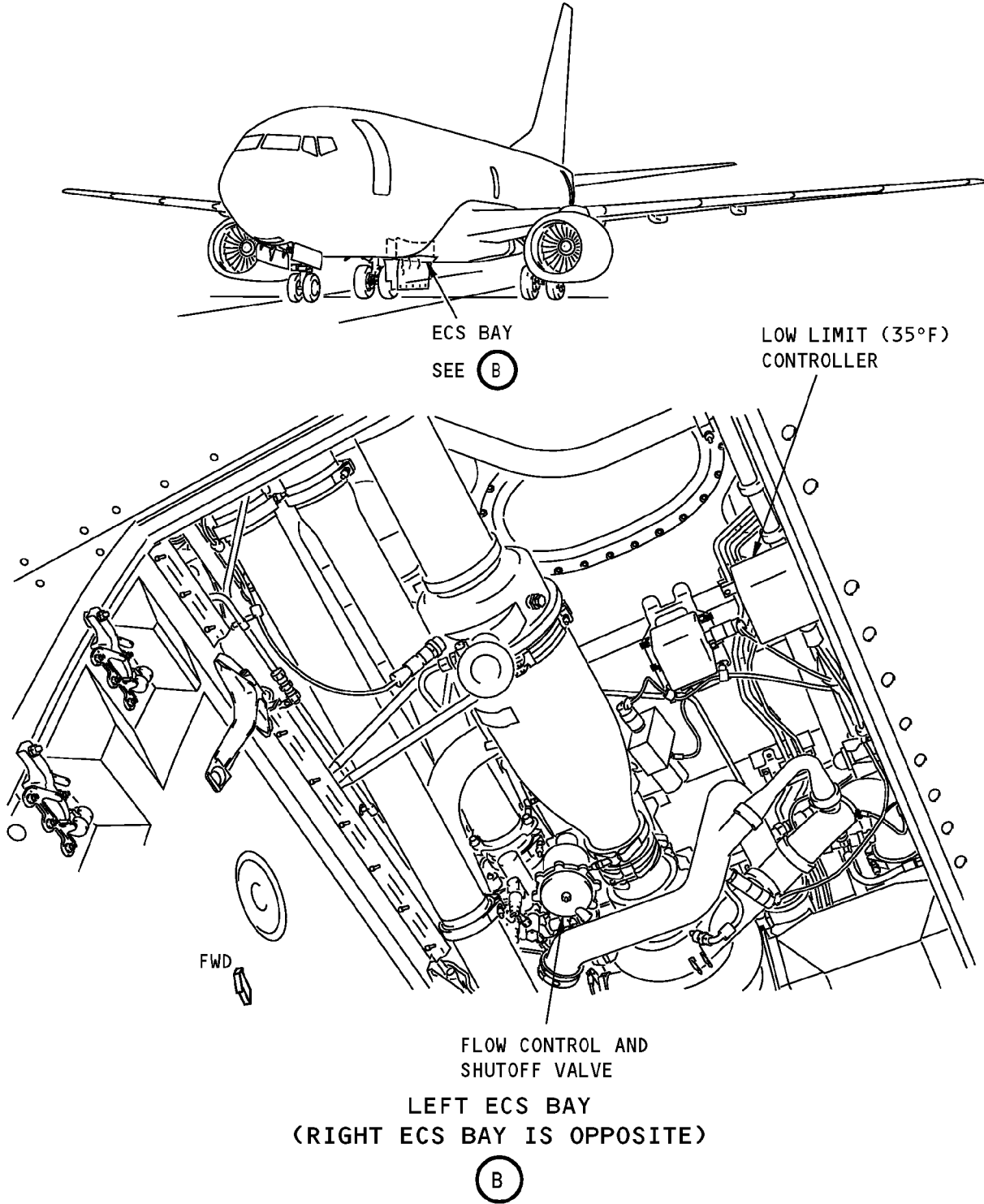
(A)

**Pack Flow Control and Pack Cooling Adjustment  
Figure 501 (Sheet 1 of 2)/21-51-00-990-801**

EFFECTIVITY  
HAP 101-999

**21-51-00**

**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**



**Pack Flow Control and Pack Cooling Adjustment  
Figure 501 (Sheet 2 of 2)/21-51-00-990-801**

EFFECTIVITY  
HAP 101-999

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AIRCRAFT MAINTENANCE MANUAL

HAP 101-999 (Continued)

HAP 001-013, 015-026, 028-054

TASK 21-51-00-700-803

3. Pack/Zone Temperature Controller BITE Test

(Figure 502 or Figure 503 or Figure 504 or Figure 505)

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	AIR CONDITIONING TEMP CONT VALVE CLOSE LEFT
A	3	C01170	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT AFT PASS
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	1	C01160	AIR CONDITIONING TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT FLT DK
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT
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 RIGHT

EFFECTIVITY

HAP ALL
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AIRCRAFT MAINTENANCE MANUAL

HAP 001-013, 015-026, 028-054 (Continued)

Row	Col	Number	Name
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

HAP 023-026, 028-054; HAP 001-013, 015-022 POST SB 737-21-1133

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 CONDITIONING PACK CONT VALVES L ALT
D	4	C01614	AIR CONDITIONING PACK CONT VALVES R ALT

HAP 001-013, 015-026, 028-054

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
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES LEFT
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES RIGHT
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) Put the L PACK and R PACK switches to the AUTO position.
- (c) Put the L RECIRC FAN and R RECIRC FAN switches to the AUTO position.

EFFECTIVITY

HAP ALL

21-51-00



737-600/700/800/900

AIRCRAFT MAINTENANCE MANUAL

HAP 001-013, 015-026, 028-054 (Continued)

(d) 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:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-51-00-740-002

- (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 - RAM AIR
  - (c) 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.
- 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:

EFFECTIVITY
HAP ALL

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**AIRCRAFT MAINTENANCE MANUAL**

**HAP 001-013, 015-026, 028-054 (Continued)**

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:

<u>Number</u>	<u>Name/Location</u>
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** —————

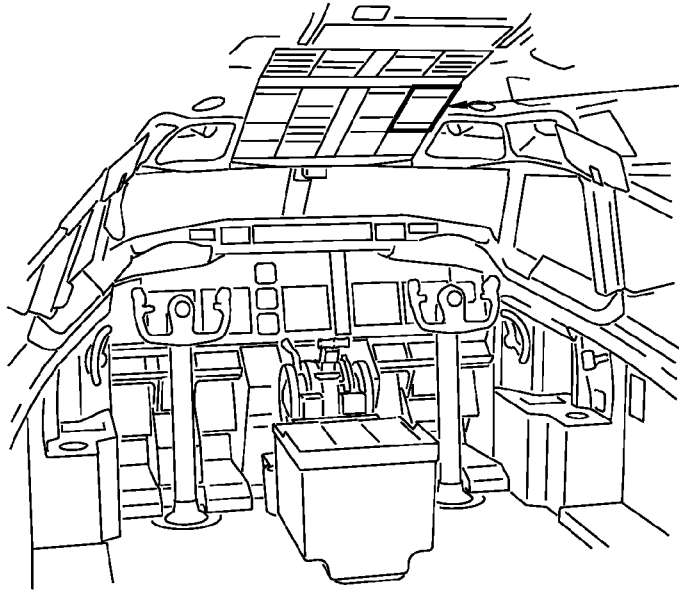
EFFECTIVITY  
HAP ALL

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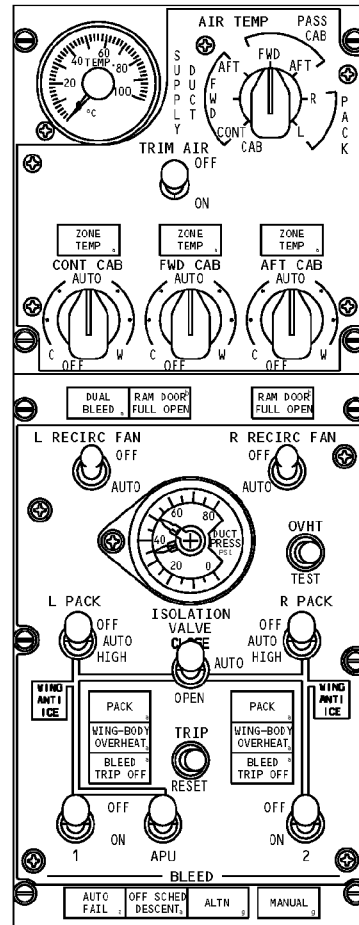
**AIRCRAFT MAINTENANCE MANUAL**



AIR CONDITIONING  
MODULE

SEE (A)

**FLIGHT COMPARTMENT**



**AIR CONDITIONING  
MODULE**

(A)

**Pack Flow Control and Pack Cooling Adjustment**  
**Figure 502/21-51-00-990-803**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

**21-51-00**

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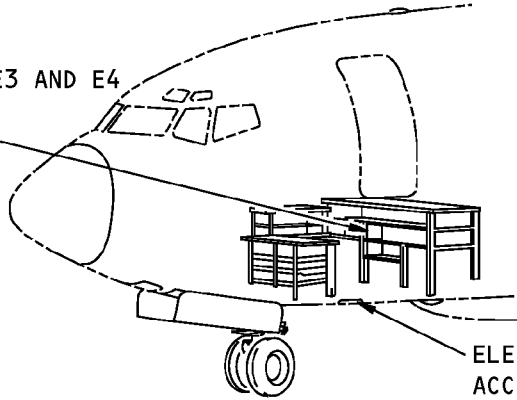
D633A101-HAP



**AIRCRAFT MAINTENANCE MANUAL**

ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

SEE (B)



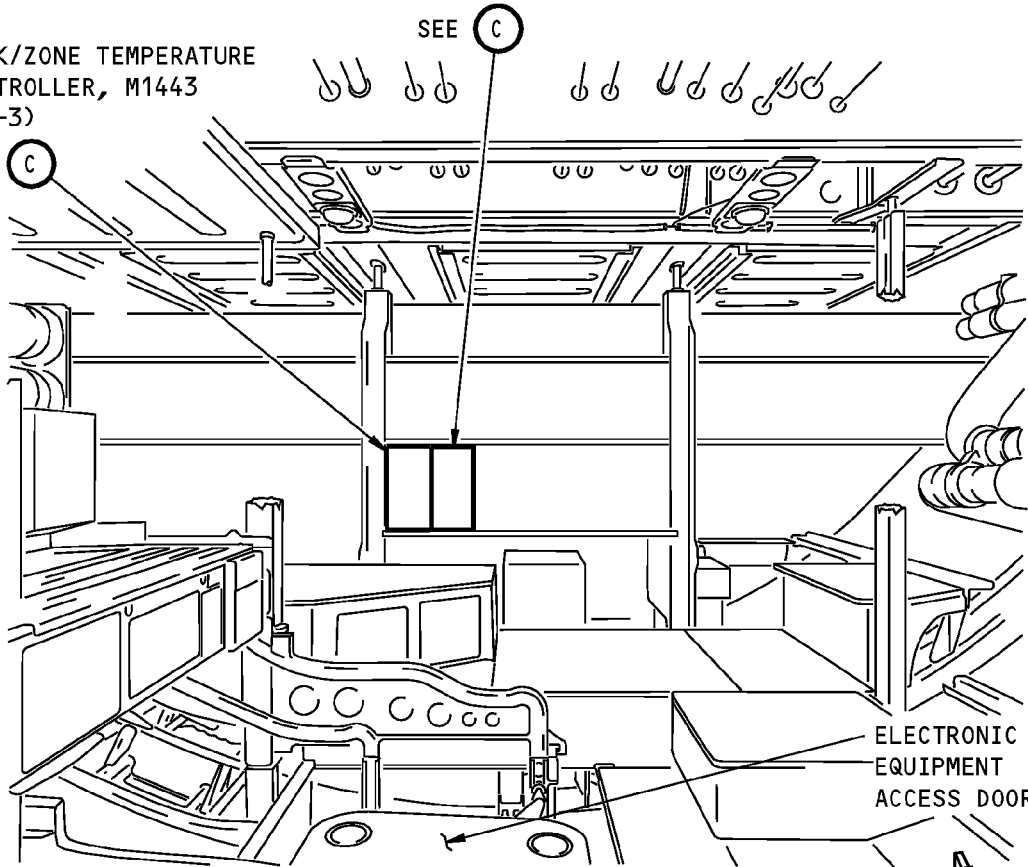
ELECTRONIC EQUIPMENT  
ACCESS DOOR, 117A

PACK/ZONE TEMPERATURE  
CONTROLLER, M1442  
(E3-3)

SEE (C)

PACK/ZONE TEMPERATURE  
CONTROLLER, M1443  
(E3-3)

SEE (C)



ELECTRONIC  
EQUIPMENT  
ACCESS DOOR, 117A

ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

FWD

(B)

**Pack Flow Control and Pack Cooling Adjustment**  
**Figure 503/21-51-00-990-804**

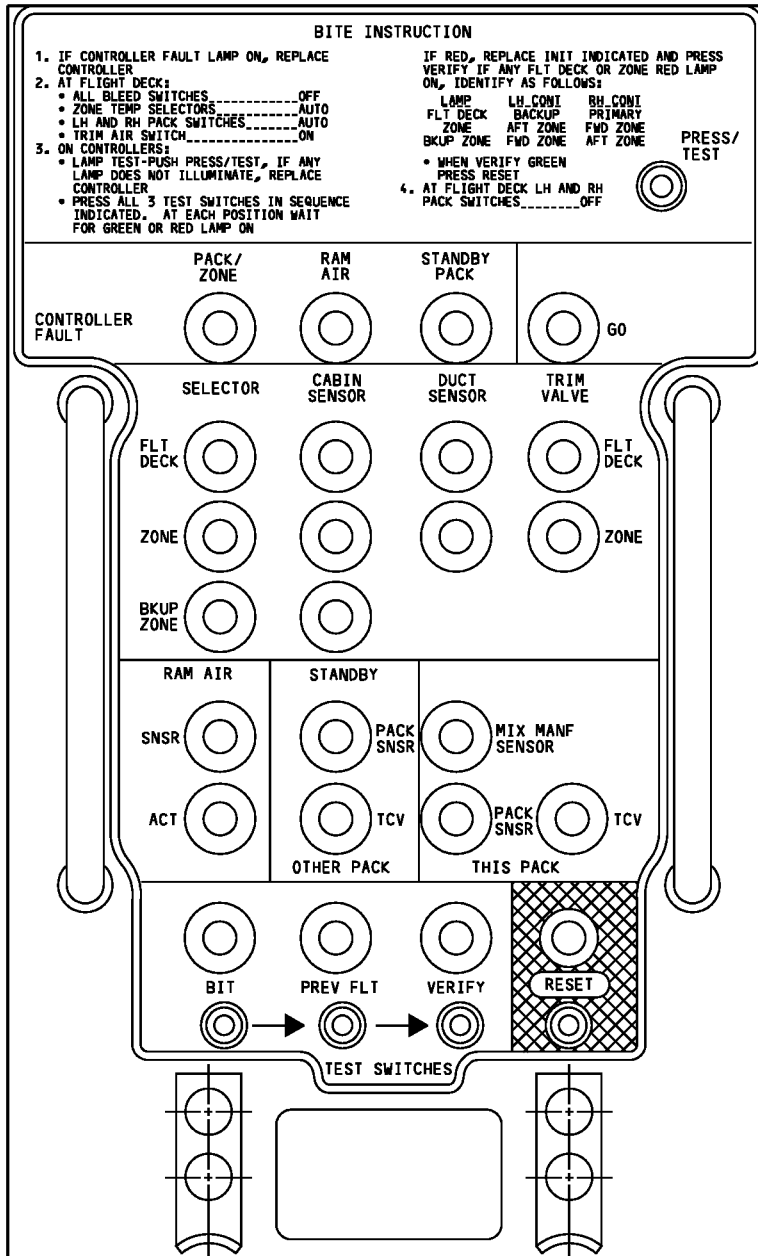
EFFECTIVITY

HAP 001-013, 015-026, 028-054

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**PACK/ZONE TEMPERATURE CONTROLLER, M1442, M1443**



**Pack Flow Control and Pack Cooling Adjustment**  
**Figure 504/21-51-00-990-805**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

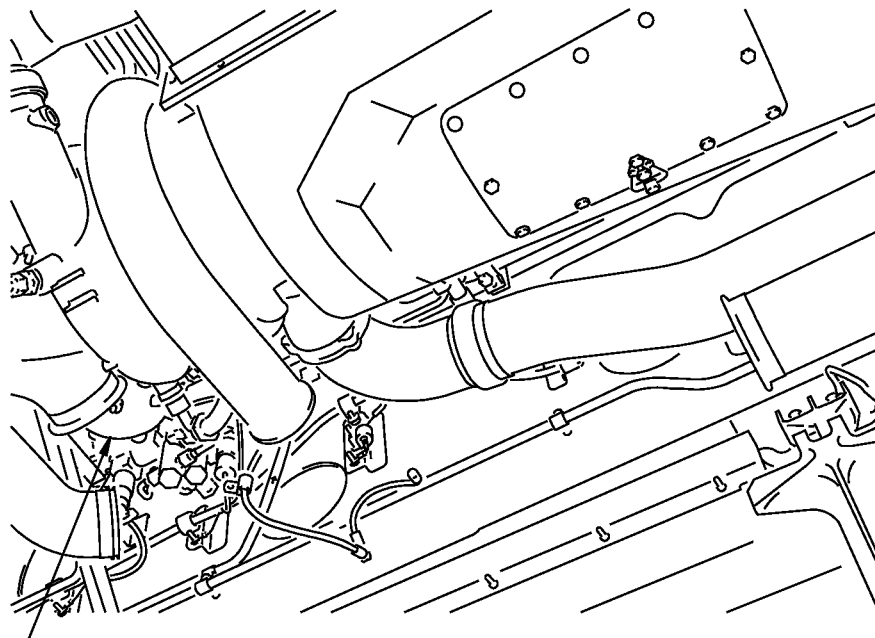
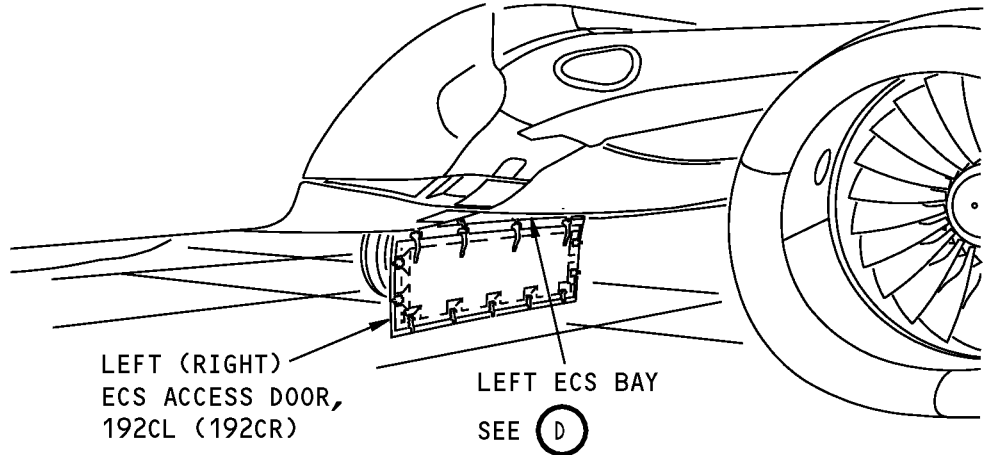
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LEFT ECS BAY  
(RIGHT ECS BAY IS OPPOSITE)  
(DUCTS REMOVED FOR CLARITY)

(D)

Pack Flow Control and Pack Cooling Adjustment  
Figure 505/21-51-00-990-806

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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TASK 21-51-00-700-802

## 4. Pack Flow Control Valve - Operational Test

HAP 101-999

NOTE: See Figure 501.

HAP ALL

### A. General

(1) This test does a check of the pack flow control and shutoff valve normal and 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)
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	Air Conditioning Access Door

### E. Procedure

SUBTASK 21-51-00-860-006

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

SUBTASK 21-51-00-010-003

(2) Open this access panel:

Number	Name/Location
192CL	Air Conditioning Access Door

SUBTASK 21-51-00-860-007

(3) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-51-00-860-008

(4) 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 indicator on the left pack and right pack flow control and shutoff valves are in the closed position.

SUBTASK 21-51-00-860-009

(5) Do these steps to make sure the left pack and right pack 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.

EFFECTIVITY HAP ALL
------------------------

# 21-51-00



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# AIRCRAFT MAINTENANCE MANUAL

## HAP 101-999

- (b) Set the CONT CABIN and the PASS CABIN temperature selectors on the P5-17 temperature control module to the AUTO NORMAL (12:00 o'clock) position.

## HAP 001-013, 015-026, 028-054

- (c) 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.

## HAP ALL

- (d) Put the L PACK switch and the R PACK switch in the AUTO position.
- (e) Make sure the position indicator on the left pack and the right pack flow control and shutoff valves moves to a partially open position.

NOTE: The packs will operate.

SUBTASK 21-51-00-860-010

- (6) Do these steps to make sure the left pack and right pack flow control valves are commanded to high mode with the pack switches in the HIGH position:
  - (a) Put the L PACK and the R PACK switches on the P5-10 air conditioning panel in the HIGH position.
  - (b) Disconnect electrical connector D392 from the left flow control and shutoff valve:
  - (c) Connect an analog multimeter between connector D392, pins 1 and 2.
  - (d) Make sure there is 28 (plus or minus 5) VDC between connector D392, pins 1 and 2.
  - (e) Disconnect electrical connector D394 from the right pack flow control valve:
  - (f) Connect an analog multimeter between connector D394, pins 1 and 2.
  - (g) Make sure there is 28 (plus or minus 5) VDC between connector D394, pins 1 and 2.
  - (h) Re-connect electrical connector D392 to the left flow control valve and shutoff valve.
  - (i) Re-connect electrical connector D394 to the right flow control and shutoff valve.

SUBTASK 21-51-00-860-011

- (7) Put the L PACK and R PACK switches in the OFF position.

SUBTASK 21-51-00-860-012

- (8) 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 this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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 —————

EFFECTIVITY
HAP ALL

# 21-51-00

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# AIRCRAFT MAINTENANCE MANUAL

## PACK FLOW CONTROL AND PACK COOLING SYSTEM - INSPECTION/CHECK

### 1. General

- A. This procedure contains scheduled maintenance task data.
- B. The purpose of this procedure is to do a check of the flow output of the packs under the different pack operation modes of auto (low), high and APU high flow. The procedure will also do a check of the temperature of the air from the air conditioning pack which will indicate if the 35°F control system operation is satisfactory. These checks will enable the operator to evaluate the performance of the packs and possibly reduce or eliminate the possibility of an in-flight pressurization problem.

### **TASK 21-51-00-943-801**

### 2. Pack Flow Control and Pack Cooling System Check

#### A. References

Reference	Title
21-51-07-000-801-001	Conditioned Air Check Valve Removal (P/B 401)
21-51-07-400-801-001	Conditioned Air Check Valve 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)
25-52-17-000-801	Forward Cargo Compartment Aft Bulkhead Liner Removal (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)
49-11-00-860-801	APU Starting and Operation (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-6191	Diagnostic - Air Pack (Part #: 020240-01, Supplier: 64818, A/P Effectivity: 737-ALL)

#### 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

#### D. Access Panels

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door

#### E. Preparation for the Pack Flow Control and Pack Cooling System Check

SUBTASK 21-51-00-861-003

- (1) Supply electrical power. To supply electrical power, do this task: Supply Electrical Power, TASK 24-22-00-860-811.

EFFECTIVITY
HAP 101-999

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SUBTASK 21-51-00-010-011

(2) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-00-010-012

(3) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

SUBTASK 21-51-00-010-008

(4) Open the forward cargo compartment door, 821, on the right side of the fuselage.

SUBTASK 21-51-00-010-009

(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.

SUBTASK 21-51-00-010-010

(6) Remove the conditioned air check valve for the check of the air conditioning pack. To remove the conditioned air check valve, do this task: Conditioned Air Check Valve Removal, TASK 21-51-07-000-801-001.

SUBTASK 21-51-00-480-001

- (7) Install the pack air flow/temperature diagnostics tool, (air pack - air flow and temperature diagnostic, SPL-6191), as follows (Figure 601):
- (a) Install the diagnostics tool where the conditioned air check valve was removed.
    - 1) Make sure that the arrow on the tool points in the forward direction.
  - (b) Put the clamps that were used to retain the conditioned air check valve in position to retain the diagnostics tool.
  - (c) Tighten the clamps to 50 in-lbs. to retain the diagnostics tool.
  - (d) Connect the 28V or 115 VAC power sources to the tool.
  - (e) Position the display box for the tool in a convenient location inside the aircraft.

SUBTASK 21-51-00-860-029

(8) Close these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C00133	INDICATOR MASTER DIM DIM/TST CONT
E	11	C00313	INDICATOR MASTER DIM SECT 1

SUBTASK 21-51-00-710-002

- (9) Momentarily set the LIGHTS switch on the P1-3 panel to TEST.
- (a) Make sure that these lights come on and then go off:
    - 1) MASTER CAUTION and AIR COND annunciator lights on the P7 panel
    - 2) PACK TRIP OFF lights on the P5-10 air conditioning panel.

SUBTASK 21-51-00-860-027

(10) Do these steps on the Flight Management Computer (FMC) to display the FMCS ANALOG page 1/4:

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- (a) Press the INIT REF function key on the CDU front panel.
- (b) Press 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 either Left or Right Prompts.
- (f) Push the LSK adjacent to < DISCRETES (LSK 4L) to show the FMCS ANALOG DISC 1/4 page.
- (g) Use the ECS PACK H/L (high flow, low flow) line entry on the ANALOG DISC 1/4 page.
- (h) The FMC displays this information:

	LEFT	RIGHT
ECS PACK	ON	OFF
ECS PACK H/L	LO	HI
ISOLATION VALVE	OPEN	(CLOSED)

#### F. Pack Flow Control and Pack Cooling System Check

SUBTASK 21-51-00-860-026

(1) Set these switches on the P5-10 air conditioning panel as follows:

- (a) BLEED 1 and 2 switches to OFF
- (b) APU BLEED switch to OFF
- (c) L and R PACK switches to OFF
- (d) ISOLATION VALVE switch to CLOSE
- (e) RECIRC FAN switch to OFF

SUBTASK 21-51-00-860-028

(2) Do this task to start the APU: APU Starting and Operation, TASK 49-11-00-860-801.

- (a) Make a record of the outside air temperature (OAT) and the dew point on the data sheet of Figure 602.
- (b) Make sure that the current draw on the APU is less than 25 amperes.

SUBTASK 21-51-00-863-001

(3) Supply pneumatic pressure to the pneumatic system. To supply pneumatic pressure, do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-51-00-860-032

(4) Set these switches on the P5-10 air conditioning panel as follows:

- (a) ISOLATION VALVE switch to AUTO
- (b) APU BLEED switch to ON.

SUBTASK 21-51-00-863-003

(5) Let the pneumatic duct pressure stabilize.

SUBTASK 21-51-00-970-002

(6) Observe the DUCT PRESS gage on the P5-10 panel.

- (a) Make a record of the R DUCT PRESS indication on the data sheet of Figure 602.

SUBTASK 21-51-00-970-003

(7) Read the flow and temperature indications on the pack air flow/temperature diagnostics tool:

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- (a) Make a record of the flow (pounds per minute ) and temperature indications on the data sheet of Figure 602.

NOTE: This step is a check that solenoid "C" of the pack valve is energized to the closed position and that there is no flow through the pack valve.

SUBTASK 21-51-00-700-001

- (8) Do this check of the right pack flow and temperature with the right pack valve in the HIGH flow mode:
  - (a) Set the R PACK switch on the air conditioning panel to the AUTO position.
  - (b) Set the PASS CABIN temperature selector on the temperature control panel to the MANUAL COOL position.
  - (c) Make sure there are no leaks at the duct connections of the pack air flow/temperature diagnostics tool:
    - 1) Repair any leaks that you find.
  - (d) Make a record of the flow and temperature of the air through the right pack valve as follows:
    - 1) Observe the FMC to make sure that the pack configuration is as selected.
    - 2) Let the flow and temperature indications on the pack air flow/temperature diagnostics tool stabilize.
    - 3) Set the AIR TEMP selector on the temperature control panel P5-17 to the SUPPLY DUCT position.
    - 4) When the temperature on the TEMP gauge on the P5-17 temperature control panel is stable, make a record of the pneumatic duct pressure on the DUCT PRESS gauge and the SUPPLY DUCT temperature on the data sheet of Figure 602.
    - 5) Make a record on the data sheet of Figure 602 of the flow and temperature of the air from the diagnostics tool.
    - 6) Make a record on the data sheet of Figure 602 of the position of the indicators on these components:
      - a) 35 °F control valve
      - b) pack flow control and shutoff valve
      - c) mix valve
      - d) water separator bag condition indicator.

SUBTASK 21-51-00-700-010

- (9) Make sure that the pack flow and temperature indications from the diagnostic tool are within acceptable limits as follows:
  - (a) Make sure that the temperature of the air through the diagnostics tool is between 35°F and 39°F
  - (b) Make sure that the flow indication from the diagnostics tool is within the expected flow range for the pack valve in the high flow mode (Figure 603).

SUBTASK 21-51-00-700-002

- (10) Do this check of the right pack flow with the right pack valve in the AUTO flow mode:
  - (a) Set the R PACK switch to AUTO.
  - (b) Set either engine BLEED 1 or BLEED 2 switch on the P5-10 air conditioning panel to ON.
  - (c) Observe the FMC to make sure that the pack configuration is as selected.

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- (d) Let the flow and temperature indications on the pack air flow/temperature diagnostics tool stabilize.
- (e) Set the AIR TEMP selector on the temperature control panel P5-17 to the SUPPLY DUCT position.
- (f) When the temperature on the AIR TEMP gauge is stable, make a record of the pneumatic duct pressure on the DUCT PRESS gauge and the SUPPLY DUCT temperature on the data sheet of Figure 602.
- (g) Make a record on the data sheet of Figure 602 of the flow and temperature of the air from the diagnostics tool.
- (h) Make a record on the data sheet of Figure 602 of the position of the indicators on these components:
  - 1) 35 °F control valve
  - 2) pack flow control and shutoff valve
  - 3) mix valve
  - 4) water separator bag condition indicator.

SUBTASK 21-51-00-700-015

- (11) Make sure that the pack flow and temperature indications from the diagnostic tool are within acceptable limits as follows:
  - (a) Make sure that the temperature of the air through the diagnostics tool is between 35°F and 39°F.
  - (b) Make sure that the flow indication from the diagnostics tool is within the expected flow range for the pack valve in the auto flow mode (Figure 603).

SUBTASK 21-51-00-700-008

- (12) Do this check of the right pack flow with the right pack system in the APU HI-FLOW mode:
  - (a) Set the R PACK switch on the P5-10 air conditioning panel to HIGH.
  - (b) Set the engine BLEED 1 and 2 switches to OFF.
  - (c) Observe the FMC to make sure that the pack configuration is as selected.
  - (d) Let the flow and temperature indications on the pack air flow/temperature diagnostics tool stabilize.
  - (e) Set the AIR TEMP selector on the temperature control panel P5-17 to the SUPPLY DUCT position.
  - (f) When the temperature on the TEMP gauge on the P5-17 temperature control panel is stable, make a record of the pneumatic pressure on the DUCT PRESS gauge and the SUPPLY DUCT temperature on the data sheet of Figure 602.
  - (g) Make a record on the data sheet of Figure 602 of the flow and temperature of the air from the diagnostics tool.
  - (h) Make a record on the data sheet of Figure 602 of the position of the indicators on these components:
    - 1) 35 °F control valve
    - 2) pack flow control and shutoff valve
    - 3) mix valve
    - 4) water separator bag condition indicator.

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SUBTASK 21-51-00-700-011

- (13) Make sure that the pack flow and temperature indications from the diagnostic tool are within acceptable limits as follows:
- (a) Make sure that the temperature of the air through the diagnostics tool is between 35°F and 39°F.
  - (b) Make sure that the flow indication from the diagnostics tool is within the expected flow range for the pack valve in the APU HI-FLOW mode (Figure 603).

SUBTASK 21-51-00-860-033

- (14) Set the R PACK switch on the P5-10 air conditioning panel to OFF.

SUBTASK 21-51-00-860-034

- (15) Set the APU BLEED switch on the P5-10 air conditioning panel to OFF.

SUBTASK 21-51-00-860-035

- (16) Make sure the engine BLEED 1 and 2 switches are set to OFF.

SUBTASK 21-51-00-700-009

- (17) Make sure that the R pointer on the DUCT PRESS gauge on the P5-10 panel indicates 0 psi.

SUBTASK 21-51-00-860-036

- (18) Observe the FMC to make sure that the pack configuration is as selected.

SUBTASK 21-51-00-080-002

- (19) Remove the pack air flow/temperature diagnostics tool.

SUBTASK 21-51-00-420-002

- (20) Install the right conditioned air check valve. To install the conditioned air check valve, do this task: Conditioned Air Check Valve Installation, TASK 21-51-07-400-801-001.

SUBTASK 21-51-00-020-001

- (21) Remove the left conditioned air check valve. To remove the conditioned air check valve, do this task: Conditioned Air Check Valve Removal, TASK 21-51-07-000-801-001.

SUBTASK 21-51-00-480-002

- (22) Install the pack air flow/temperature diagnostics tool, P/N 020040-01, as follows (Figure 601):

- (a) Install the diagnostics tool where the left conditioned air check valve was removed:
  - 1) Make sure that the arrow on the tool points in the forward direction.
- (b) Put the clamps that were used to retain the conditioned air check valve in position to retain the diagnostics tool.
- (c) Tighten the clamps to 50 in-lbs. to retain the diagnostics tool.
- (d) Connect the 28V or 115 VAC power sources to the tool.
- (e) Position the display box for the tool in a convenient location inside the aircraft.

SUBTASK 21-51-00-970-001

- (23) Make a record of the outside air temperature (OAT) and the dew point on the data sheet of Figure 602.

SUBTASK 21-51-00-860-031

- (24) Set these switches on the P5-10 air conditioning panel as follows:

- (a) ISOLATION VALVE switch to CLOSE
- (b) APU BLEED switch to ON.

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SUBTASK 21-51-00-863-002

(25) Let the pneumatic duct pressure stabilize.

SUBTASK 21-51-00-700-007

(26) Observe the DUCT PRESS gauge on the P5-10 air conditioning panel:

(a) Make a record of the L DUCT PRESS indication on the data sheet of Figure 602.

SUBTASK 21-51-00-700-006

(27) Read the flow and temperature indications on the pack air flow/temperature diagnostics tool:

(a) Make a record of the flow (pounds per minute) and temperature (°F) indications on the data sheet of Figure 602.

**NOTE:** This step is a check that solenoid "C" of the pack valve is energized to the closed position and that there is no flow through the pack valve.

SUBTASK 21-51-00-700-005

(28) Do this check of the left pack flow with the left pack valve in the HIGH flow mode:

(a) Set the L PACK switch to AUTO.

(b) Set the CONT CABIN temperature selector on the P5-17 temperature control panel to MANUAL COOL.

(c) Make a record of the flow and temperature of the air through the left pack valve as follows:

1) Observe the FMC to make sure that the pack configuration is as selected.

2) Let the flow and temperature indications on the pack air flow/temperature diagnostics tool stabilize.

3) Set the AIR TEMP selector on the P5-17 temperature control panel to SUPPLY DUCT.

4) When the temperature indication on the TEMP gauge is stable, make a record of the SUPPLY DUCT temperature and pressure on the data sheet of Figure 602.

5) Make a record of the flow and temperature of the air from the diagnostics tool on the data sheet of Figure 602.

6) Make a record on the data sheet of Figure 602 of the position of the indicators on these components:

a) 35°F control valve

b) pack flow control and shutoff valve, V18

c) mix valve

d) water separator bag condition indicator

SUBTASK 21-51-00-700-012

(29) Make sure that the pack flow and temperature indications from the diagnostic tool are within acceptable limits as follows:

(a) Make sure that the temperature of the air through the diagnostics tool is between 35°F and 39°F.

(b) Make sure that the flow indication from the diagnostics tool is within the expected flow range for the pack valve in the high flow mode (Figure 603).

SUBTASK 21-51-00-700-004

(30) Do this check of the left pack flow with the left pack valve in the AUTO flow mode:

(a) Set the L PACK switch to AUTO.

(b) Set either engine BLEED 1 or BLEED 2 switch to ON.

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- (c) Observe the FMC to make sure that the pack configuration is as selected.
- (d) Let the flow and temperature indications on the pack air flow/temperature diagnostics tool stabilize.
- (e) Set the AIR TEMP selector on the P5-17 temperature control panel to SUPPLY DUCT.
- (f) When the temperature on the TEMP gauge is stable, make a record of the SUPPLY DUCT temperature and the L DUCT PRESS pressure indication on the data sheet of Figure 602.
- (g) Make a record on the data sheet of Figure 602 of the flow and temperature of the air through the diagnostics tool.
- (h) Make a record on the data sheet of Figure 602 of the position of the indicators of these components:
  - 1) 35°F control valve
  - 2) pack flow control and shutoff valve
  - 3) mix valve
  - 4) water separator bag condition indicator.

SUBTASK 21-51-00-700-013

- (31) Make sure that the pack flow and temperature indications from the diagnostic tool are within acceptable limits as follows:
  - (a) Make sure that the temperature of the air through the diagnostics tool is between 35°F and 39°F.
  - (b) Make sure that the flow indication from the diagnostics tool is within the expected flow range for the pack valve in the low flow (AUTO) mode (Figure 603).

SUBTASK 21-51-00-700-003

- (32) Do this check of the left pack flow with the left pack valve in the APU HI-FLOW mode:
  - (a) Set the L PACK switch on the P5-10 panel to the HIGH position.
  - (b) Make sure that the engine pneumatic BLEED 1 and BLEED 2 switches are set to OFF.
  - (c) Observe the FMC to make sure that the pack configuration is as selected.
  - (d) Let the flow and temperature indications on the pack air flow/temperature diagnostics tool stabilize.
  - (e) Set the AIR TEMP selector on the P5-17 temperature control panel to SUPPLY DUCT.
  - (f) When the temperature on the TEMP gauge is stable, make a record of the SUPPLY DUCT temperature and the L DUCT PRESS pressure indication on the data sheet of Figure 602.
  - (g) Make a record on the data sheet of Figure 602 of the flow and temperature of the air from the diagnostics tool.
  - (h) Make a record on the data sheet of Figure 602 of the position of the indicators on these components:
    - 1) 35°F control valve
    - 2) pack flow control and shutoff valve
    - 3) mix valve
    - 4) water separator bag condition indicator.

SUBTASK 21-51-00-700-014

- (33) Make sure that the pack flow and temperature indications from the diagnostic tool are within acceptable limits as follows:

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- (a) Make sure that the temperature of the air through the diagnostics tool is between 35°F and 39°F.
- (b) Make sure that the flow indication from the diagnostics tool is within the expected flow range for the pack valve in the APU HI-FLOW mode (Figure 603).

SUBTASK 21-51-00-860-030

- (34) Set the L PACK switch to OFF.

SUBTASK 21-51-00-864-002

- (35) Set the APU BLEED switch to OFF.

SUBTASK 21-51-00-212-002

- (36) Make sure that the pressure indication on the DUCT PRESS gauge on the P5-10 panel is 0 psi.

SUBTASK 21-51-00-212-001

- (37) Observe the FMC to make sure that the pack configuration is as selected.

SUBTASK 21-51-00-080-001

- (38) Remove the pack air flow/temperature diagnostics tool.

SUBTASK 21-51-00-420-001

- (39) Install the left conditioned air check valve. To install the conditioned air check valve, do this task: Conditioned Air Check Valve Installation, TASK 21-51-07-400-801-001.

### G. Return the Airplane Back to Its Usual Condition

SUBTASK 21-51-00-864-001

- (1) Remove pneumatic pressure from the pneumatic ducts. To remove pneumatic pressure, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-00-860-037

- (2) Set the APU BLEED switch on the P5-10 air conditioning panel to OFF.

SUBTASK 21-51-00-860-025

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

SUBTASK 21-51-00-862-001

- (4) If no longer required, remove electrical power. To remove electrical power, do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

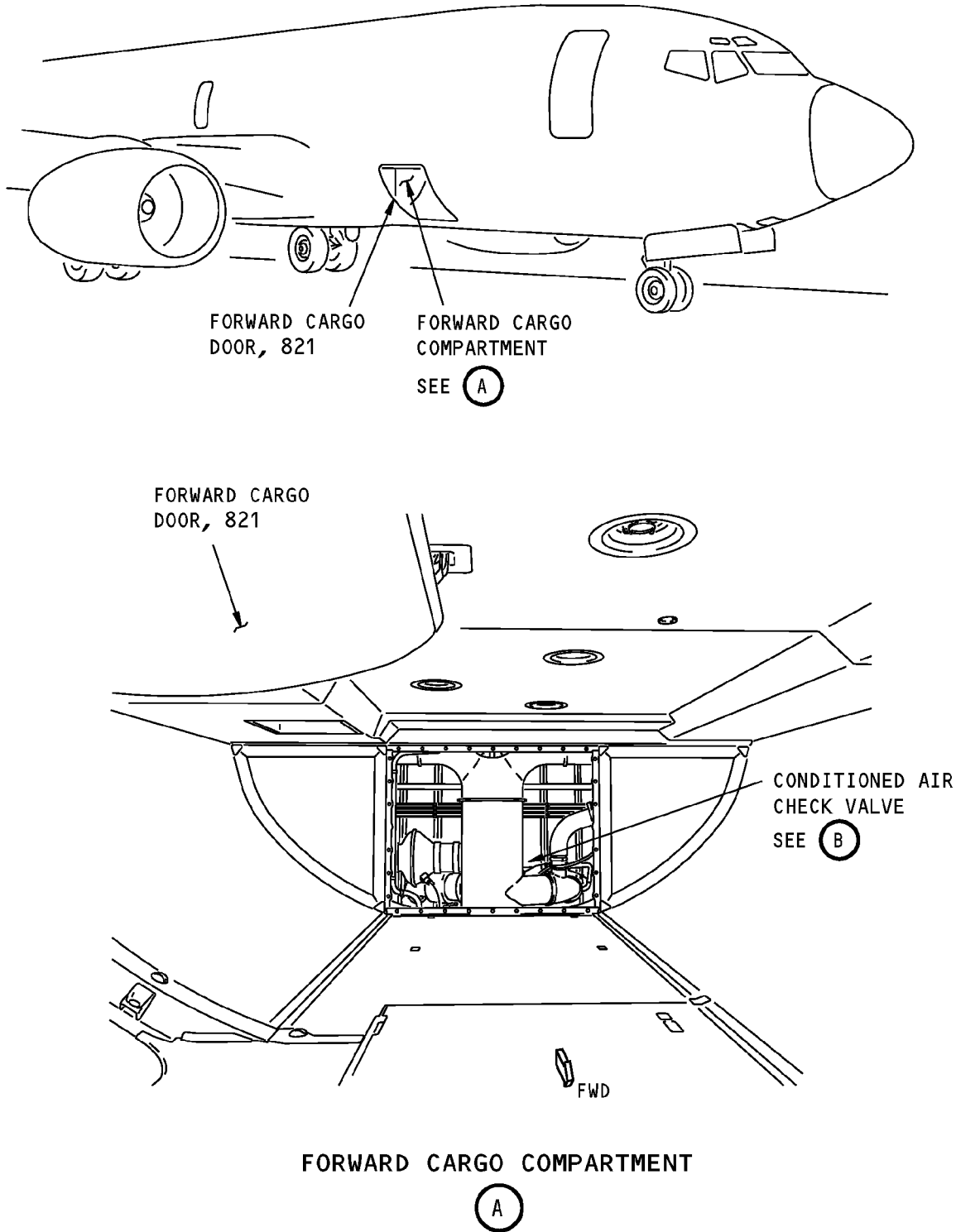
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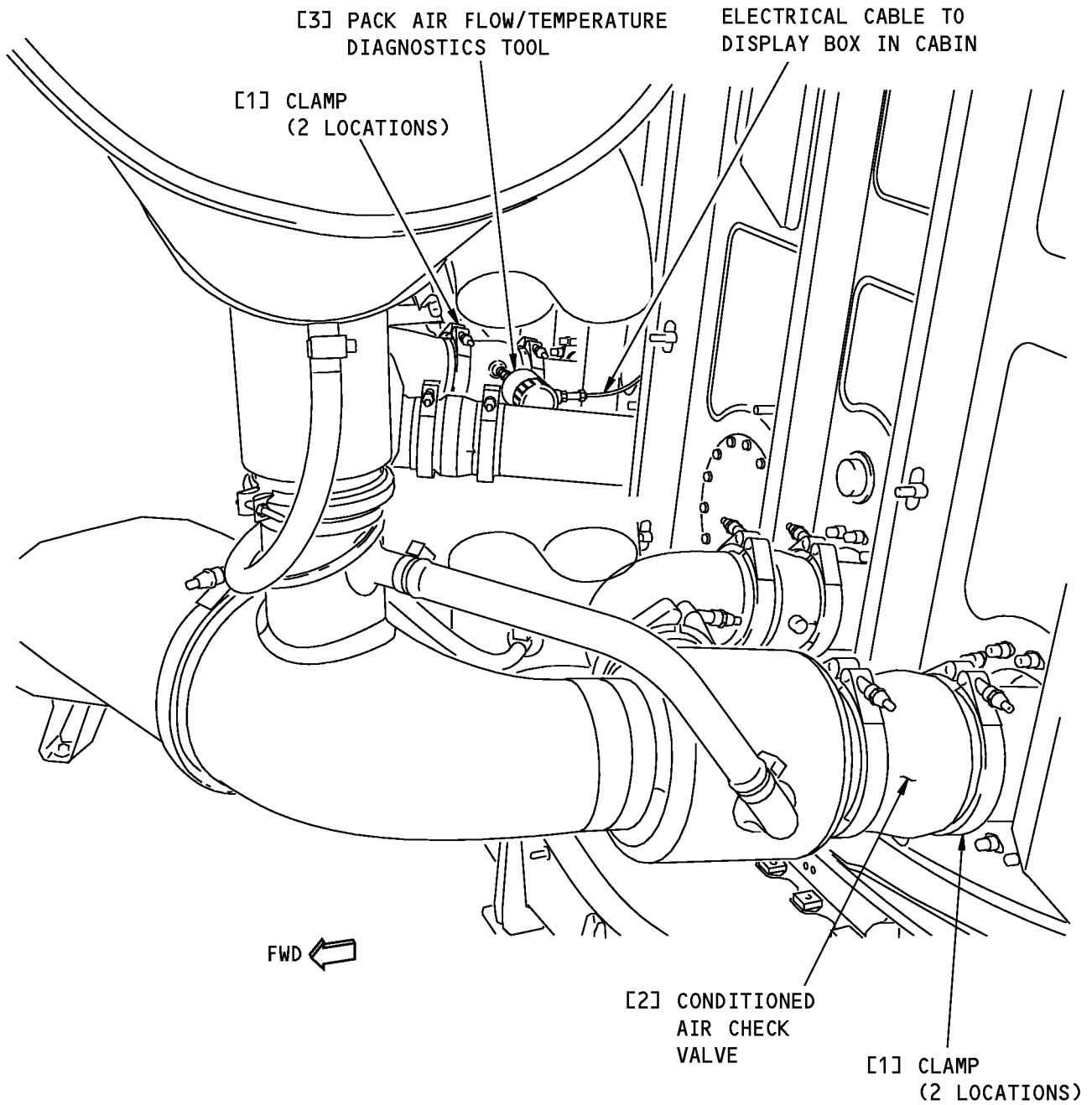
**Pack Air Flow/Temperature Diagnostics Tool Installation  
Figure 601 (Sheet 1 of 2)/21-51-00-990-810**

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**CONDITIONED AIR CHECK VALVE**

**B**

**Pack Air Flow/Temperature Diagnostics Tool Installation  
Figure 601 (Sheet 2 of 2)/21-51-00-990-810**

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DATA COLLECTION SHEET

Airplane \_\_\_\_\_ Pack: Left or Right Date: \_\_\_\_\_  
Ambient Temperature: \_\_\_\_\_ °C or °F Dew Point: \_\_\_\_\_

Flow Mode: HIGH

Pack Flow: \_\_\_\_\_ lbs/min Pack Temperature: \_\_\_\_\_ °F  
Duct Pressure \_\_\_\_\_ PSI Duct Temperature: \_\_\_\_\_ °C or F  
35 °F Valve Position: Circle one Full Close Half Closed \_\_\_\_\_ %Closed  
Flow Control Valve: Indicate percent open \_\_\_\_\_ % Open  
Water Separator Indicator Position: Red Black

Flow Mode: AUTO

Pack Flow: \_\_\_\_\_ lbs/min Pack Temperature: \_\_\_\_\_ °F  
Duct Pressure \_\_\_\_\_ PSI Duct Temperature: \_\_\_\_\_ °C or F  
35 °F Valve Position: Circle one Full Close Half Closed \_\_\_\_\_ %Closed  
Flow Control Valve: Indicate percent open \_\_\_\_\_ % Open  
Water Separator Indicator Position: Red Black

Flow Mode: APU HIGH

Pack Flow: \_\_\_\_\_ lbs/min Pack Temperature: \_\_\_\_\_ °F  
Duct Pressure \_\_\_\_\_ PSI Duct Temperature: \_\_\_\_\_ °C or F  
35 °F Valve Position: Circle one Full Close Half Closed \_\_\_\_\_ %Closed  
Flow Control Valve: Indicate percent open \_\_\_\_\_ % Open  
Water Separator Indicator Position: Red Black

Any other observations:

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Pack Flow Control and Pack Cooling System Check - Data Sheet  
Figure 602/21-51-00-990-813

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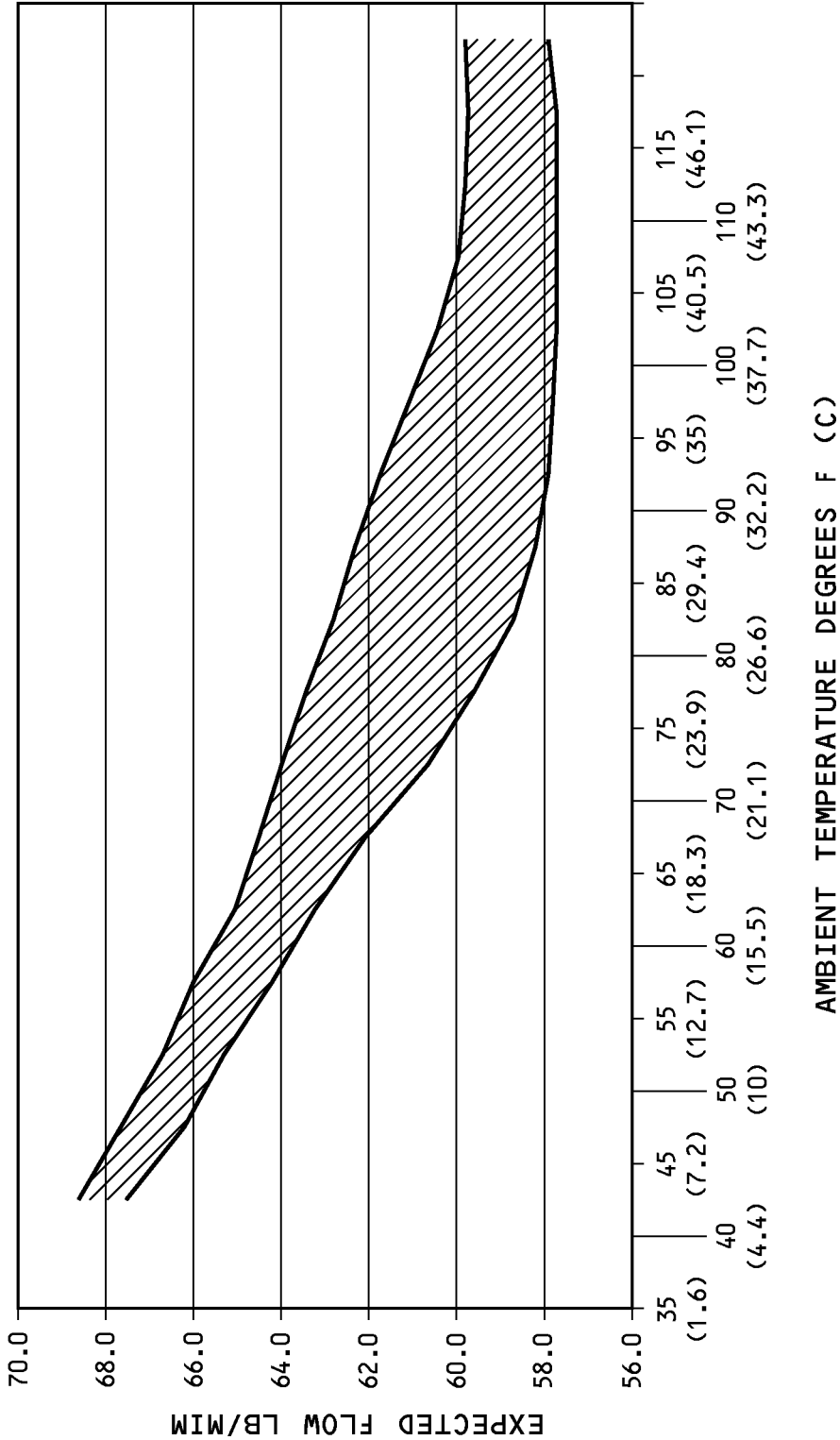
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SINGLE PACK EXPECTED FLOWS IN AUTO FLOW MODE



LEGEND:

▨ - EXPECTED FLOW RANGE

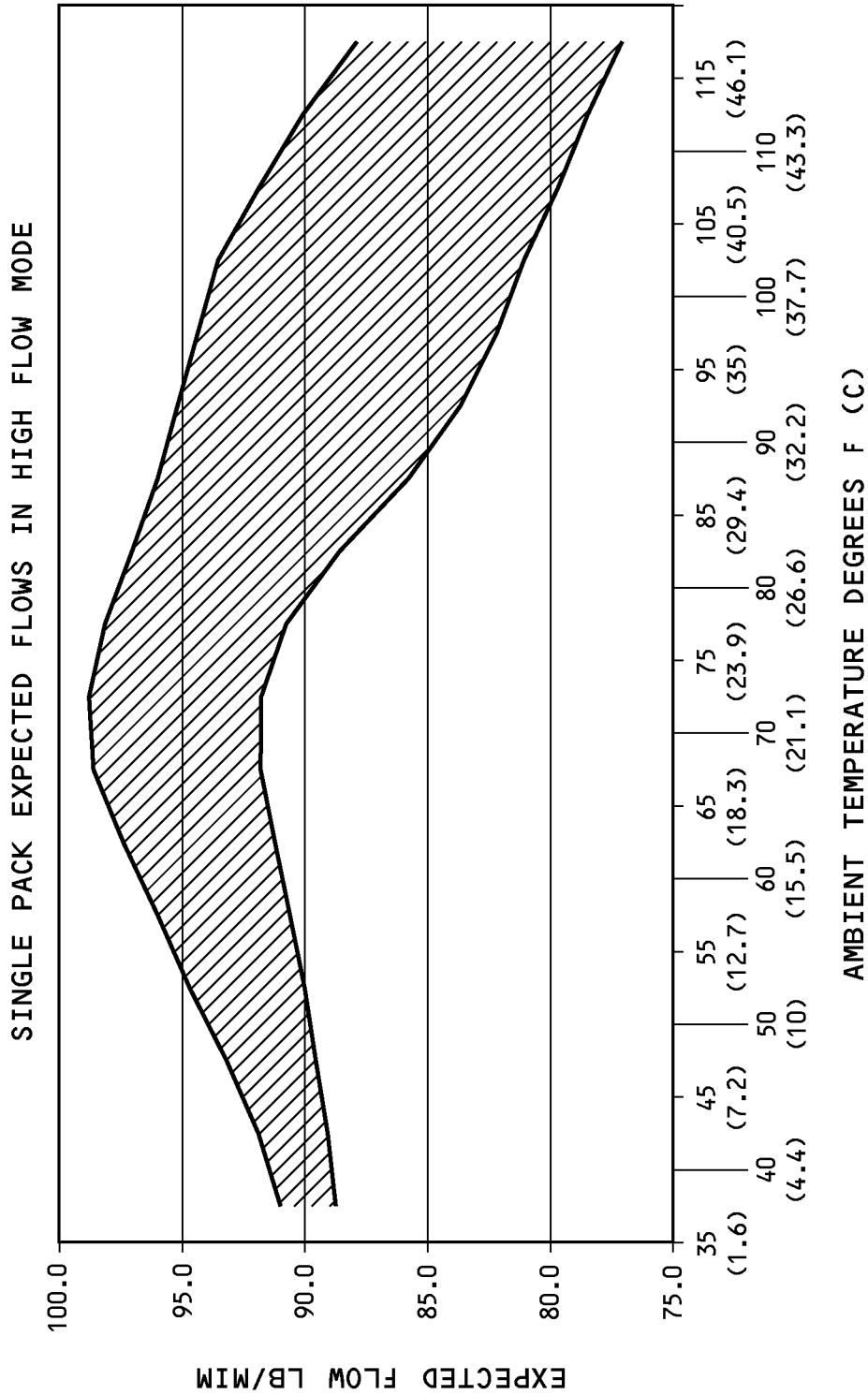
Air Conditioning Pack Flow Performance Checks  
Figure 603 (Sheet 1 of 3)/21-51-00-990-814

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**LEGEND:**

- EXPECTED FLOW RANGE

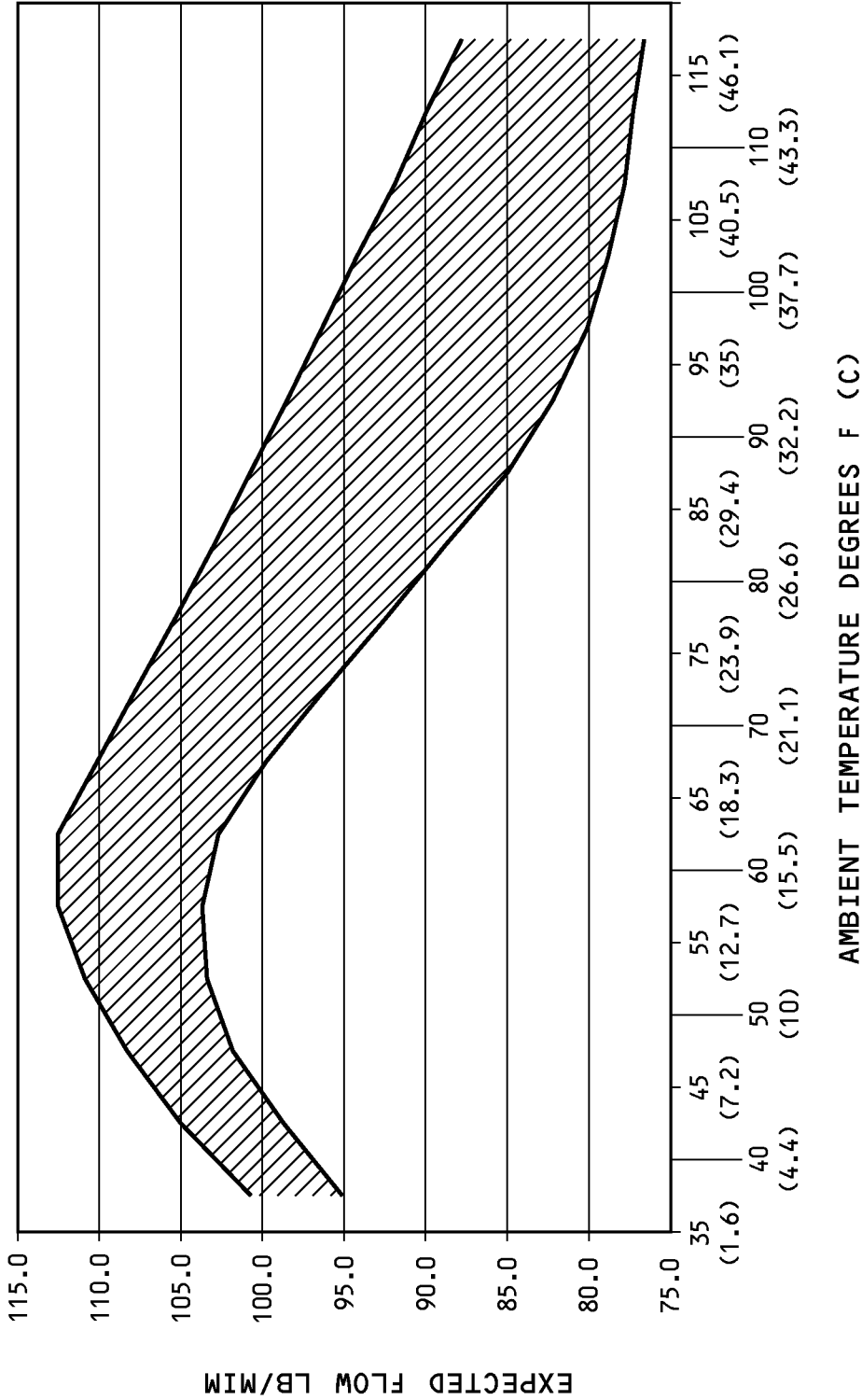
**Air Conditioning Pack Flow Performance Checks  
Figure 603 (Sheet 2 of 3)/21-51-00-990-814**

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
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**SINGLE PACK EXPECTED FLOWS IN APU HIGH FLOW MODE**



**LEGEND:**

 - EXPECTED FLOW RANGE

**Air Conditioning Pack Flow Performance Checks  
Figure 603 (Sheet 3 of 3)/21-51-00-990-814**

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## AIRCRAFT MAINTENANCE MANUAL

### 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.
- (2) An installation of the flow control and shutoff valve.

#### **TASK 21-51-01-000-801-001**

#### 2. Flow Control and Shutoff Valve Removal

(Figure 401)

A. References

Reference	Title
21-51-05-000-801	Water Separator Removal (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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-01-860-010-001

**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 21-51-01-860-011-001

- (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.
  - (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 21-51-01-010-001-001

- (3) For the left flow control and shutoff valve, do this step:
  - (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 LEFT

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SUBTASK 21-51-01-010-002-001

- (4) For the right flow control and shutoff valve, do this step:
  - (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT

SUBTASK 21-51-01-010-003-001

- (5) Do this step to get access to the left flow control and shutoff valve:  
Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-01-010-004-001

- (6) Do these steps to get access to the right flow control and shutoff valve:  
Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

SUBTASK 21-51-01-010-008-001

- (7) Remove the water separator. To remove the water separator, do this task: Water Separator Removal, TASK 21-51-05-000-801.

#### E. Flow Control and Shutoff Valve Removal

SUBTASK 21-51-01-020-012-001

**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 air supply duct [2]:
  - (a) Remove the clamp [3].
  - (b) Remove the clamp [17].
  - (c) Remove the nut [10], washer [9], washer [6], and bolt [7].
  - (d) Remove the washer [8] between the tie rod and the flange of the air supply duct [2].
  - (e) Remove the air supply duct [2].

SUBTASK 21-51-01-020-013-001

- (2) Do these steps to remove the 35° F duct [4]:
  - (a) Remove the couplings [5].
  - (b) Remove the 35° F duct [4].

SUBTASK 21-51-01-020-002-001

- (3) Do these steps to remove the electrical connectors:

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- (a) Disconnect electrical connector D486 (left), D490 (right) from the flow control and shutoff valve [1].
- (b) Disconnect electrical connector D962 (left), D964 (right) from the flow control and shutoff valve [1].
- (c) Disconnect electrical connector D488 (left), D492 (right) from the flow control and shutoff valve [1].
- (d) Disconnect electrical connector D392 (left), D394 (right) from the flow control and shutoff valve [1].

SUBTASK 21-51-01-020-004-001

- (4) Do these steps to remove the sense line from the flow control and shutoff valve [1]:
  - (a) Loosen the b-nut on the sense line.
  - (b) Remove the union [13].
  - (c) Discard the O-ring [12].

SUBTASK 21-51-01-020-015-001

- (5) Do this step to remove the left flow control and shutoff valve [1]:
  - (a) Remove the screw [16] and washer [15] that connect the bonding jumper [14] to the structure.

SUBTASK 21-51-01-020-016-001

- (6) Do these steps to disconnect the bonding jumper [14] from the right flow control and shutoff valve [1]:
  - (a) Remove the nut [18], the washers [20], and the screw [19].
  - (b) Move the bonding jumper [14] away from the flow control and shutoff valve [1].

SUBTASK 21-51-01-020-005-001

- (7) Hold the valve [1] as you remove the clamp [11].

SUBTASK 21-51-01-020-006-001

- (8) Remove the flow control and shutoff valve [1].

SUBTASK 21-51-01-020-007-001

- (9) Do these steps to remove the bonding jumper [14] from the left flow control and shutoff valve [1]:

**NOTE:** You will have to install the bonding jumper [14] on the new flow control and shutoff valve [1].

- (a) Remove the nut [18], the washers [20], and the screw [19].
- (b) Remove the bonding jumper [14] from the flow control and shutoff valve [1].
- (c) Keep the bonding jumper [14], screw [19], washers [20], and nut [18] for installation on the new valve [1].

SUBTASK 21-51-01-410-001-001

- (10) Put covers on the duct openings to keep out unwanted materials.

————— **END OF TASK** —————

EFFECTIVITY  
HAP 101-999

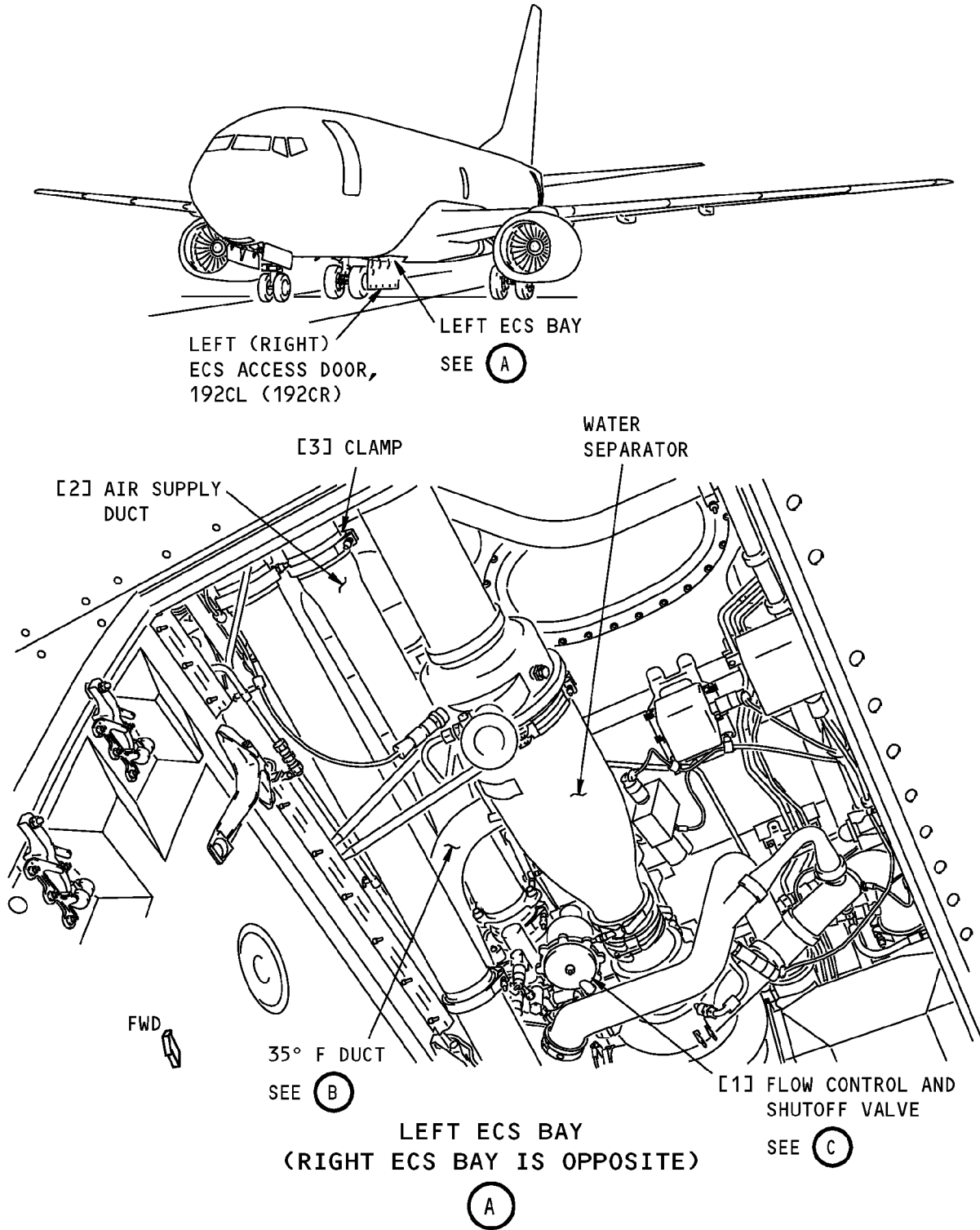
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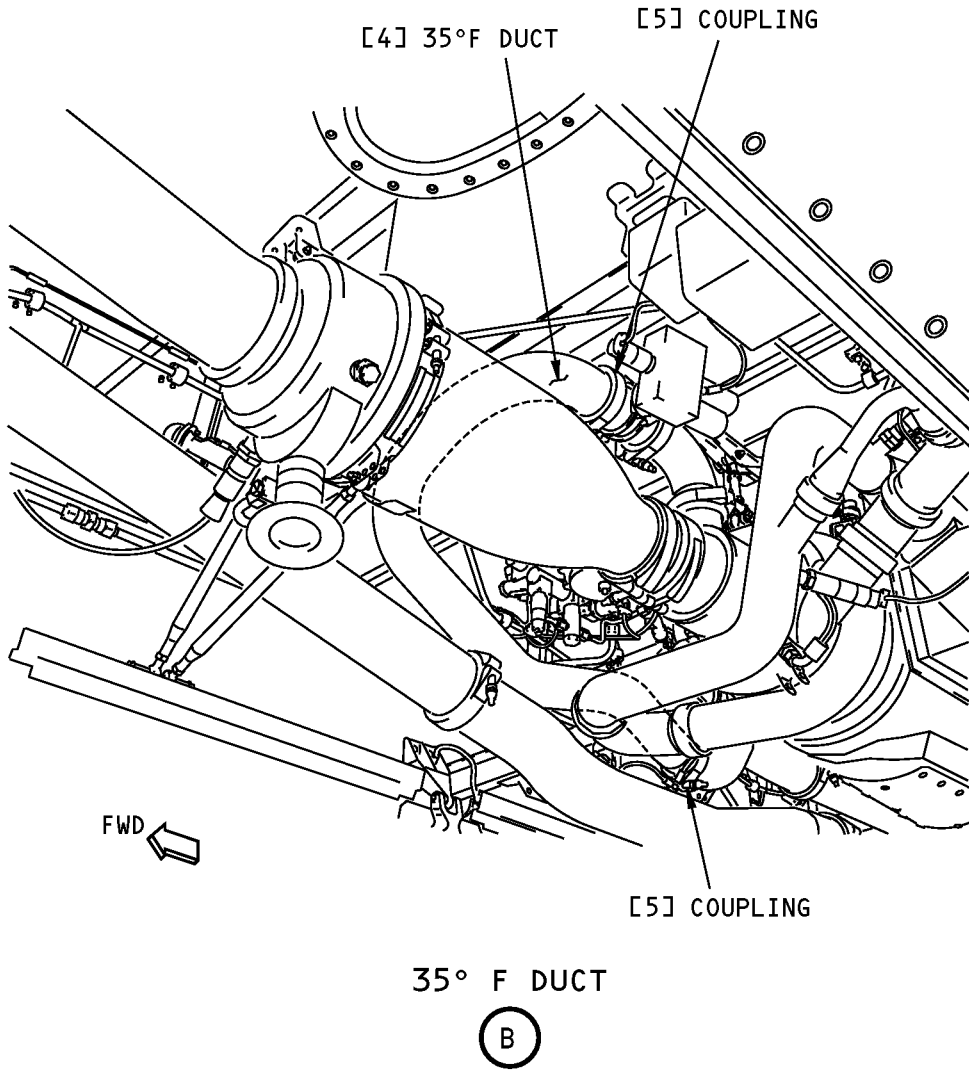
**Flow Control and Shutoff Valve Installation  
Figure 401 (Sheet 1 of 3)/21-51-01-990-801-001**

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**Flow Control and Shutoff Valve Installation  
Figure 401 (Sheet 2 of 3)/21-51-01-990-801-001**

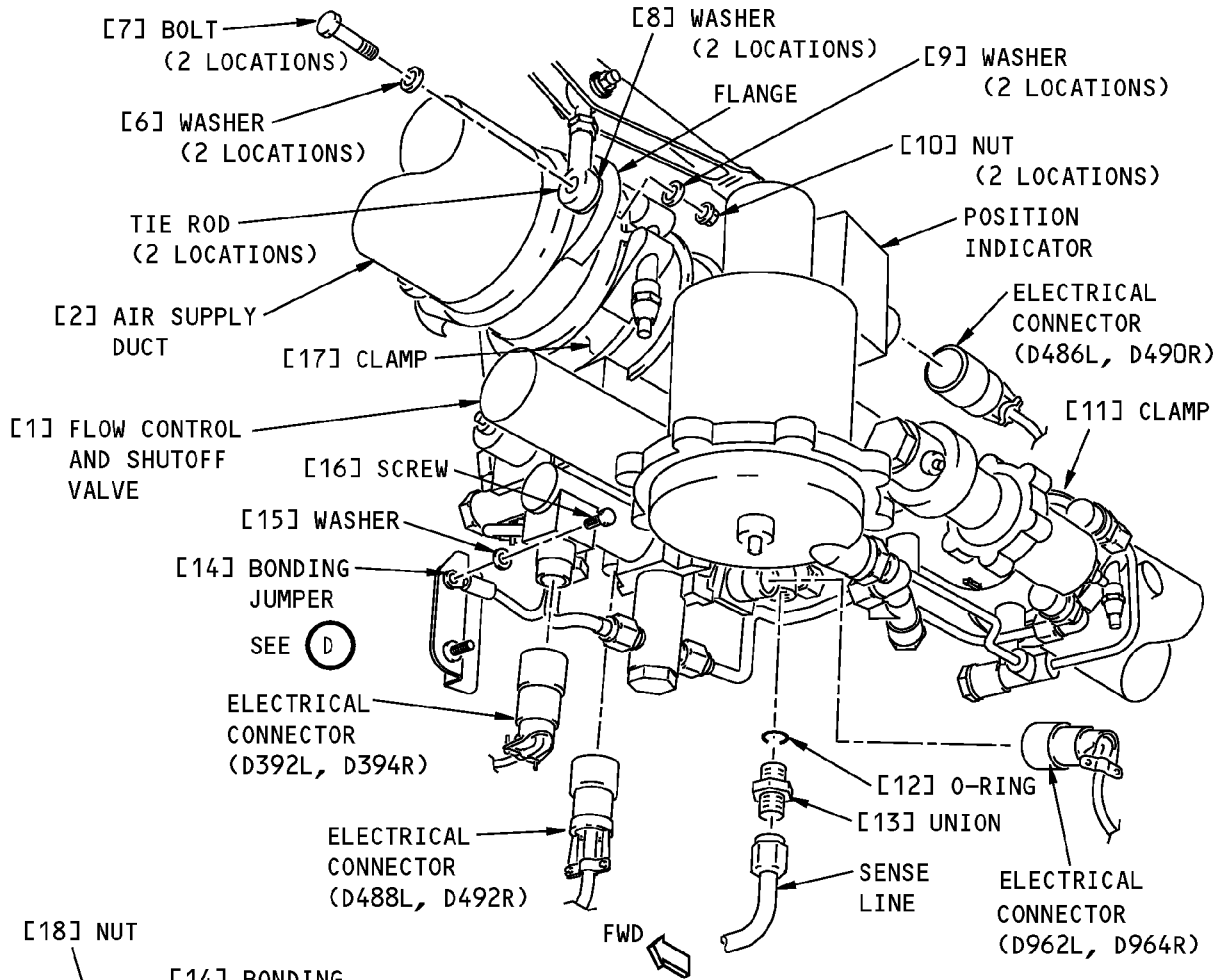
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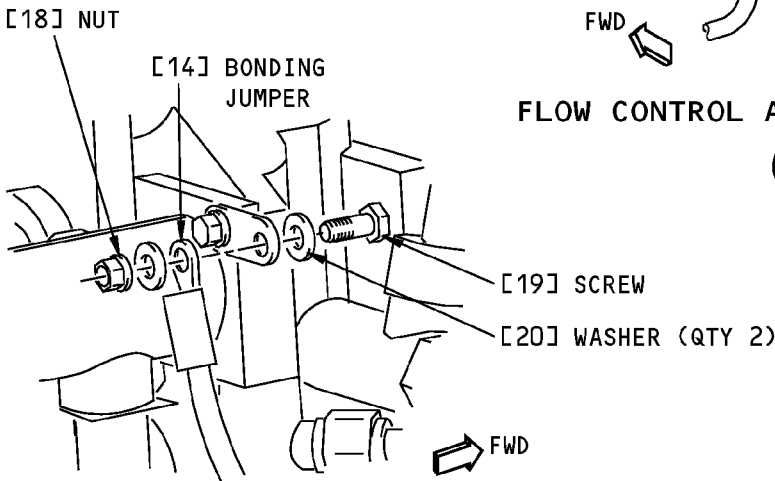
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**FLOW CONTROL AND SHUTOFF VALVE**

(C)



**BONDING JUMPER TO VALVE BODY**

(D)

**Flow Control and Shutoff Valve Installation  
Figure 401 (Sheet 3 of 3)/21-51-01-990-801-001**

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TASK 21-51-01-400-801-001

#### 3. Flow Control and Shutoff Valve Installation

(Figure 401)

##### A. References

Reference	Title
21-51-05-400-802	Water Separator Installation (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)
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-8N	MIL-PRF-907F

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-51-01-06-035	HAP 101-999
12	O-ring	21-51-53-02-065	HAP 101
		21-51-53-02-068	HAP 101-999
		21-51-53-03-050	HAP 101-999
		21-51-53-03-130	HAP 101-999

##### D. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

##### E. Access Panels

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

##### F. Flow Control and Shutoff Valve Installation

SUBTASK 21-51-01-010-005-001

(1) Remove the covers from the duct openings.

SUBTASK 21-51-01-020-008-001

(2) Do these steps to install the bonding jumper [14] on the left flow control and shutoff valve:

(a) Set the bonding jumper [14] on the flow control and shutoff valve.

(b) Install the screw [19], the washers [20], and the nut [18].

SUBTASK 21-51-01-980-001-001

(3) Put the flow control and shutoff valve [1] in its position.

SUBTASK 21-51-01-420-001-001

(4) Loosely install the clamp [11].

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SUBTASK 21-51-01-020-009-001

- (5) Do these steps to install the air supply duct [2]:
- Put the air supply duct [2] in its position.
  - Loosely install the clamp [17].
  - Loosely install the clamp [3].
  - Put the washer [8] in its position between the tie rod and the flange of the air supply duct [2].
  - Install the bolt [7], the washer [6], the washer [9], and the nut [10].
  - For the flow control and shutoff valve on the right pack, make sure there is a minimum of 0.10 inch clearance between the valve and the bonding jumper ground stud on the keel beam.
    - 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.
  - Tighten the nut on the clamp [17] 60 to 65 pound-inches (6.8 to 7.3 newton-meters).
  - Tighten the nut on the clamp [3] 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

SUBTASK 21-51-01-020-010-001

- (6) Do these steps to install the sense line on the flow control and shutoff valve [1]:
- Apply a layer of Never-Seez NSBT-8N compound, D00006 to the threads the union [13].
  - Install a new O-ring [12] and the union [13] on the flow control and shutoff valve [1].
  - Tighten the b-nut on the sense line.

SUBTASK 21-51-01-420-002-001

- (7) Tighten the nut on the clamp [11] 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

SUBTASK 21-51-01-020-011-001

- (8) Do these steps to install the electrical connectors:
- Install electrical connector D486 (left), D490 (right) on the flow control and shutoff valve [1].
  - Install electrical connector D962 (left), D964 (right) on the flow control and shutoff valve [1].
  - Install electrical connector D488 (left), D492 (right) on the flow control and shutoff valve [1].
  - Install electrical connector D392 (left), D394 (right) on the flow control and shutoff valve [1].

SUBTASK 21-51-01-420-003-001

- (9) Do this step to install the bonding jumper [14] for the left flow control and shutoff valve [1]:
- Install the screw [16] and washer [15] that connect the bonding jumper [14] to the structure.

SUBTASK 21-51-01-020-017-001

- (10) Do these steps to install the bonding jumper [14] on the right flow control and shutoff valve:
- Set the bonding jumper [14] on the flow control and shutoff valve.
  - Install the screw [19], the washers [20], and the nut [18].

SUBTASK 21-51-01-020-014-001

- (11) Do these steps to install the 35° F duct [4]:
- Put the 35° F duct [4] in position.
  - Install the couplings [5], and tighten to 55 to 60 pound-inches (6.2 to 6.8 newton-meters).

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SUBTASK 21-51-01-410-004-001

(12) Install the water separator. To install the water separator, do this task: Water Separator Installation, TASK 21-51-05-400-802.

SUBTASK 21-51-01-010-006-001

(13) If you replaced the left flow control and shutoff valve, do this step:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

SUBTASK 21-51-01-010-007-001

(14) If you replaced the right flow control and shutoff valve, do this step:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT

SUBTASK 21-51-01-860-012-001

(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 21-51-01-860-002-001

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

SUBTASK 21-51-01-860-003-001

(2) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-51-01-860-004-001

(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 21-51-01-860-005-001

(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 21-51-01-860-006-001

(5) Do these steps to make sure the flow control valve is fully open with the applicable pack switch in the HIGH position:

- (a) Put the applicable L PACK switch or R PACK switch in the HIGH position.

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- (b) Make sure the position indicator on the flow control and shutoff valve moves to the fully open position.

SUBTASK 21-51-01-790-001-001

- (6) Make sure there is no air leakage at the couplings or at the sense lines.

SUBTASK 21-51-01-860-007-001

- (7) Put the applicable L PACK or R PACK switch in the OFF position.

SUBTASK 21-51-01-860-008-001

- (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 21-51-01-410-002-001

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-01-410-003-001

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

SUBTASK 21-51-01-860-009-001

- (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) 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	Air Conditioning 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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.

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- (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].

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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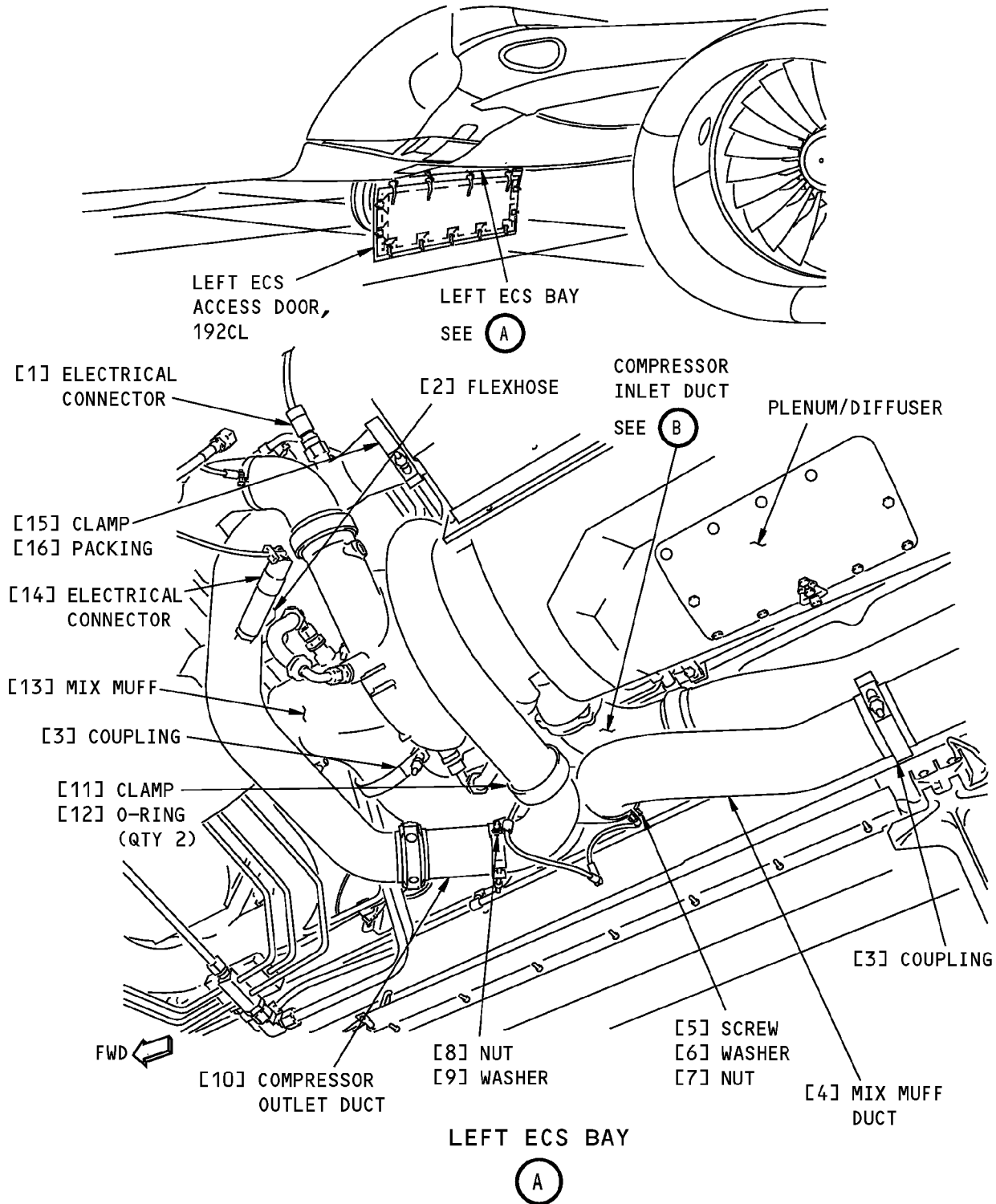
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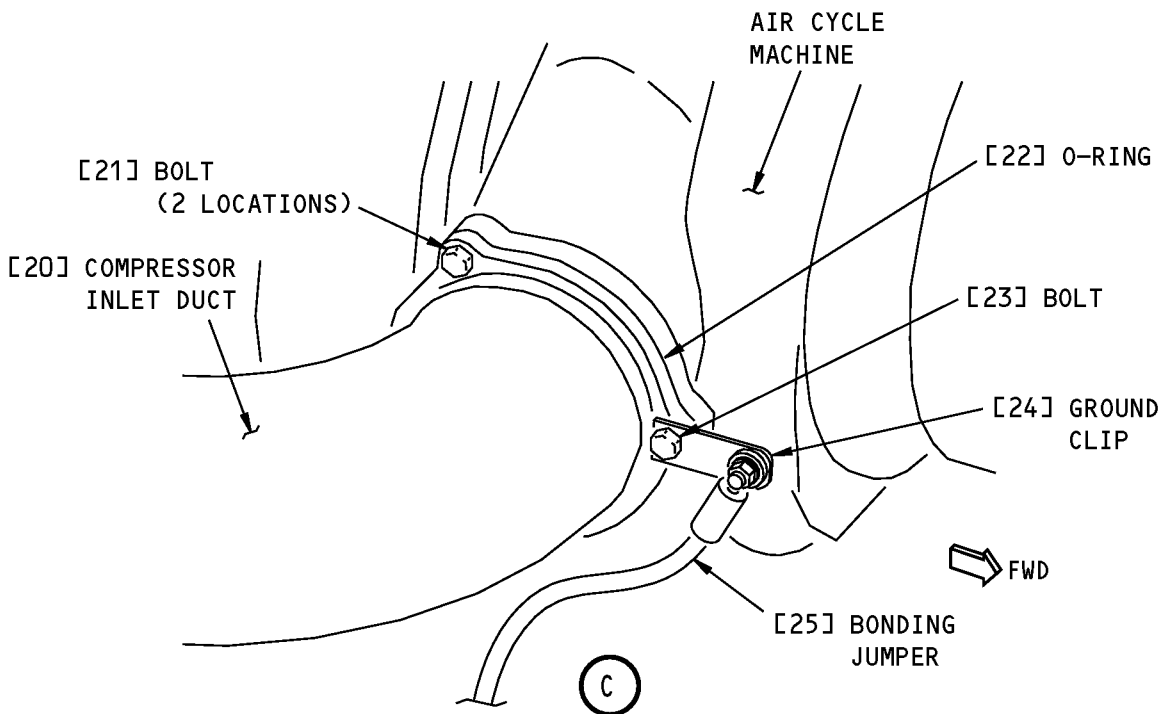
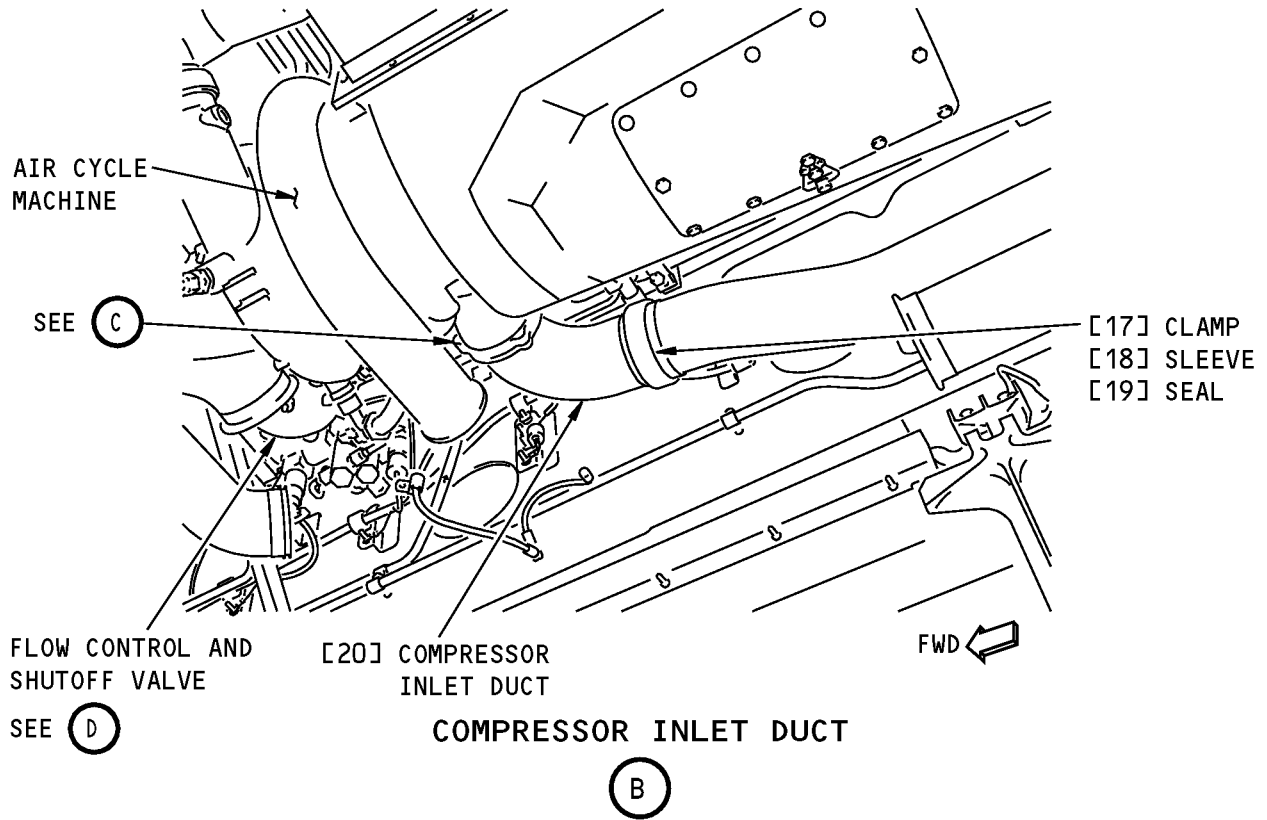
**Left Flow Control and Shutoff Valve Installation  
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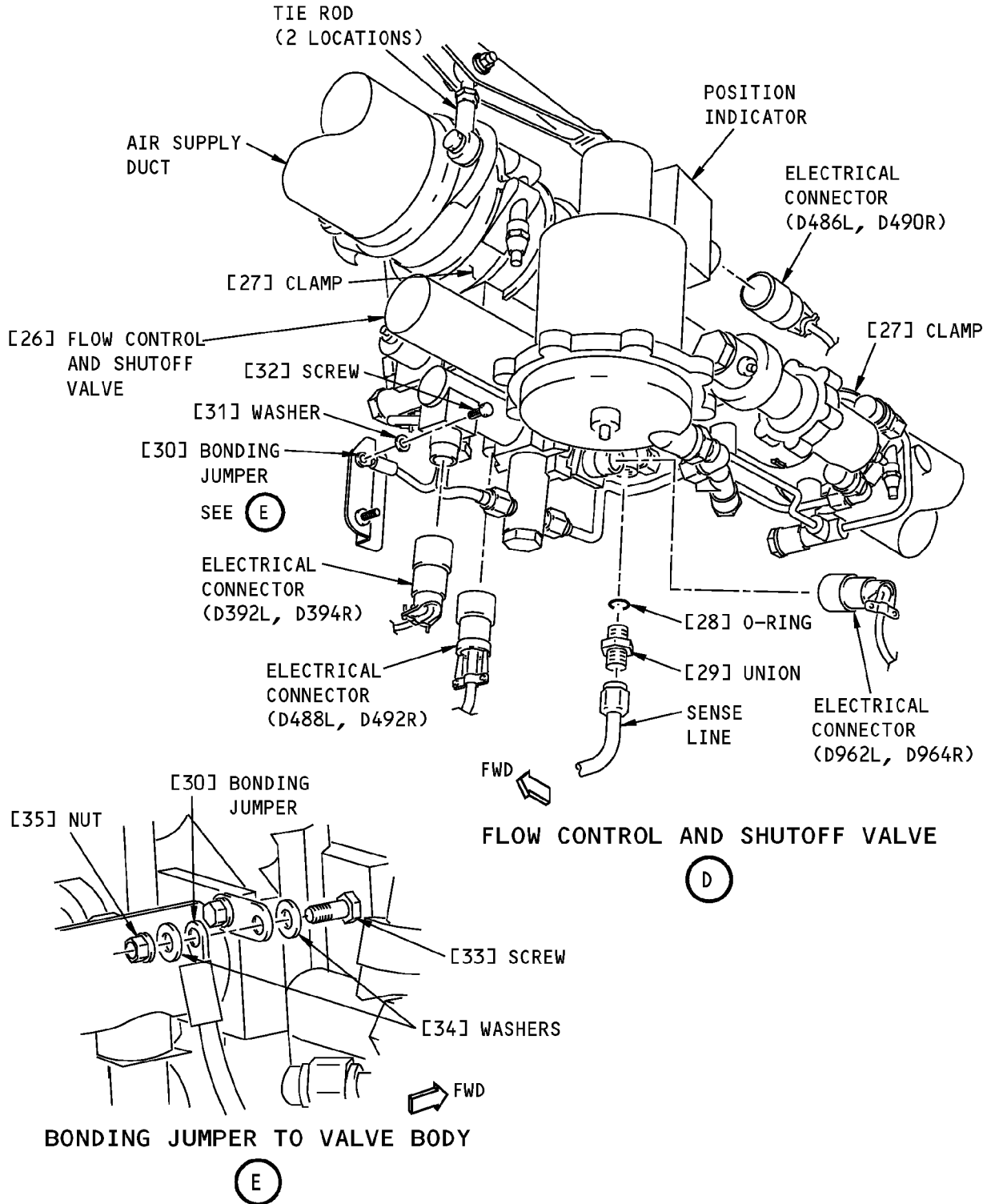
**Left Flow Control and Shutoff Valve Installation**  
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**Left Flow Control and Shutoff Valve Installation  
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TASK 21-51-01-000-805-002

#### 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	Air Conditioning 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 RIGHT

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

EFFECTIVITY
HAP 001-013, 015-026, 028-054

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Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

**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].

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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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].

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** —————

EFFECTIVITY

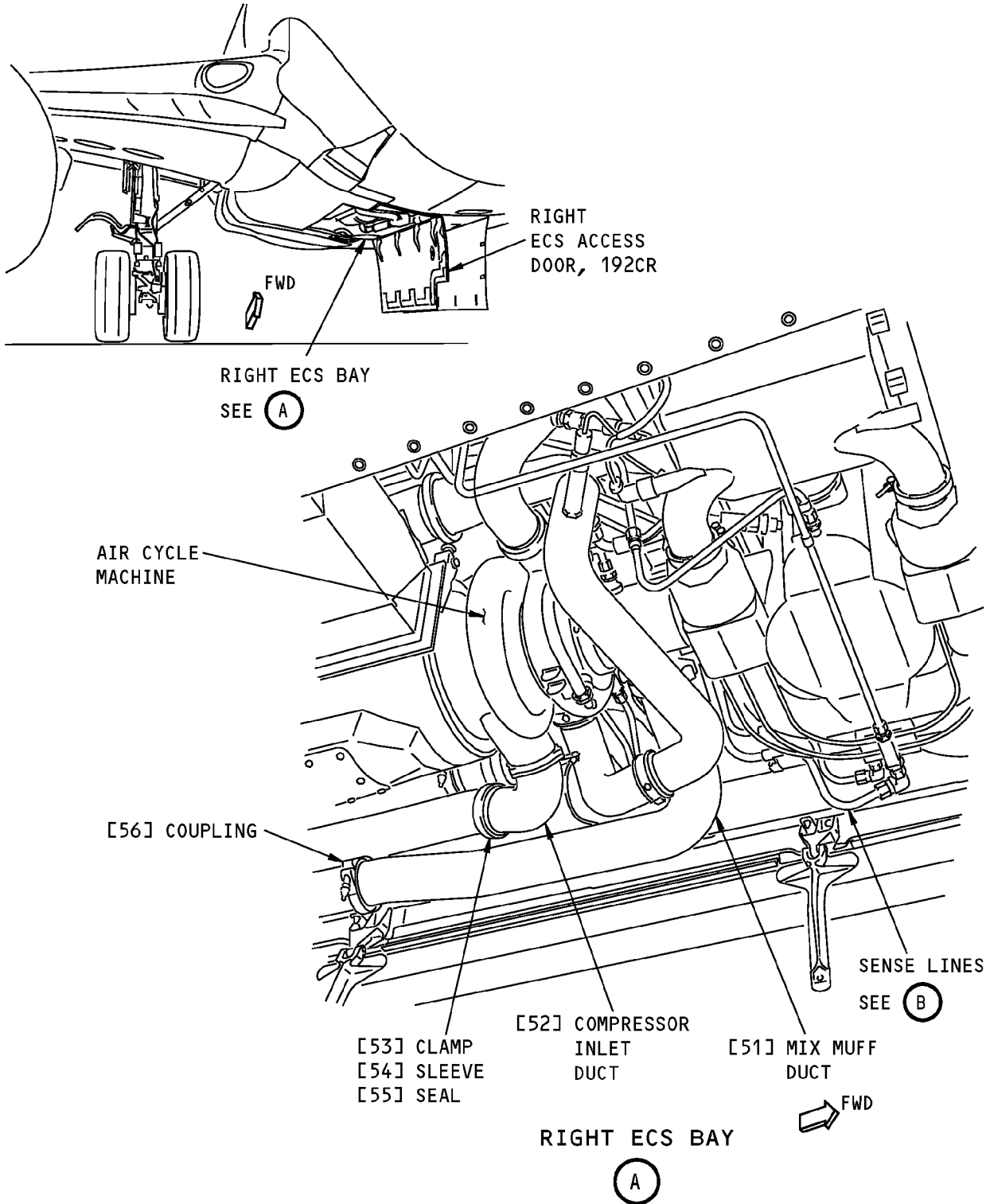
HAP 001-013, 015-026, 028-054

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**Right Flow Control and Shutoff Valve Installation  
Figure 402 (Sheet 1 of 3)/21-51-01-990-805-002**

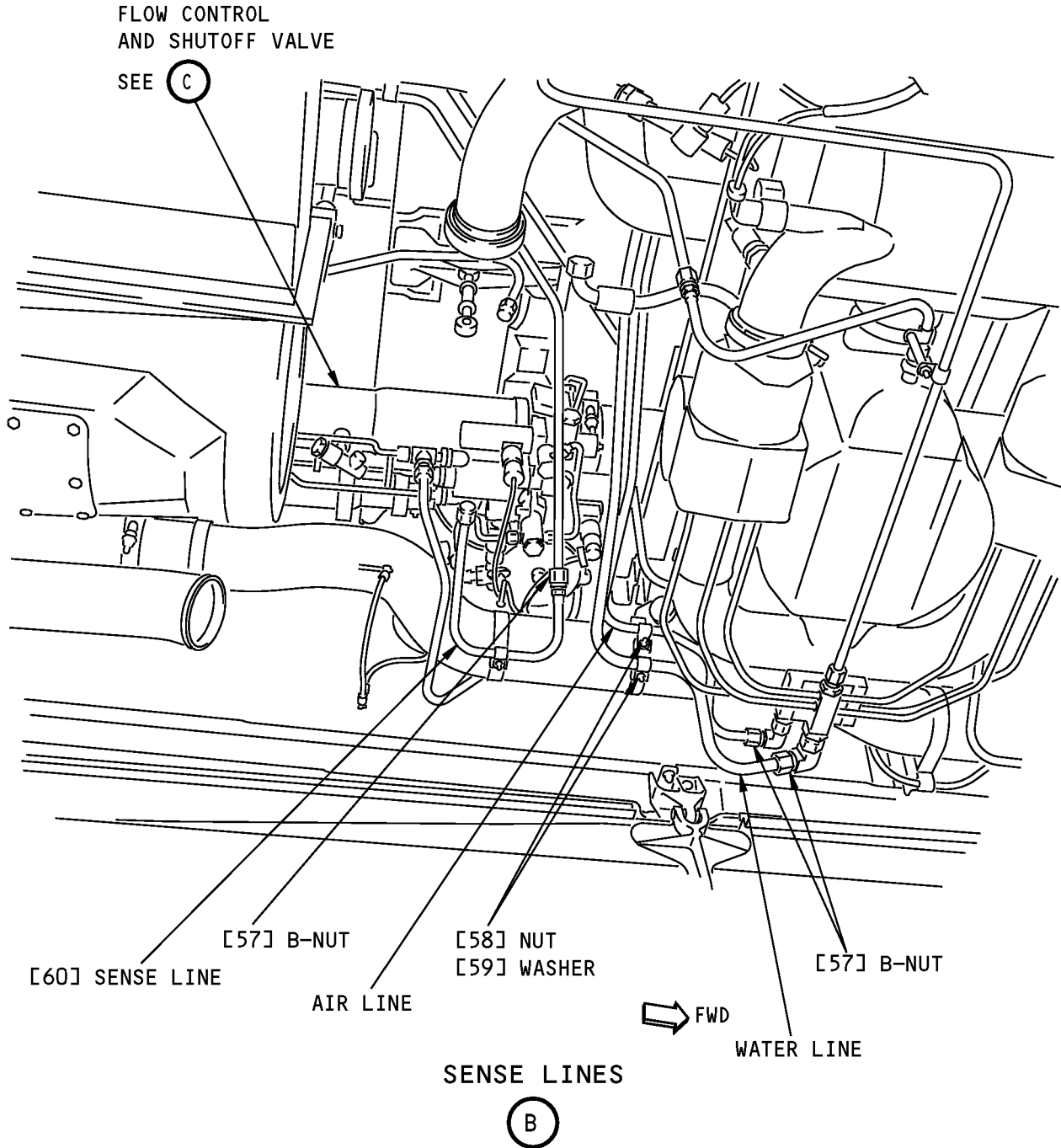
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**AIRCRAFT MAINTENANCE MANUAL**



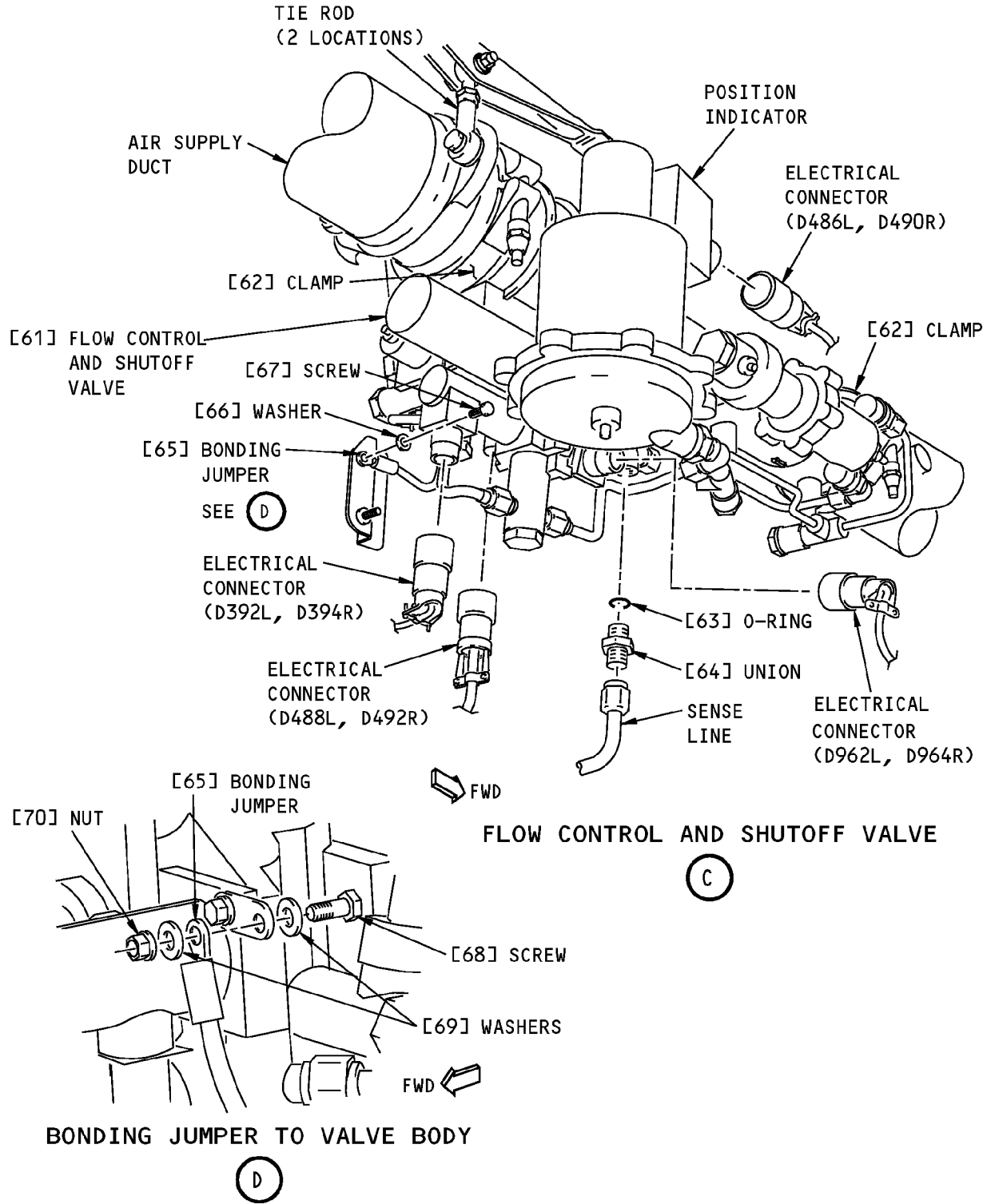
**Right Flow Control and Shutoff Valve Installation**  
**Figure 402 (Sheet 2 of 3)/21-51-01-990-805-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**Right Flow Control and Shutoff Valve Installation**  
**Figure 402 (Sheet 3 of 3)/21-51-01-990-805-002**

EFFECTIVITY  
 HAP 001-013, 015-026, 028-054

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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)
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-8N	MIL-PRF-907F
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	HAP 001-013, 015-026, 028-046, 054
16	Packing	21-51-03-05A-040	HAP 001-013, 015-026, 028-046, 054
19	Seal	21-51-01-04-165	HAP 001-013, 015-026, 028-030
		21-51-01-05-145	HAP 001-013, 015-026, 028-030
		21-51-10-03-070	HAP 031-047, 054
		21-51-10-03-072	HAP 048-053
22	O-ring	21-51-03-05A-025	HAP 001-013, 015-026, 028-046, 054
		21-51-03-05A-185	HAP 001-013, 015-026, 028-046, 054
26	Valve	21-51-01-04-170	HAP 001-013, 015-026, 028-030
		21-51-01-05-150	HAP 001-013, 015-026, 028-030
		21-51-01-06-035	HAP 031-054
28	O-ring	21-51-53-04-213	HAP 031-046, 054
		21-51-53-18-260	HAP 001-013, 015-026, 028-030

##### D. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

EFFECTIVITY HAP 001-013, 015-026, 028-054
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### E. Access Panels

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning 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.

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-8N 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.

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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- (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]:
  - (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-8N 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

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

EFFECTIVITY
HAP 001-013, 015-026, 028-054

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(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.

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 21-51-01-790-005-002

(6) Make sure there is no air leakage at the couplings or the sense line connections you removed for this task.

SUBTASK 21-51-01-860-054-002

(7) Put the applicable L PACK or R PACK switch in the OFF position.

SUBTASK 21-51-01-860-055-002

(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 21-51-01-410-018-002

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-01-410-019-002

(2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

EFFECTIVITY

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Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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

<u>Reference</u>	<u>Title</u>
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

<u>Reference</u>	<u>Description</u>	<u>Specification</u>
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT-8N	MIL-PRF-907F

C. Expendables/Parts

<u>AMM Item</u>	<u>Description</u>	<u>AIPC Reference</u>	<u>AIPC Effectivity</u>
55	Seal	21-51-01-05-145	HAP 001-013, 015-026, 028-030
		21-51-10-04-070	HAP 031-054
		21-51-13-01-170	HAP 001-013, 015-026, 028-030
		21-51-41-03-085	HAP 001-013, 015-026, 028-030
61	Valve	21-51-01-04-170	HAP 001-013, 015-026, 028-030
		21-51-01-05-150	HAP 001-013, 015-026, 028-030
63	O-ring	21-51-01-06-035	HAP 031-054
		21-51-53-04-213	HAP 031-046, 054
		21-51-53-04A-201	HAP 047-053
		21-51-53-19-300	HAP 001-013, 015-026, 028-030

D. Location Zones

<u>Zone</u>	<u>Area</u>
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

**EFFECTIVITY**  
**HAP 001-013, 015-026, 028-054**

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### E. Access Panels

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning 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].

- (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-8N 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:

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HAP 001-013, 015-026, 028-054

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- (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.
(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 [4]:

- (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).

SUBTASK 21-51-01-010-016-002

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

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Row C, Col 6, Number C00262, Name AIR CONDITIONING PACK CONT VALVES LEFT

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.

EFFECTIVITY
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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.
  - (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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-01-410-007-002

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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** —————

EFFECTIVITY

HAP 001-013, 015-026, 028-054

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AIRCRAFT MAINTENANCE MANUAL

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).

**HAP 101-999**

- (3) The air conditioning accessory unit (ACAU) is installed in the electronic equipment center on the E4-1 shelf.

**HAP 001-013, 015-026, 028-054**

- (4) There are two air conditioning accessory units (ACAU) installed in the electronic equipment center on the E4-1 shelf.

**HAP ALL**

**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** —————

<b>EFFECTIVITY</b> <b>HAP ALL</b>	
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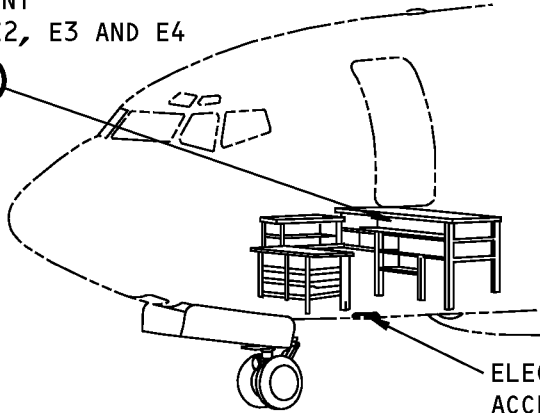
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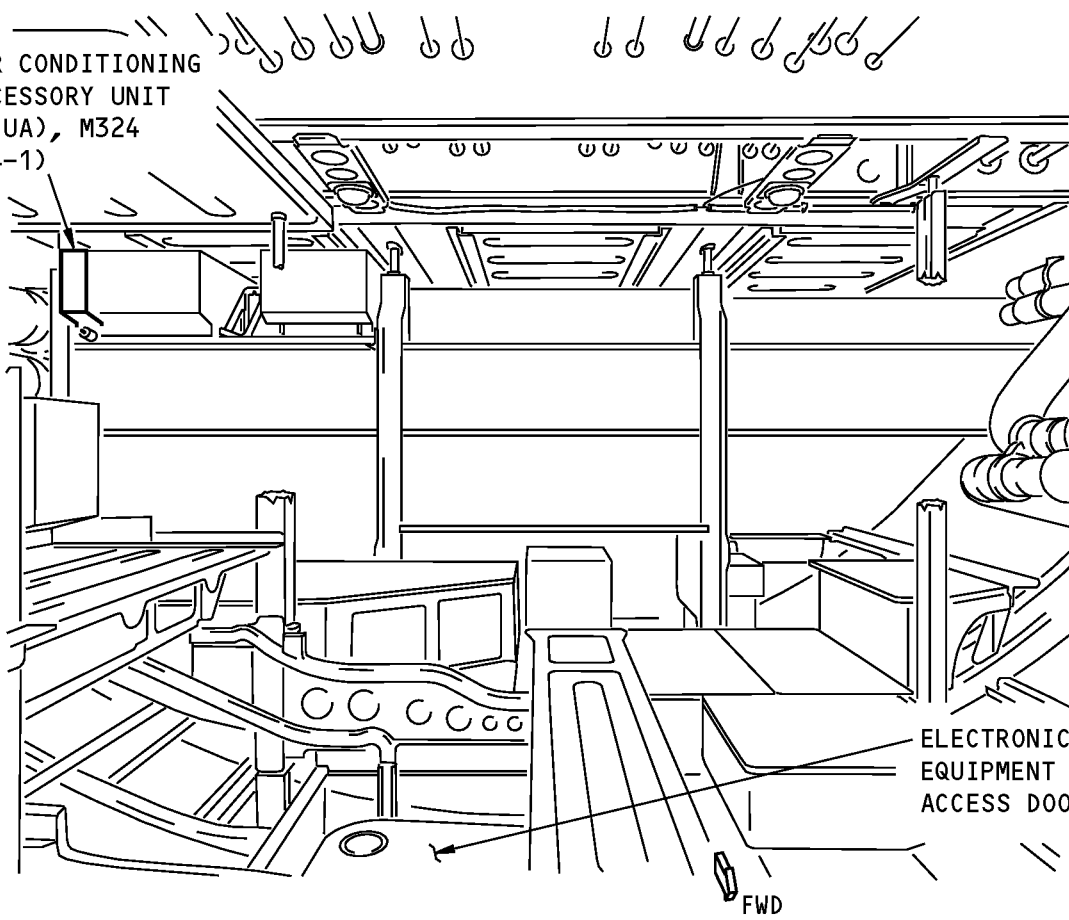
ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

SEE



ELECTRONIC EQUIPMENT  
ACCESS DOOR, 117A

[1] AIR CONDITIONING  
ACCESSORY UNIT  
(ACUA), M324  
(E4-1)



ELECTRONIC  
EQUIPMENT  
ACCESS DOOR, 117A

ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4



**Air Conditioning Accessory Unit (ACAU) Installation**  
**Figure 401 (Sheet 1 of 2)/21-51-02-990-801**

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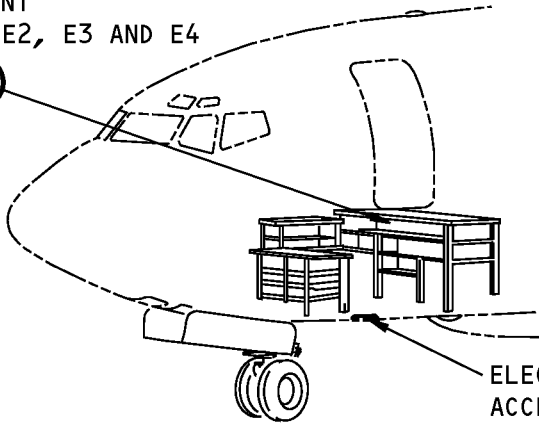
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**AIRCRAFT MAINTENANCE MANUAL**

ELECTRONIC  
EQUIPMENT  
RACKS, E2, E3 AND E4

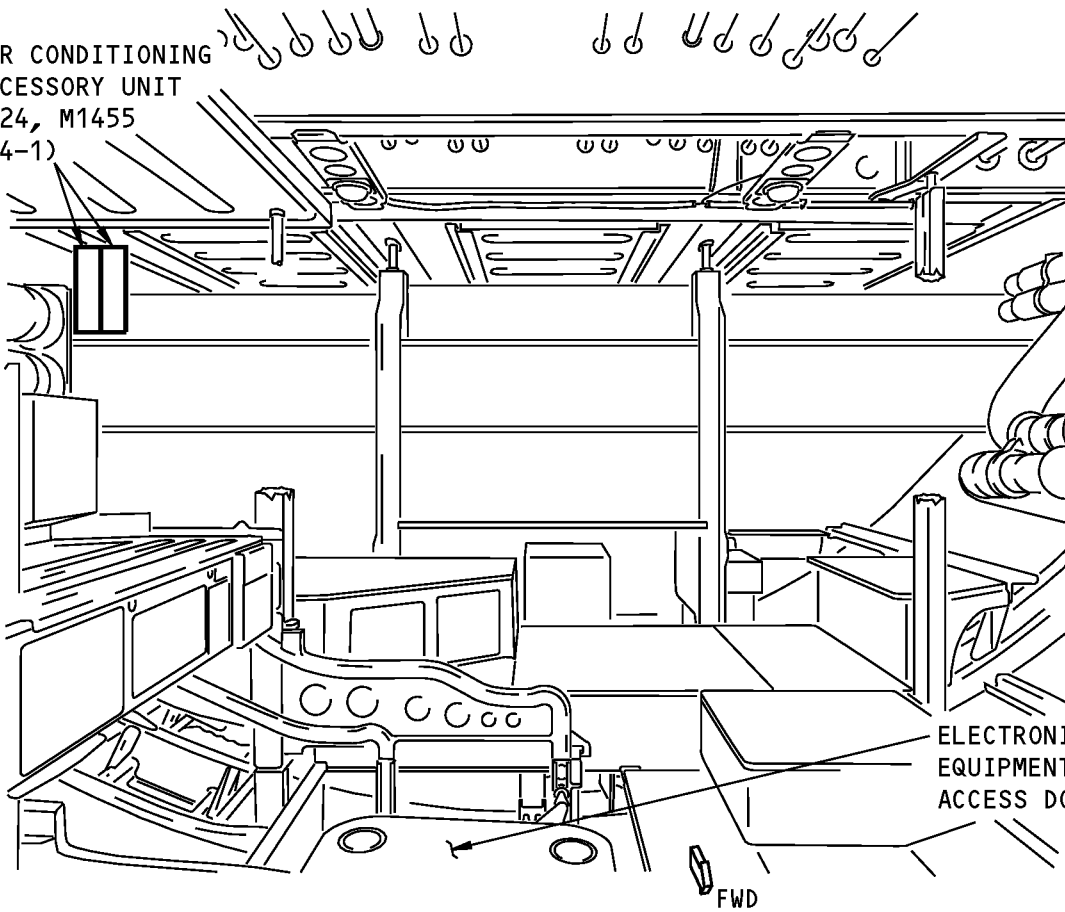
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(A)



ELECTRONIC EQUIPMENT  
ACCESS DOOR, 117A

[1] AIR CONDITIONING  
ACCESSORY UNIT  
M324, M1455  
(E4-1)



ELECTRONIC  
EQUIPMENT  
ACCESS DOOR, 117A

ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

(A)

**Air Conditioning Accessory Unit (ACAU) Installation**  
**Figure 401 (Sheet 2 of 2)/21-51-02-990-801**

EFFECTIVITY  
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# AIRCRAFT MAINTENANCE MANUAL

## 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)
21-51-02-710-801-001	Air Conditioning Accessory Unit - 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)

#### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	ACAU	21-51-02-01-300	HAP 001-011
		21-51-02-01-302	HAP 001-011
		21-51-02-02-005	HAP 101-999
		21-51-02-02-245	HAP 031-054
		21-51-02-02A-245	HAP 012, 013, 015-026, 028-030

#### C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

#### D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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

##### **HAP 101-999**

SUBTASK 21-51-02-740-001

- (1) Do this test of the ACAU [1]:

**NOTE:** If you replaced the Air Conditioning Accessory Unit (ACAU) because it had a defect, it is recommended that Air Conditioning Accessory Unit - Operational Test, TASK 21-51-02-710-801-001 be done. If there is not sufficient time to do the full adjustment/test, you may make a decision to do only the part of the adjustment/test that does a test of the system that had the defect. If just one test is done, you must do all of the Air Conditioning Accessory Unit - Operational Test, TASK 21-51-02-710-801-001 when there is sufficient time. If the ACAU is being replaced for any other reason, you may do just the test that follows.

- (a) Do this test of the control cabin and passenger cabin mix valve relays:

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## AIRCRAFT MAINTENANCE MANUAL

### HAP 101-999 (Continued)

- 1) Supply electrical power Supply Electrical Power, TASK 24-22-00-860-811.
- 2) Do this step to get access to the left flow control and shutoff valve, V18:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

- 3) Do this step to get access to the right flow control and shutoff valve, V19:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

- 4) Disconnect electrical connector D486 from the left pack valve, V18.
- 5) Disconnect electrical connector D490 from the right pack valve, V19.
- 6) Set the L PACK switch on the P5-10 air conditioning module to AUTO.
- 7) Set the CONT CABIN selector on the P5-17 temperature control panel to the MANUAL WARM position.
- 8) Make sure the AIR MIX VALVE position indicator moves to the HOT position.
- 9) Set the CONT CABIN selector on the P5-17 temperature control panel to the MANUAL COOL position.
- 10) Make sure the AIR MIX VALVE position indicator moves to the COOL position.
- 11) Set the CONT CABIN selector selector on the P5-17 temperature control panel to the MANUAL WARM position.
- 12) Make sure the AIR MIX VALVE position indicator moves to the HOT position.
- 13) Set the R PACK switch on the P5-10 air conditioning panel to the AUTO position.
- 14) Set the PASS CABIN selector on the P5-17 temperature control panel to the MANUAL WARM position.
- 15) Make sure the AIR MIX VALVE position indicator moves to the HOT position.
- 16) Set the PASS CABIN selector on the P5-17 temperature control panel to the MANUAL COOL position.
- 17) Make sure the AIR MIX VALVE position indicator moves to the COOL position.
- 18) Set the PASS CABIN selector on the P5-17 temperature control panel to the MANUAL WARM position.
- 19) Make sure the AIR MIX VALVE position indicator moves to the HOT position.
- 20) Set the L and R PACK switches on the P5-10 air conditioning panel to OFF.
- 21) Reconnect electrical connector D486 to the left pack valve, V18.
- 22) Reconnect electrical connector D490 to the right pack valve, V19.
- 23) Close these access panels that you opened to get access to the pack valves:

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### AIRCRAFT MAINTENANCE MANUAL

#### HAP 101-999 (Continued)

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

#### HAP 001-013, 015-026, 028-054

SUBTASK 21-51-02-710-010

(2) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

3) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

- 4) Disconnect electrical connector D532 from the left compressor discharge overheat switch, S2.
- 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.

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HAP 001-013, 015-026, 028-054 (Continued)

- 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) Make sure the AIR COND and MASTER CAUTION lights on the P7 glareshield go off.
- 13) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

3) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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) Make sure the AIR COND and MASTER CAUTION lights on the P7 glareshield go off.
- 13) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-02-410-001

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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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# AIRCRAFT MAINTENANCE MANUAL

## 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 relays module) after installation.
- B. All of the steps in the procedure must be completed to make sure the Air Conditioning Accessory Unit (ACAU) is serviceable.
- C. The ACAU is installed in the E/E bay on the E4-1 shelf.

#### **TASK 21-51-02-710-801-001**

### 2. Air Conditioning Accessory Unit - Operational Test

#### 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)
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)
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
54-53-02-000-802	Forward Strut Fairing Panel (Thrust Reverser Strut Fairing) Removal (P/B 401)
78-31-00-010-801-F00	Open the Thrust Reverser (Selection) (P/B 201)

#### B. Location Zones

Zone	Area
126	Air Conditioning Distribution Bay - Right
192	Lower Wing-To-Body Fairing - Under Wing Box
211	Flight Compartment - Left
212	Flight Compartment - Right

#### C. Access Panels

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door
431CL	Forward Strut Fairing, Left Overwing Fairing, Strut 1
431CR	Forward Strut Fairing, Right Overwing Fairing, Strut 1
441CL	Forward Strut Fairing, Left Overwing Fairing, Strut 2
441CR	Forward Strut Fairing, Right Overwing Fairing, Strut 2

#### D. Preparation for the Test

SUBTASK 21-51-02-860-002-001

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

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SUBTASK 21-51-02-860-003-001

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT
A	3	C00267	AIR CONDITIONING TEMP CONTROL MANUAL
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES LEFT
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	5	C00077	AIR CONDITIONING BLEED AIR PRESS IND
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES RIGHT
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT
C	4	C00257	AIR CONDITIONING OVERHEAT
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT
D	7	C00124	AIR CONDITIONING MIX VALVE POS IND
E	1	C01015	AIR CONDITIONING RECIRC FAN CONT
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

SUBTASK 21-51-02-860-004-001

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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 21-51-02-860-005-001

(4) Set these switches on the P5-10 air conditioning module to these positions:

- (a) L PACK to OFF
- (b) R PACK to OFF
- (c) BLEED 1 to OFF
- (d) BLEED 2 to OFF
- (e) ISOLATION VALVE to OPEN
- (f) RECIRC FAN to AUTO

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SUBTASK 21-51-02-860-006-001

- (5) Set the CONT CABIN and PASS CABIN temperature selector switches on the P5-17 temperature control module to the OFF position.

### E. ACAU Relay Module Test

SUBTASK 21-51-02-710-001-001

- (1) Do a test of the Ram Air System Relays:
  - (a) Make sure the AIR/GND logic shows GND.
  - (b) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door

### HAP 101-999; AIRPLANES WITH CONNECTORS D40844 AND D40846

- (c) Disconnect electrical connectors D40844 and D40846 from the left and right pack valves, respectively.

### HAP 101-999

- (d) Set the flaps to the FLAPS POS 1. To set the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.
- (e) Make sure that the two deflector doors for the ram air systems are fully extended.
- (f) Make sure the two RAM DOOR FULL OPEN lights on the P5-10 air conditioning panel are on.

**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.

- (g) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.
- (h) Make sure that the two deflector doors for the ram air systems retract to the fully faired position.
- (i) Make sure the two RAM DOOR FULL OPEN lights on the P5-10 air conditioning panel stay on.
- (j) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.
- (k) Make sure the two RAM DOOR FULL OPEN lights on the P5-10 air conditioning panel go off.
- (l) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.
- (m) Make sure the two RAM DOOR FULL OPEN lights on the P5-10 air conditioning panel come on.
- (n) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.
- (o) Make sure that the two deflector doors for the ram air systems are fully extended.
- (p) Make sure the two RAM DOOR FULL OPEN lights are on.

SUBTASK 21-51-02-710-002-001

- (2) Do a test of the control cabin mix valve relays:
  - (a) Set the L PACK switch on the P5-10 air conditioning module to AUTO.
  - (b) Set the CONT CABIN selector on the P5-17 temperature control panel to the MANUAL WARM position.

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- (c) Make sure the AIR MIX VALVE position indicator moves to the HOT position.
- (d) Set the CONT CABIN selector on the P5-17 temperature control panel to the MANUAL COOL position.
- (e) Make sure the AIR MIX VALVE position indicator moves to the COOL position.
- (f) Set the CONT CABIN selector on the P5-17 temperature control panel to the MANUAL WARM position.
- (g) Make sure the AIR MIX VALVE position indicator moves to the HOT position.

SUBTASK 21-51-02-710-003-001

(3) Do a test of the passenger cabin mix valve relays:

- (a) Set the R PACK switch on the P5-10 air conditioning panel to AUTO.
- (b) Set the PASS CABIN selector on the P5-17 temperature control panel to the MANUAL WARM position.
- (c) Make sure the AIR MIX VALVE position indicator moves to the HOT position.
- (d) Set the PASS CABIN selector on the P5-17 temperature control panel to the MANUAL COOL position.
- (e) Make sure the AIR MIX VALVE position indicator moves to the COOL position.
- (f) Set the PASS CABIN selector on the P5-17 temperature control panel to the MANUAL WARM position.
- (g) Make sure the AIR MIX VALVE position indicator moves to the HOT position.

SUBTASK 21-51-02-710-004-001

(4) Do a test of the cabin air recirculation fan relays:

- (a) Remove the aft right 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.
- (b) Make sure that the BLEED 1 switch on the P5-10 air conditioning panel is set to ON.
- (c) Make sure that the L and R PACK switches on the P5-10 air conditioning panel are set to AUTO.
- (d) Make sure that the RECIRC FAN switch on the P5-10 air conditioning panel is set to AUTO.
- (e) Make sure the recirculation fan operates.

NOTE: You can feel the operation of the fan if you put your hand on the fan case.

- (f) Put the L PACK switch on the P5-10 air conditioning panel to HIGH.
- (g) Make sure that the recirculation fan does not operate.
- (h) Put the L PACK switch on the P5-10 air conditioning panel to AUTO.
- (i) Make sure the recirculation fan starts to operate.
- (j) Put the R PACK switch on the P5-10 air conditioning panel to HIGH.
- (k) Make sure that the recirculation fan does not operate.
- (l) Put the R PACK switch on the P5-10 air conditioning panel to AUTO.
- (m) Make sure that recirculation fan starts to operate.
- (n) Put the R PACK switch on the P5-10 air conditioning panel to HIGH.

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**HAP 101-999; AIRPLANES WITH CONNECTORS D40844 AND D40846**

- (o) Connect electrical connector D40846 to the right pack valve.

**HAP 101-999**

- (p) Make sure that the recirculation fan operates.

**HAP 101-999; AIRPLANES WITH CONNECTORS D40844 AND D40846**

- (q) Disconnect the D490 connector from the right pack valve.
- (r) Disconnect electrical connector D40846 from the right pack valve.

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- (s) Make sure the recirculation fan does not operate.

**HAP 101-999; AIRPLANES WITH CONNECTORS D40844 AND D40846**

- (t) Connect the D40844 connector to the left pack valve.

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- (u) Make sure that the recirculation fan operates.
- (v) Set the R PACK switch on the P5-10 air conditioning panel to AUTO.

**HAP 101-999; AIRPLANES WITH CONNECTORS D40844 AND D40846**

- (w) Connect the D490 connector to the right pack valve.
- (x) Connect electrical connector D40846 from the right pack valve.

**HAP 101-999**

SUBTASK 21-51-02-710-005-001

- (5) Do a test of the pack flow mode relays and the pack overheat relays:

**HAP 101-999; AIRPLANES WITH CONNECTORS D40844 AND D40846**

- (a) Disconnect the electrical connectors D40844, D488, D962 and D392 from the left pack valve.
- (b) Disconnect electrical connectors D40846, D492, D964 and D394 from the right pack valve.

**HAP 101-999**

- (c) Disconnect these electrical connectors from the pack overheat switches:
  - 1) D532 from the left pack compressor discharge overheat switch, S2.
  - 2) D530 from the left pack turbine inlet overheat switch, S1.
  - 3) D538 from the right pack compressor discharge overheat switch, S5.
  - 4) D536 from the right pack turbine inlet overheat switch, S4.
- (d) Set the flaps to the FLAPS POS 1. To set the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

**HAP 101-999; AIRPLANES WITH CONNECTORS D40844 AND D40846**

- (e) Install a jumper wire between pins 1 and 3 of electrical connector D40846 on the right pack valve.
- (f) Install a jumper wire between pins 1 and 3 of electrical connector D40844 on the left pack valve.

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- (g) Make sure these switches on the P5-10 air conditioning panel are set as follows:

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- 1) BLEED 1 switch - OFF
- 2) BLEED 2 switch - ON
- 3) APU BLEED switch - OFF
- 4) L PACK switch - OFF
- 5) R PACK switch - OFF

(h) Push one of the MASTER CAUTION lights on the P7 glareshield panel.

**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.

(i) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

(j) Make sure that these voltages exist at the listed connectors:

**NOTE:** The tolerance on 28 VDC is plus/minus 5 VDC. The tolerance on 0 VDC is plus/minus 2 VDC.

- 1) D488 Pins 1 to 3 - 0 VDC
- 2) D488 Pins 3 to 5 - 28 VDC
- 3) D962 Pins 1 to 2 - 0 VDC
- 4) D392 Pins 1 to 2 - 0 VDC
- 5) D492 Pins 1 to 3 - 0 VDC
- 6) D492 Pins 3 to 5 - 28 VDC
- 7) D964 Pins 1 to 2 - 0 VDC
- 8) D394 Pins 1 to 2 - 0 VDC

(k) Set the L and R PACK switches on the P5-10 air conditioning panel to AUTO.

(l) Make sure that these voltages exist at the listed connectors:

**NOTE:** The tolerance on 28 VDC is plus/minus 5 VDC. The tolerance on 0 VDC is plus/minus 2 VDC.

- 1) D488 Pins 1 to 3 - 28 VDC
- 2) D488 Pins 3 to 5 - 0 VDC
- 3) D962 Pins 1 to 2 - 28 VDC
- 4) D392 Pins 1 to 2 - 0 VDC
- 5) D492 Pins 1 to 3 - 28 VDC
- 6) D492 Pins 3 to 5 - 0 VDC
- 7) D964 Pins 1 to 2 - 28 VDC
- 8) D394 Pins 1 to 2 - 0 VDC

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

(n) Make sure that these voltages exist at the listed connectors:

**NOTE:** The tolerance on 28 VDC is plus/minus 5 VDC. The tolerance on 0 VDC is plus/minus 2 VDC.

- 1) D488 Pins 1 to 3 - 28 VDC
- 2) D488 Pins 3 to 5 - 0 VDC
- 3) D962 Pins 1 to 2 - 0 VDC

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- 4) D392 Pins 1 to 2 - 0 VDC
  - 5) D492 Pins 1 to 3 - 28 VDC
  - 6) D492 Pins 3 to 5 - 0 VDC
  - 7) D964 Pins 1 to 2 - 0 VDC
  - 8) D394 Pins 1 to 2 - 0 VDC
- (o) Set these switches on the P5-10 air conditioning panel as follows:
- 1) BLEED 2 switch - OFF
  - 2) APU BLEED switch - ON

### HAP 101-999; AIRPLANES WITH CONNECTORS D40844 AND D40846

- (p) Remove the jumper wires from pins 1 and 3 of connector D40844 on the left pack valve and connector D40846 on the right pack valve.

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- (q) Make sure that these voltages exist at the listed connectors:

NOTE: The tolerance on 28 VDC is plus/minus 5 VDC. The tolerance on 0 VDC is plus/minus 2 VDC.

- 1) D488 Pins 1 to 3 - 28 VDC
  - 2) D488 Pins 3 to 5 - 0 VDC
  - 3) D962 Pins 1 to 2 - 0 VDC
  - 4) D392 Pins 1 to 2 - 0 VDC
  - 5) D492 Pins 1 to 3 - 28 VDC
  - 6) D492 Pins 3 to 5 - 0 VDC
  - 7) D964 Pins 1 to 2 - 0 VDC
  - 8) D394 Pins 1 to 2 - 0 VDC
- (r) Set the L and R PACK switches on the P5-10 air conditioning panel to HIGH.

- (s) Make sure that these voltages exist at the listed connectors:

NOTE: The tolerance on 28 VDC is plus/minus 5 VDC. The tolerance on 0 VDC is plus/minus 2 VDC.

- 1) D488 Pins 1 to 3 - 28 VDC
  - 2) D488 Pins 3 to 5 - 0 VDC
  - 3) D962 Pins 1 to 2 - 0 VDC
  - 4) D392 Pins 1 to 2 - 0 VDC
  - 5) D492 Pins 1 to 3 - 28 VDC
  - 6) D492 Pins 3 to 5 - 0 VDC
  - 7) D964 Pins 1 to 2 - 0 VDC
  - 8) D394 Pins 1 to 2 - 0 VDC
- (t) Set these switches on the P5-10 air conditioning panel to these positions:
- 1) BLEED 1 switch to ON
  - 2) BLEED 2 switch to ON
- (u) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

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- (v) Install a jumper wire between pins 1 and 2 of electrical connector D532 for the left compressor discharge overheat switch, S2.
- (w) Make sure that the MASTER CAUTION light (P7 panel), AIR COND annunciator light (P7 panel) and the left PACK TRIP OFF light (P5-10 panel) come on.
- (x) Push either MASTER CAUTION light to reset the light.
- (y) Make sure the left PACK TRIP OFF lights stays on and the AIR COND annunciator goes off.
- (z) Push either of the MASTER CAUTION Annunciator lights.
- (aa) Make sure the MASTER CAUTION and the AIR COND annunciator lights come on and the left PACK TRIP OFF light stays on.
- (ab) Make sure that these voltages exist at the listed connectors:

NOTE: The tolerance on 28 VDC is plus/minus 5 VDC. The tolerance on 0 VDC is plus/minus 2 VDC.

- 1) D488 Pins 1 to 3 - 0 VDC
  - 2) D488 Pins 3 to 5 - 28 VDC
  - 3) D962 Pins 1 to 2 - 0 VDC
  - 4) D492 Pins 1 to 3 - 28 VDC
  - 5) D492 Pins 3 to 5 - 0 VDC
  - 6) D964 Pins 1 to 2 - 0 VDC
- (ac) Remove the jumper wire from connector D532.
  - (ad) Push the TRIP RESET switch.
  - (ae) Make sure the left PACK TRIP OFF light goes off.
  - (af) Install a jumper wire between pins 1 and 2 of electrical connector D530 for the left turbine inlet overheat switch, S1.
  - (ag) Make sure the left PACK TRIP OFF light comes on.
  - (ah) Remove the jumper wire between pins 1 and 2 of electrical connector D530.
  - (ai) Push the TRIP RESET switch.
  - (aj) Make sure the left PACK TRIP OFF light goes off.
  - (ak) Install a jumper wire between pins 1 and 2 of electrical connector D538 for the right compressor discharge overheat switch, S5.
  - (al) Make sure the right PACK TRIP OFF light come on.
  - (am) Push either Master Caution light to cancel the Master Caution.
  - (an) Remove the electrical connector D962 from the left pack valve.
  - (ao) Make sure the right PACK TRIP OFF light stays on.
  - (ap) Push either Master Caution Annunciator light.
  - (aq) Make sure the Master Caution and AIR COND annunciator lights come on and the R PACK TRIP OFF light stays on.
  - (ar) Make sure that these voltages exist at the listed connectors:

NOTE: The tolerance on 28 VDC is plus/minus 5 VDC. The tolerance on 0 VDC is plus/minus 2 VDC.

- 1) D488 Pins 1 to 3 - 28 VDC
- 2) D488 Pins 3 to 5 - 0 VDC

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- 3) D962 Pins 1 to 2 - 0 VDC
  - 4) D492 Pins 1 to 3 - 0 VDC
  - 5) D492 Pins 3 to 5 - 28 VDC
  - 6) D964 Pins 1 to 2 - 0 VDC
- (as) Remove the jumper wire from electrical connector D538.
  - (at) Push the TRIP RESET switch.
  - (au) Make sure the right PACK TRIP OFF light goes off.
  - (av) Install a jumper wire between pins 1 and 2 of electrical connector D536 for the right turbine inlet overheat switch, S4.
  - (aw) Make sure the right PACK TRIP OFF light comes on.
  - (ax) Remove the jumper wire from electrical connector D536.
  - (ay) Push the TRIP RESET switch.
  - (az) Make sure the right PACK TRIP OFF light goes off.
  - (ba) Set the L PACK switch on the P5-10 air conditioning panel to AUTO.

SUBTASK 21-51-02-710-006-001

- (6) Do a test of the left engine start sense relay:
  - (a) Set these switches on the P5-10 air conditioning panel to OFF:
    - 1) APU BLEED
    - 2) BLEED 1
    - 3) BLEED 2

**WARNING:** DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DEACTIVATE THE LEADING EDGE, DEACTIVATE THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANEL. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) For the left thrust reverser, do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.
- (c) Disconnect the electrical connector DP1102 from the Engine 1 Bleed Air Regulator.
- (d) Install a DC voltmeter between pin 5(+) and pin 6(-) of the electrical connector DP1102.
- (e) Make sure the voltmeter shows less than 10 volts DC.
- (f) Set the engine 1 BLEED 1 switch on the P5-10 air conditioning panel to ON.
- (g) Make sure the voltmeter shows 20 to 29 volts DC.
- (h) Manually turn the engine 1 pneumatic start valve 30 degrees clockwise.
- (i) Make sure the voltmeter shows less than 10 volts DC.
- (j) Remove the voltmeter lead from pin 5.
- (k) Connect the voltmeter positive lead to pin 7.
- (l) Make sure the voltmeter shows 20 to 29 volts DC.
- (m) Release the pneumatic start valve.
- (n) Make sure the voltmeter shows less than 10 volts DC.
- (o) Connect the electrical connector DP1102 to the engine 1 bleed air regulator.

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- (p) Set the engine 1 BLEED 1 switch on the P5-10 air conditioning panel to OFF.

SUBTASK 21-51-02-710-007-001

- (7) Do a test of the right engine start sense relay:

**WARNING:** DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DEACTIVATE THE LEADING EDGE, DEACTIVATE THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANEL. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) For the right thrust reverser, do this task: Open the Thrust Reverser (Selection), TASK 78-31-00-010-801-F00.
- (b) Disconnect the electrical connector DP1102 from the Engine 2 Bleed Air Regulator.
- (c) Install a DC voltmeter between pin 5(+) and pin 6(-) of the electrical connector DP1102.
- (d) Make sure the voltmeter shows less than 10 volts DC.
- (e) Set the engine 2 BLEED 2 switch on the P5-10 air conditioning panel to ON.
- (f) Make sure the voltmeter shows 20 to 29 volts DC.
- (g) Manually turn the engine 2 pneumatic start valve 30 degrees clockwise.
- (h) Make sure the voltmeter shows less than 10 volts DC.
- (i) Remove the voltmeter lead from pin 5.
- (j) Connect the voltmeter positive lead to pin 7.
- (k) Make sure the voltmeter shows 20 to 29 volts DC.
- (l) Release the pneumatic start valve.
- (m) Make sure the voltmeter shows less than 10 volts DC.
- (n) Connect the electrical connector DP1102 to the engine 2 bleed air regulator.
- (o) Set the engine BLEED 2 switch on the P5-10 air conditioning panel to OFF.

SUBTASK 21-51-02-710-008-001

- (8) Do a test of the left engine bleed air overheat relays:

- (a) Set these switches on the P5-10 air conditioning panel to OFF:
  - 1) APU BLEED
  - 2) BLEED 1
  - 3) BLEED 2
  - 4) L PACK
  - 5) R PACK
- (b) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.

**NOTE:** Use the APU as the pneumatic source.

- (c) Remove the applicable access panels, do this task:

Forward Strut Fairing Panel (Thrust Reverser Strut Fairing) Removal,  
TASK 54-53-02-000-802

Number      Name/Location

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## AIRCRAFT MAINTENANCE MANUAL

(Continued)

<u>Number</u>	<u>Name/Location</u>
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431CL	Forward Strut Fairing, Left Overwing Fairing, Strut 1
-------	---

441CL	Forward Strut Fairing, Left Overwing Fairing, Strut 2
-------	---

- (d) Disconnect the electrical connector D526 from the left engine bleed overheat switch, S20.
- (e) Set the APU BLEED switch on the P5-10 air conditioning panel to ON.
- (f) Make sure that the left and right duct pressures are more than 20 psi.
- (g) Set the BLEED 1 switch on the P5-10 panel to ON.
- (h) Make sure the DUAL BLEED light comes on.
- (i) Put a jumper between pins 1 and 2 of electrical connector D526.
- (j) Make sure these lights come on:
  - 1) Left BLEED TRIP OFF on the P5-10 panel
  - 2) AIR COND on the P7 glareshield.
- (k) Push in and release the TRIP RESET switch.
- (l) Make sure these lights stay on:
  - 1) Left BLEED TRIP OFF on the P5-10 panel
  - 2) AIR COND on the P7 glareshield.
- (m) Remove the jumper from the electrical connector D526.
- (n) Connect the electrical connector to the left engine bleed air overheat switch.
- (o) Push in and release the TRIP RESET switch.
- (p) Set the BLEED 1 switch to OFF.
- (q) Make sure the DUAL BLEED light goes off.
- (r) Make sure these lights go off:
  - 1) Left BLEED TRIP OFF on the P5-10 panel
  - 2) AIR COND on the P7 glareshield.

SUBTASK 21-51-02-710-009-001

- (9) Do a test of the right engine bleed air overheat relays:
  - (a) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.  
NOTE: Use the APU as the pneumatic source.
  - (b) Remove the applicable access panels, do this task:  
Forward Strut Fairing Panel (Thrust Reverser Strut Fairing) Removal,  
TASK 54-53-02-000-802

<u>Number</u>	<u>Name/Location</u>
---------------	----------------------

431CR	Forward Strut Fairing, Right Overwing Fairing, Strut 1
-------	---

441CR	Forward Strut Fairing, Right Overwing Fairing, Strut 2
-------	---

- (c) Disconnect the electrical connector D528 from the right engine bleed overheat switch, S21.
- (d) Set the BLEED 2 switch on the P5-10 panel to ON.
- (e) Make sure the DUAL BLEED light comes on.

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- (f) Put a jumper between pins 1 and 2 of electrical connector D528.
- (g) Make sure these lights come on:
  - 1) Right BLEED TRIP OFF on the P5-10 panel
  - 2) AIR COND on the P7 glareshield.
- (h) Push in and release the TRIP RESET switch.
- (i) Make sure these lights stay on:
  - 1) Right BLEED TRIP OFF on the P5-10 panel
  - 2) AIR COND on the P7 glareshield.
- (j) Remove the jumper from the electrical connector D528.
- (k) Connect the electrical connector D528 to the right engine bleed air overheat switch.
- (l) Push in and release the TRIP RESET switch.
- (m) Set the BLEED 2 switch to OFF.
- (n) Make sure the DUAL BLEED light goes off.
- (o) Make sure these lights go off:
  - 1) Right BLEED TRIP OFF on the P5-10 panel
  - 2) AIR COND on the P7 glareshield.
- (p) Set the APU BLEED switch to OFF.

**F. Put the Airplane Back to Its Usual Condition**

SUBTASK 21-51-02-410-002-001

- (1) Install or close all the access panels opened for the test:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door
431CL	Forward Strut Fairing, Left Overwing Fairing, Strut 1
431CR	Forward Strut Fairing, Right Overwing Fairing, Strut 1
441CL	Forward Strut Fairing, Left Overwing Fairing, Strut 2
441CR	Forward Strut Fairing, Right Overwing Fairing, Strut 2

SUBTASK 21-51-02-860-007-001

- (2) Remove the pneumatic power from the airplane. To remove the pneumatic power, do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 21-51-02-860-008-001

- (3) 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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# AIRCRAFT MAINTENANCE MANUAL

## 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
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)
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
212	Flight Compartment - Right

#### C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

#### 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	AIR CONDITIONING TEMP CONT VALVE CLOSE LEFT
A	3	C01170	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT AFT PASS
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT

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Row	Col	Number	Name
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	1	C01160	AIR CONDITIONING TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT FLT DK
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT
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 RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

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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 CONDITIONING PACK CONT VALVES L ALT
D	4	C01614	AIR CONDITIONING PACK CONT VALVES R ALT

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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
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

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES LEFT
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES RIGHT
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:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

#### E. ACAU Relay Module Test

SUBTASK 21-51-02-710-011

(1) Do this test of the applicable air conditioning accessory unit:

(a) Do a test of the right pack overheat relay:

**NOTE:** The right pack overheat relay is in the Air Conditioning Accessory Unit, M1455.

- 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

3) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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) 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) Make sure the AIR COND and MASTER CAUTION lights on the P7 glareshield panel go off.

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- 13) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

- (b) Do a test of the left pack overheat relay:

**NOTE:** The left pack overheat relay is in the Air Conditioning Accessory Unit, M324.

- 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

- 3) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

- 4) Disconnect electrical connector D532 from the left compressor discharge overheat switch, S2.
- 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) 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) Make sure the AIR COND and MASTER CAUTION lights on the P7 glareshield panel go off.

- 13) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

- (c) Do a test of the ram air system relays:

- 1) Make sure that the left and right RAM DOOR FULL OPEN lights are on.
- 2) Make sure that the deflector doors for the left and right ram air inlets are extended.
- 3) Make sure that the AIR/GND logic shows that the airplane is in the GND logic.
- 4) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door

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- 5) Disconnect electrical connectors D486 and D490 from the left and right pack valves, respectively.

NOTE: The removal of the connectors simulates that the pack valves are open.

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- 6) Disconnect electrical connectors D40844 and D40846 from the left and right pack valves, respectively.

NOTE: The removal of the connectors simulates that the pack valves are open.

**HAP 001-013, 015-026, 028-054**

- 7) Extend the trailing edge flaps to Flaps Position 1. To extend the flaps, Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.
- 8) Make sure that the two deflector doors for the ram air system are fully extended.

**WARNING: MAKE SURE ALL PERSONS AND EQUIPMENT ARE MOVED AWAY FROM THE FLAPS. THIS WILL PREVENT INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.**

- 9) 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.
- 10) Make sure that these results occur:
  - a) Make sure that the ram air inlet deflector doors retract fully.
  - b) Make sure that the ram air inlet modulation panels move towards the closed position.
- 11) Retract the trailing edge flaps to the full up position. To retract the trailing edge flaps, do this task:Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.
- 12) Make sure that these results occur:
  - a) Make sure that the ram air inlet modulation panels move towards the closed position.
  - b) Make sure that the RAM DOOR FULL OPEN lights go off.
- 13) 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.
- 14) Make sure that these results occur:
  - a) Make sure that the RAM DOOR FULL OPEN lights come on.
  - b) Make sure that the ram air inlet modulation panels move to the fully open position.
  - c) Make sure that the deflector doors move to the extended position.
- 15) Reconnect all electrical connectors that were disconnected.
- (d) Do a test of the cabin air recirculation fan relays:
  - 1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C00911	A/C RECIRC FAN LEFT CABIN AIR

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00884	AIR CONDITIONING RECIRC RIGHT FAN CABIN AIR

- 2) Open the forward cargo door.
  - 3) 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.
  - 4) Make sure that the L and R PACK switches on the P5-10 air conditioning panel are set to the OFF position.
  - 5) Put the applicable RECIRC FAN switch on the P5-10 air conditioning panel to the AUTO position.
  - 6) Make sure the recirculation fan operates.
- NOTE: You can feel the operation of the fan if you put your hand on the fan case.
- 7) 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.
  - 8) Close the forward cargo door.

#### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-02-410-004-002

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-51-02-860-012-002

- (2) 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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## AIRCRAFT MAINTENANCE MANUAL

### 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 21-51-03-000-802-001**

#### 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 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 and the air cycle machine as a unit.
- (2) The heat exchangers and air cycle machine together weigh approximately 125 pounds. If the adapter, SPL-1608 is not used, a minimum of three people 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, 250 Pound Limit (Part #: A71015-107, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-1608	Jack Adapter - Installation/Removal, Air Conditioning Pack (Part #: C21005-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

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#### F. Prepare for the Removal

SUBTASK 21-51-03-040-002-001

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

SUBTASK 21-51-03-860-004-001

(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.
- (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 21-51-03-860-040

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

SUBTASK 21-51-03-010-007-001

(4) To remove the heat exchangers for the left pack, do these steps:

Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-03-010-008-001

(5) To remove the heat exchangers for the right pack, do these steps in this sequence:

Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

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### G. Heat Exchanger and Plenum/Diffuser Assembly Removal

SUBTASK 21-51-03-020-031-001

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

- (1) Do these steps to remove the ram air exhaust elbow [2] from the primary heat exchanger plenum/diffuser:
  - (a) Remove the clamps [4] and the hose [5].
  - (b) Remove the bolts [6] and the washers [7].
  - (c) Remove the ram air exhaust elbow [2].

SUBTASK 21-51-03-020-032-001

- (2) Do these steps to remove the outer seal for the ECS access door:
  - (a) Remove the bolts [10], at 30 locations.
  - (b) Remove the retainer [13], the seal [12] and the deflector [11].

SUBTASK 21-51-03-020-033-001

- (3) Do these steps to remove the heat exchanger inlet duct:
  - (a) Loosen the clamp [14].
  - (b) Move the flexible hose off the heat exchanger inlet duct [15].
  - (c) Remove the screws [16], and the washers [17].
  - (d) Move the heat exchanger inlet duct [15] down to disengage the upper flange from the retainer on the lower wing beam.

SUBTASK 21-51-03-020-034-001

- (4) Remove the compressor outlet duct [21]:

**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 [28] from the compressor outlet overheat switch.
- (b) Disconnect the electrical connector [22] from the ram air control temperature sensor.
- (c) Remove the clamshell clamp [18].

**NOTE:** Lift the three latch pawls at the same time to release the clamp.

- (d) Move the sleeve [19] to the compressor outlet duct.
- (e) Remove the clamshell clamp [31].

**NOTE:** Lift the three latch pawls at the same time to release the clamp.

- (f) Move the sleeve [32] to the compressor outlet 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.

- (g) Remove the clamp [23] that holds the duct [21] to the heat exchanger.
- (h) Remove the compressor outlet duct [21].
- (i) Remove and discard the packings [20].
- (j) Remove and discard the packing [24].
- (k) Remove and discard the packings [33].

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SUBTASK 21-51-03-020-035-001

(5) Remove the inlet duct [36] to the turbine of the air cycle machine (ACM):

(a) Remove the clamshell clamp [25].

NOTE: Lift the three latch pawls at the same time to release the clamp.

(b) Move the sleeve [26] to the inlet duct [36], away from the ACM.

**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.

(c) Remove the clamp [37] that holds the inlet duct [36] to the heat exchanger.

(d) Remove and discard the packings [27].

SUBTASK 21-51-03-020-036-001

(6) 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.

(b) Move the bonding jumper [46] away from the air cycle machine.

NOTE: Do not remove the ground clip from the bonding jumper.

(c) Remove the bolts [47].

(d) Remove and discard the packing [43].

SUBTASK 21-51-03-010-010-001

(7) Disconnect the flex hose from the air cycle machine.

SUBTASK 21-51-03-010-011-001

(8) Disconnect the sense line from the air cycle machine.

SUBTASK 21-51-03-020-037-001

(9) Remove the clamp [29] that connects the air cycle machine to mix muff.

SUBTASK 21-51-03-020-038-001

(10) Remove the clamps [1] from primary heat exchanger outlet and bleed air inlet ducts.

SUBTASK 21-51-03-020-039-001

(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 [49] that holds the air cycle machine to the tie rod.

(b) Remove the bolt [49] and the washer [50] from the tie rod.

(c) Remove the bushing [51] from the clevis on the ACM.

SUBTASK 21-51-03-020-040-001

(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 bolts [54], washers [55] and bushings [56] from the tie rod assemblies.

SUBTASK 21-51-03-020-145-001

(13) 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.

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- (d) Lift the engine accessory lift fixture, SPL-1570 until it touches the heat exchangers.  
**NOTE:** Make sure the straps [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 nuts [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 nuts [102], at 12 locations.
- (f) Put the straps [101] around the heat exchangers.
- (g) Tighten the straps [101].

SUBTASK 21-51-03-020-010-001

**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.

- (14) Do these steps to disconnect the heat exchangers from the lower wing beam:
  - (a) Remove the bolts [57] and three washers [58], at 9 locations, that attach the heat exchangers [9][38] to the lower wing beam.
  - (b) Remove the bolts [59], at 16 locations, that attach the heat exchangers [9][38] 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 [9][38] from the ECS bay.

**NOTE:** There is a square drive socket to adjust the angle of the frame at the bottom of the adapter, SPL-1608.

SUBTASK 21-51-03-020-041-001

- (15) Remove and discard the packing [30] that was between the air cycle machine and the mix muff.

SUBTASK 21-51-03-480-001-001

- (16) Put covers on the duct openings to keep out unwanted materials.

SUBTASK 21-51-03-020-042-001

- (17) Do these steps to separate the primary plenum/diffuser from the secondary plenum/diffuser:
  - (a) Remove the clamps [60] that attach the flexible duct [61] to the plenum/diffusers.
  - (b) Carefully move one plenum/diffuser away from the other.
  - (c) Move the flexible duct [61] off the plenum/diffuser.

### H. Disassemble the Heat Exchanger and Plenum/Diffuser

SUBTASK 21-51-03-020-043-001

- (1) When the secondary plenum/diffuser [39] will be replaced, do these steps to remove the air cycle machine [35]:

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- (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 [40] and the washers [41] that connect the air cycle machine [35] to the plenum/diffuser [39].
- (c) Carefully pull the air cycle machine [35] from the plenum/diffuser [39].
- (d) Remove and discard the gasket [42] for the air cycle machine.

SUBTASK 21-51-03-020-012-001

- (2) Do the steps that follow to remove the heat exchanger from the plenum/diffuser:

**NOTE:** These steps are applicable to the primary or secondary units.

- (a) Remove the bolts [62] and washers [63] which attach the clip assembly [64] to the heat exchanger.
- (b) Remove the clip assembly [64].
- (c) Remove the bolts [62] and washers [63] which attach the clip assembly [66] to the heat exchanger.
- (d) Remove the clip assembly [66].
- (e) Remove the bolts [65] and washers [63] which attach the plenum/diffuser to the heat exchanger.
- (f) Do the applicable step that follows:
  - 1) Remove the primary heat exchanger [9] from the primary plenum/diffuser [8].
  - 2) Remove the secondary heat exchangers [38] from the secondary plenum/diffuser [39].
- (g) Remove and discard the gaskets [67].

SUBTASK 21-51-03-020-013-001

- (3) To remove the diffuser assembly [82] from the plenum, do these steps (Figure 402):

- (a) Remove the screws [81].
- (b) Remove the bolts [83] and washers [84].
- (c) Remove the diffuser assembly [82] from the plenum.

SUBTASK 21-51-03-212-001

- (4) Inspect the diffuser assembly [82] from the primary plenum/diffuser as follows:

- (a) Make sure that the fan bypass check valve door is installed.
  - 1) If the fan bypass check valve door is not installed, either replace the diffuser assembly with a serviceable unit or replace the check valve door as follows:
    - a) Incorporate instructions in Allied Signal Service Bulletin 2215240-21-2721 for the left hand primary heat exchanger unit or Allied Signal Service Bulletin 2215280-21-2722 for the right hand primary heat exchanger unit to install a replacement check valve door on the diffuser assembly.
- (b) Make sure that the hinge pin on the check valve door hinge assembly is retained in place by either a rivet at each end of the hinge assembly or bolts located forward and aft of the ends of the hinge pin.
  - 1) If the hinge pin is not retained by the rivets or the bolts, incorporate Allied Signal Service Bulletin 2215240-21-2721 for the left hand primary heat exchanger unit or Allied Signal Service Bulletin 2215280-21-2722 for the right hand primary heat exchanger unit so that the hinge pin is securely retained in the hinge assembly.

————— **END OF TASK** —————

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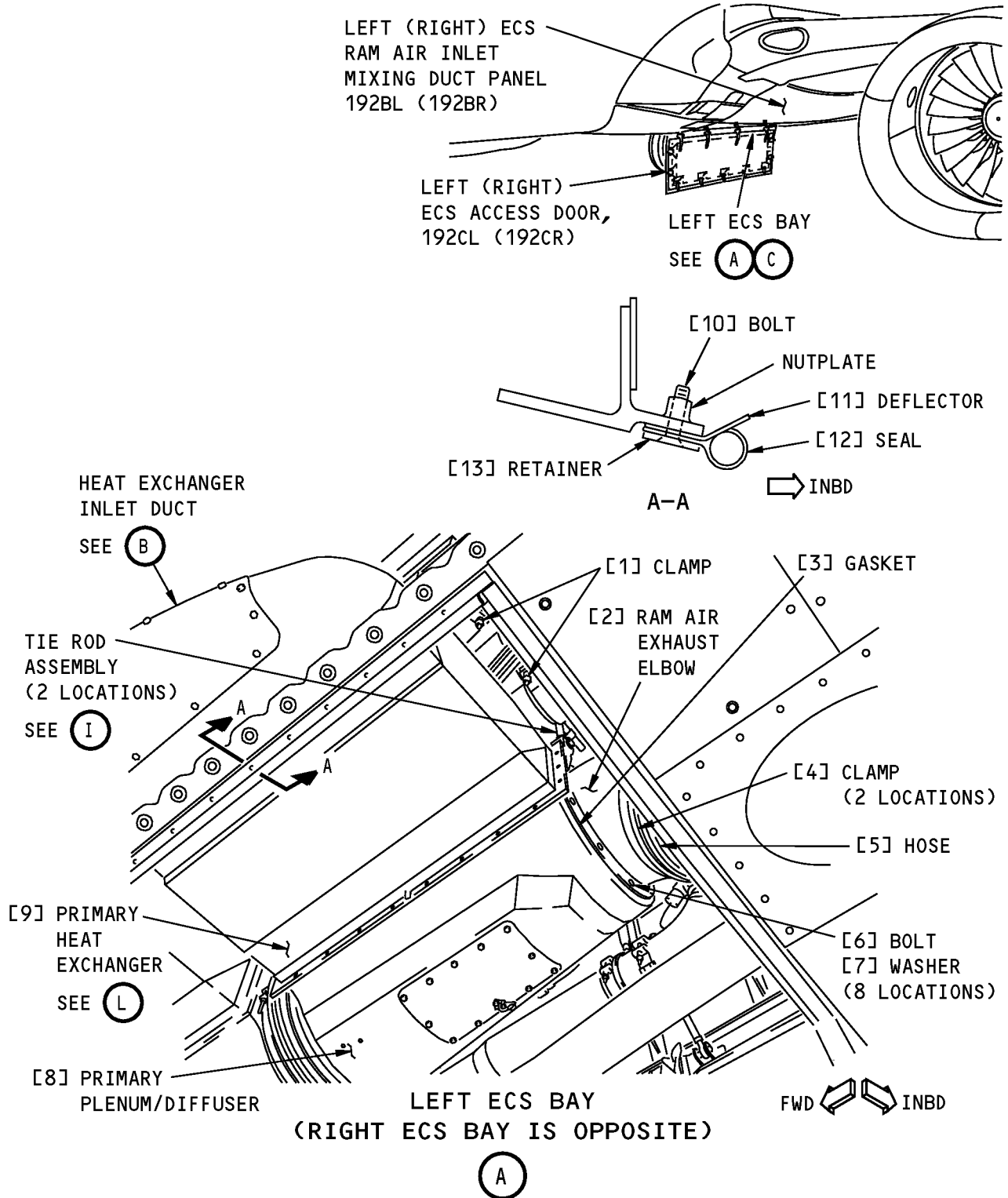
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**Heat Exchanger and Plenum/Diffuser Assembly Installation**  
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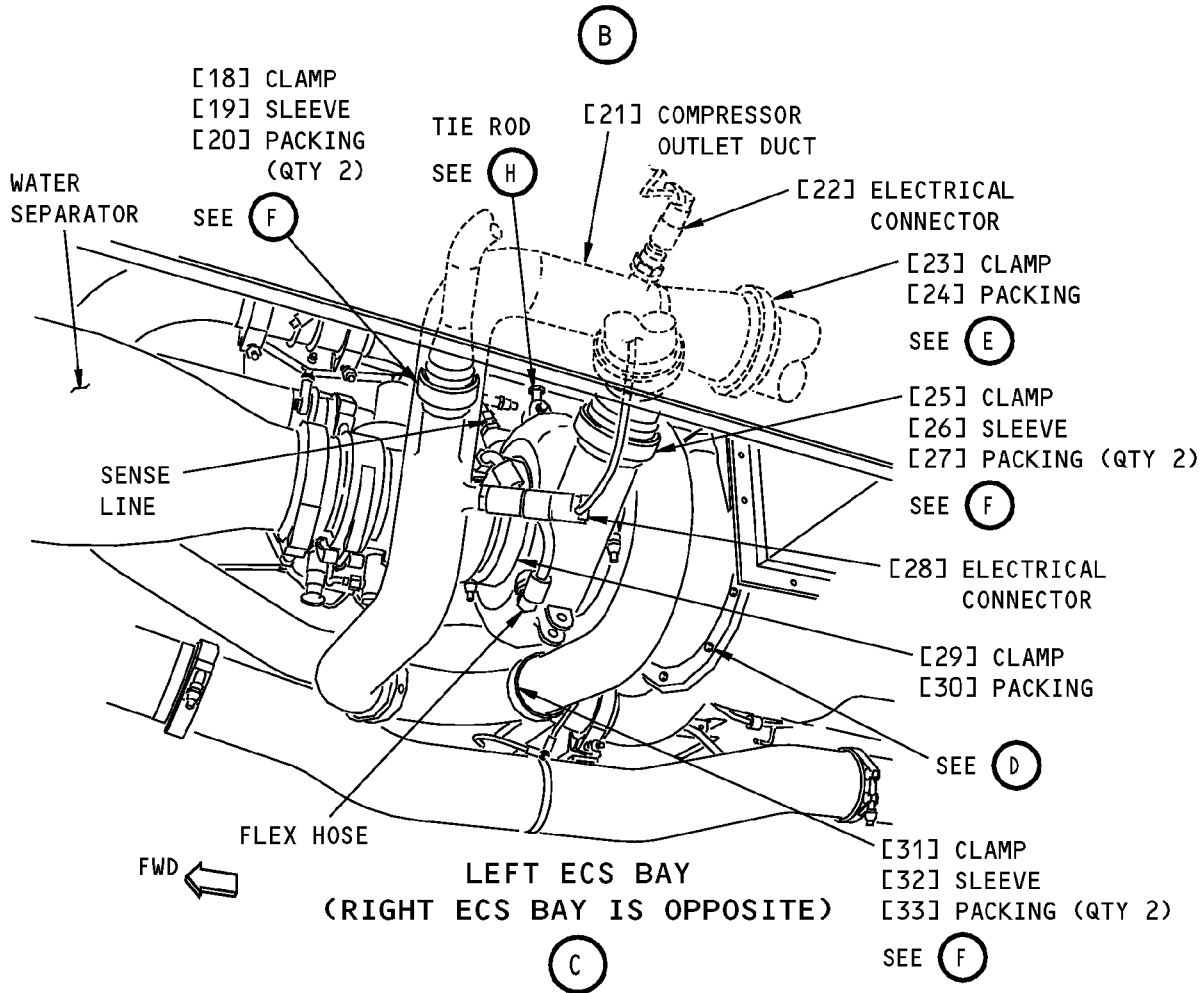
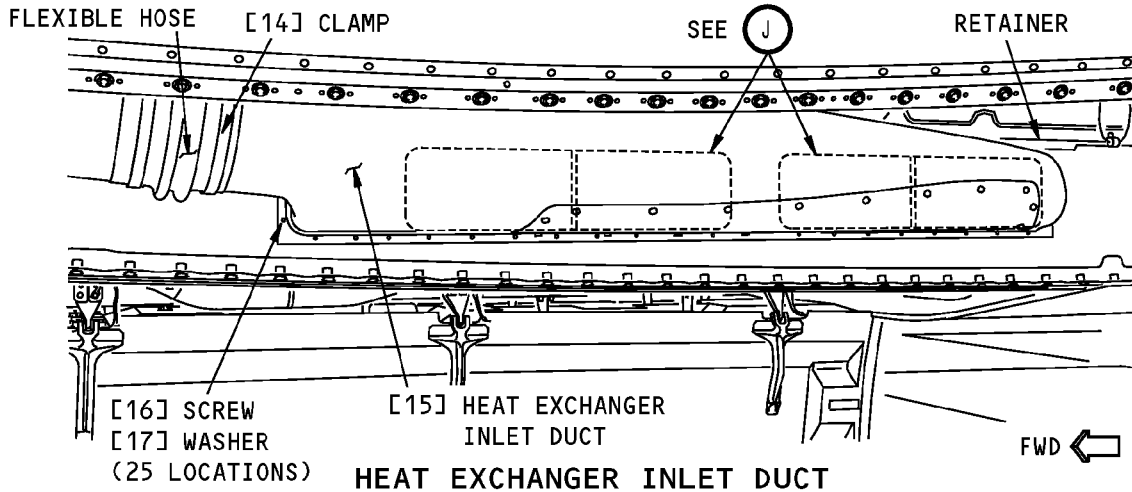
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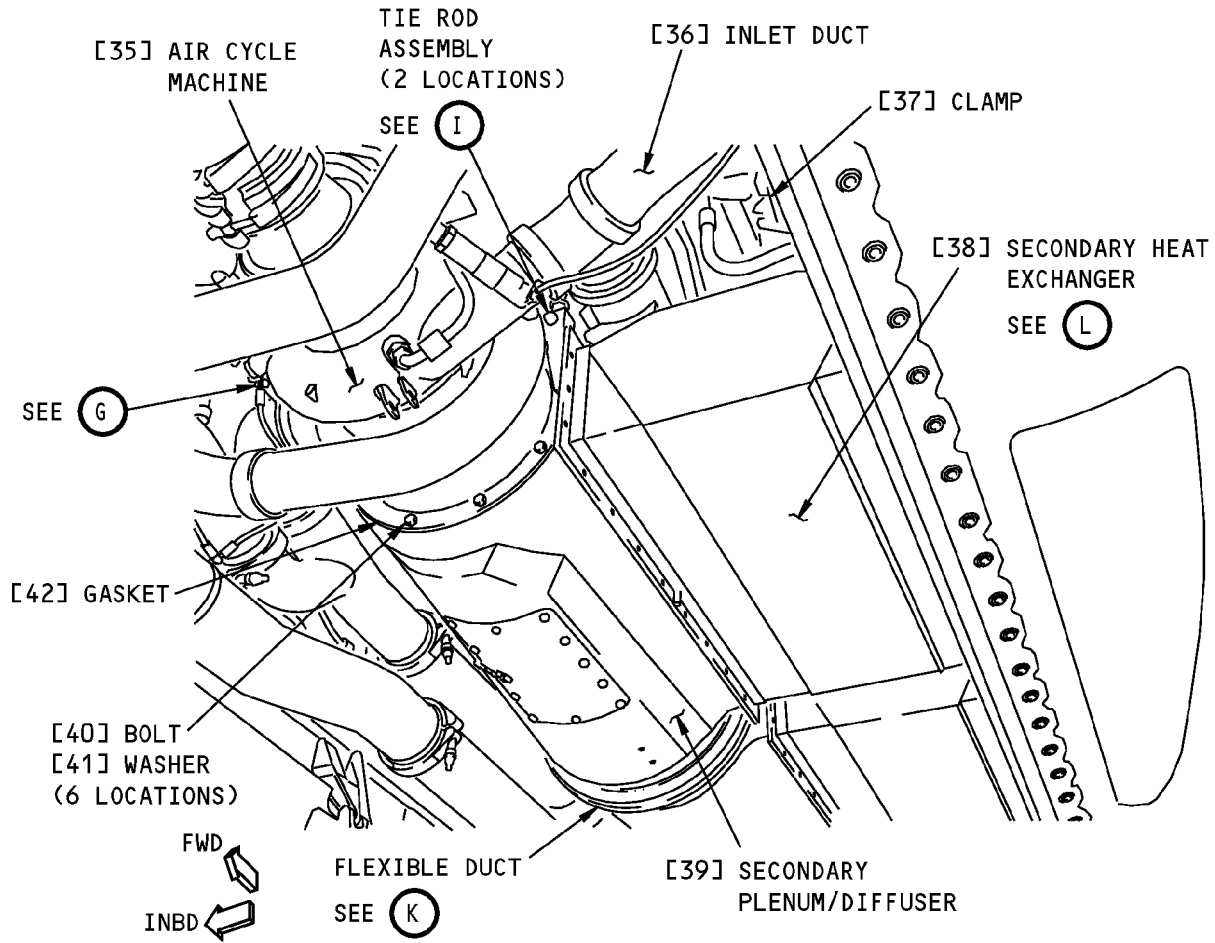
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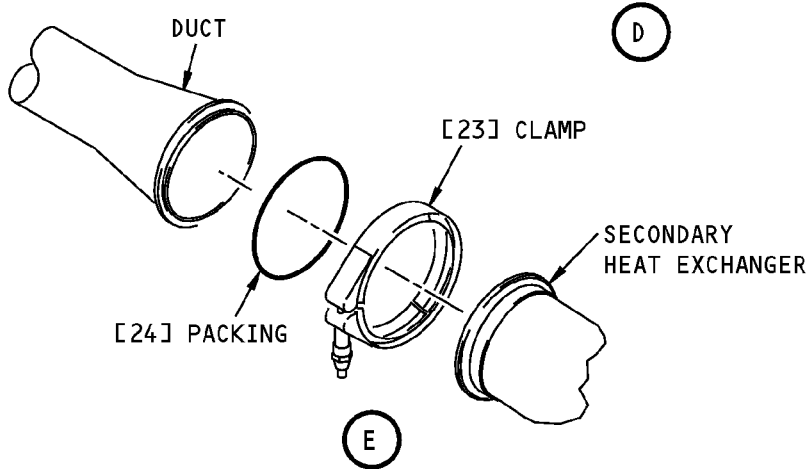
**21-51-03**

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**LEFT ECS BAY  
(RIGHT ECS BAY IS OPPOSITE)**



**Heat Exchanger and Plenum/Diffuser Assembly Installation  
Figure 401 (Sheet 3 of 7)/21-51-03-990-802-001**

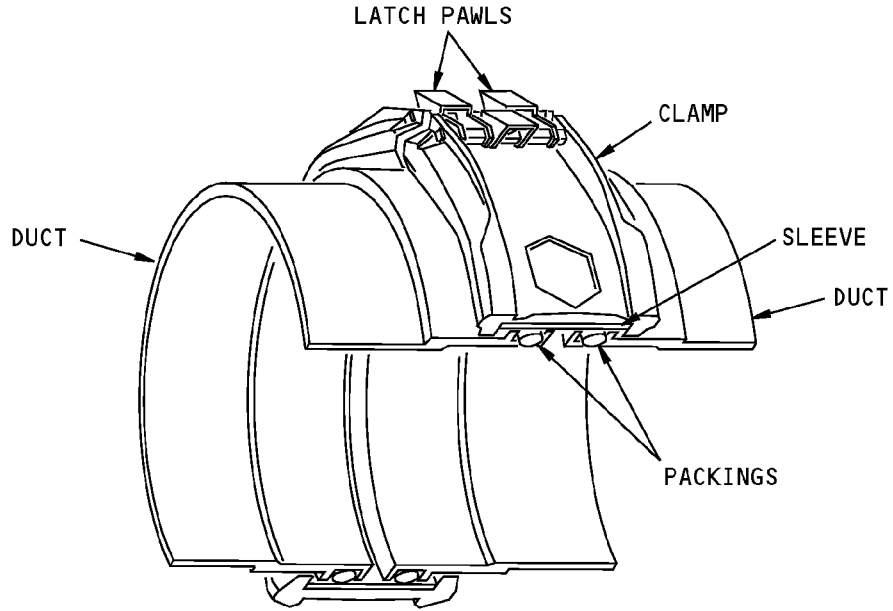
EFFECTIVITY  
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**21-51-03**

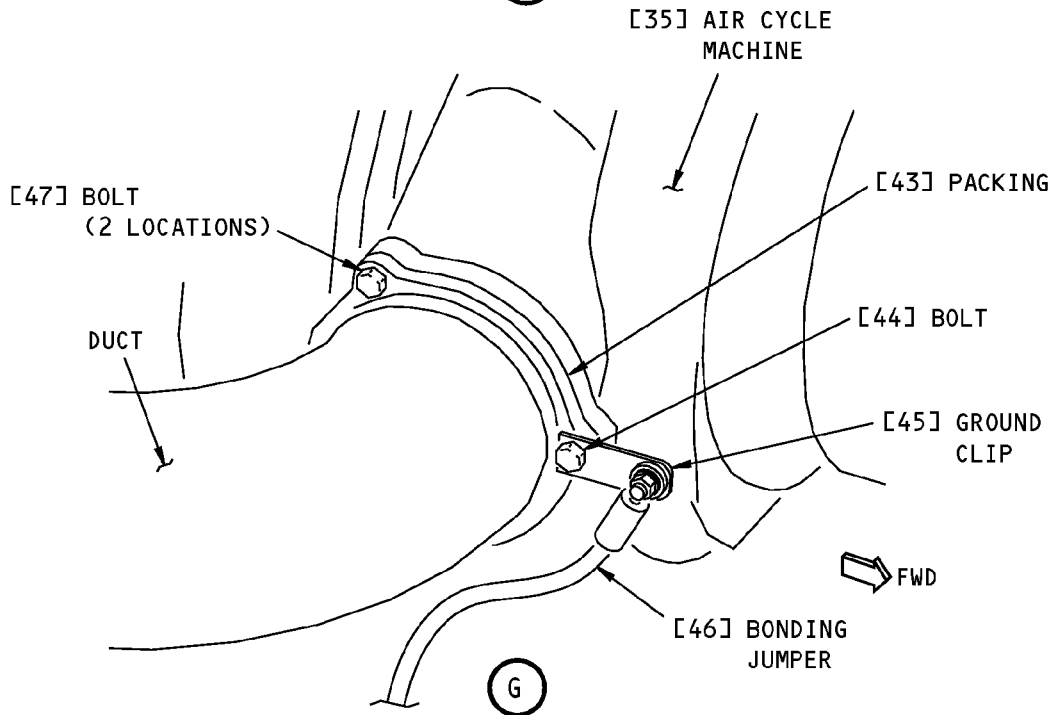
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**CLAMSHELL CLAMP INSTALLATION  
(EXAMPLE)**

(F)



(G)

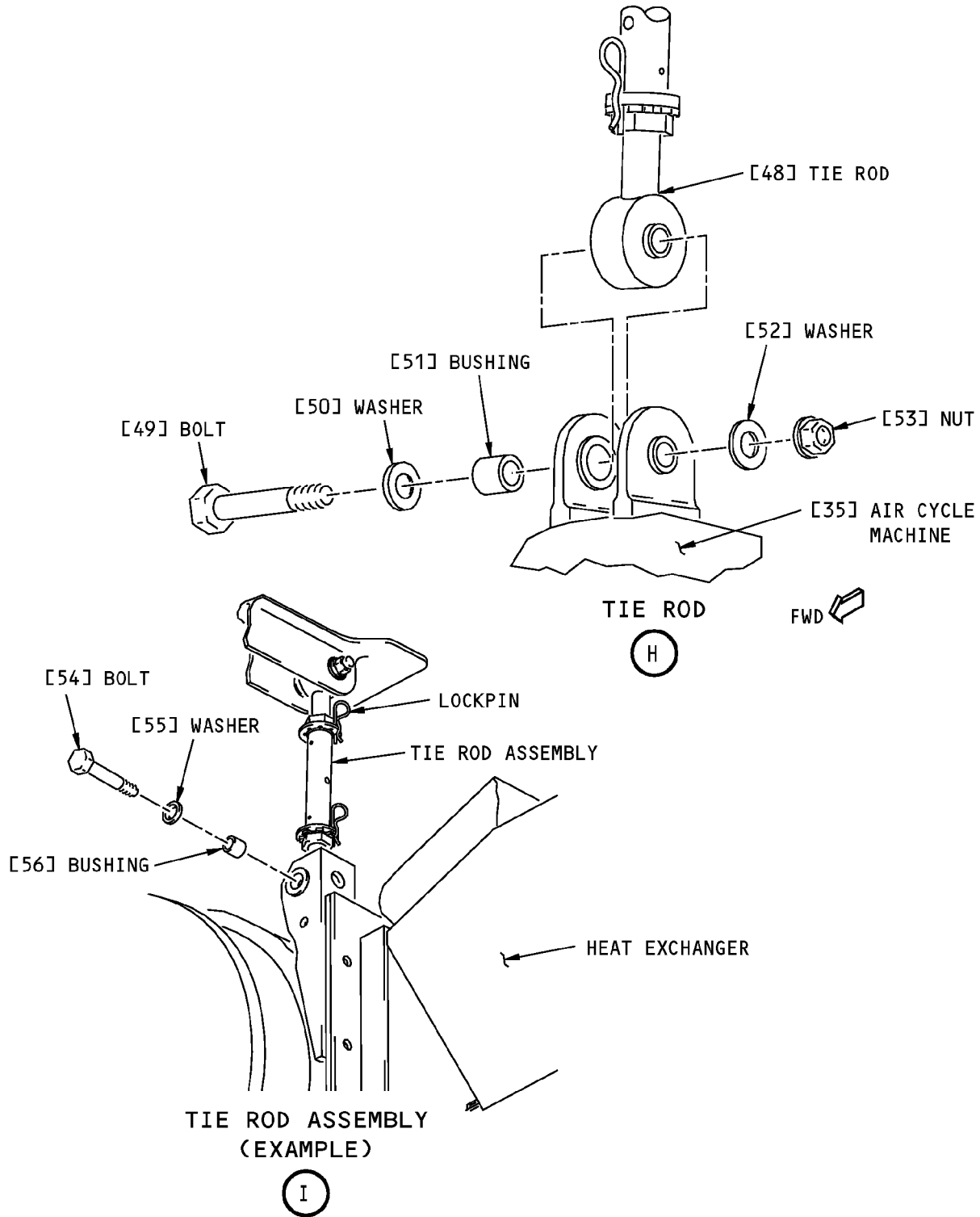
**Heat Exchanger and Plenum/Diffuser Assembly Installation  
Figure 401 (Sheet 4 of 7)/21-51-03-990-802-001**

EFFECTIVITY  
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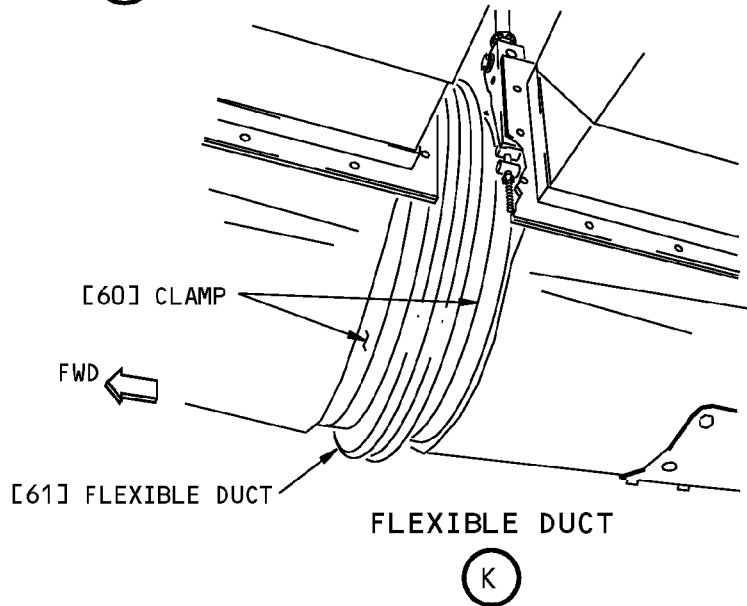
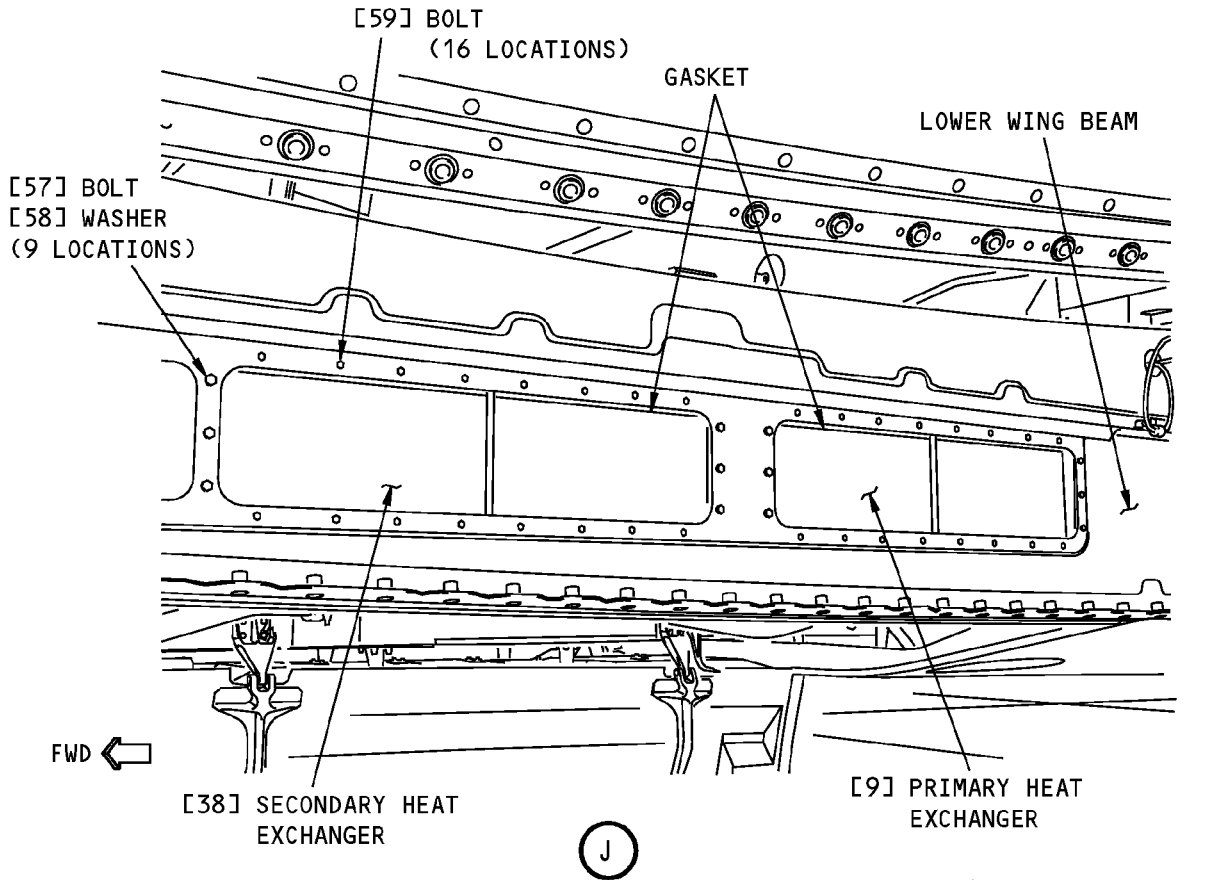


**Heat Exchanger and Plenum/Diffuser Assembly Installation  
Figure 401 (Sheet 5 of 7)/21-51-03-990-802-001**

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**Heat Exchanger and Plenum/Diffuser Assembly Installation**  
Figure 401 (Sheet 6 of 7)/21-51-03-990-802-001

EFFECTIVITY  
HAP 101-999

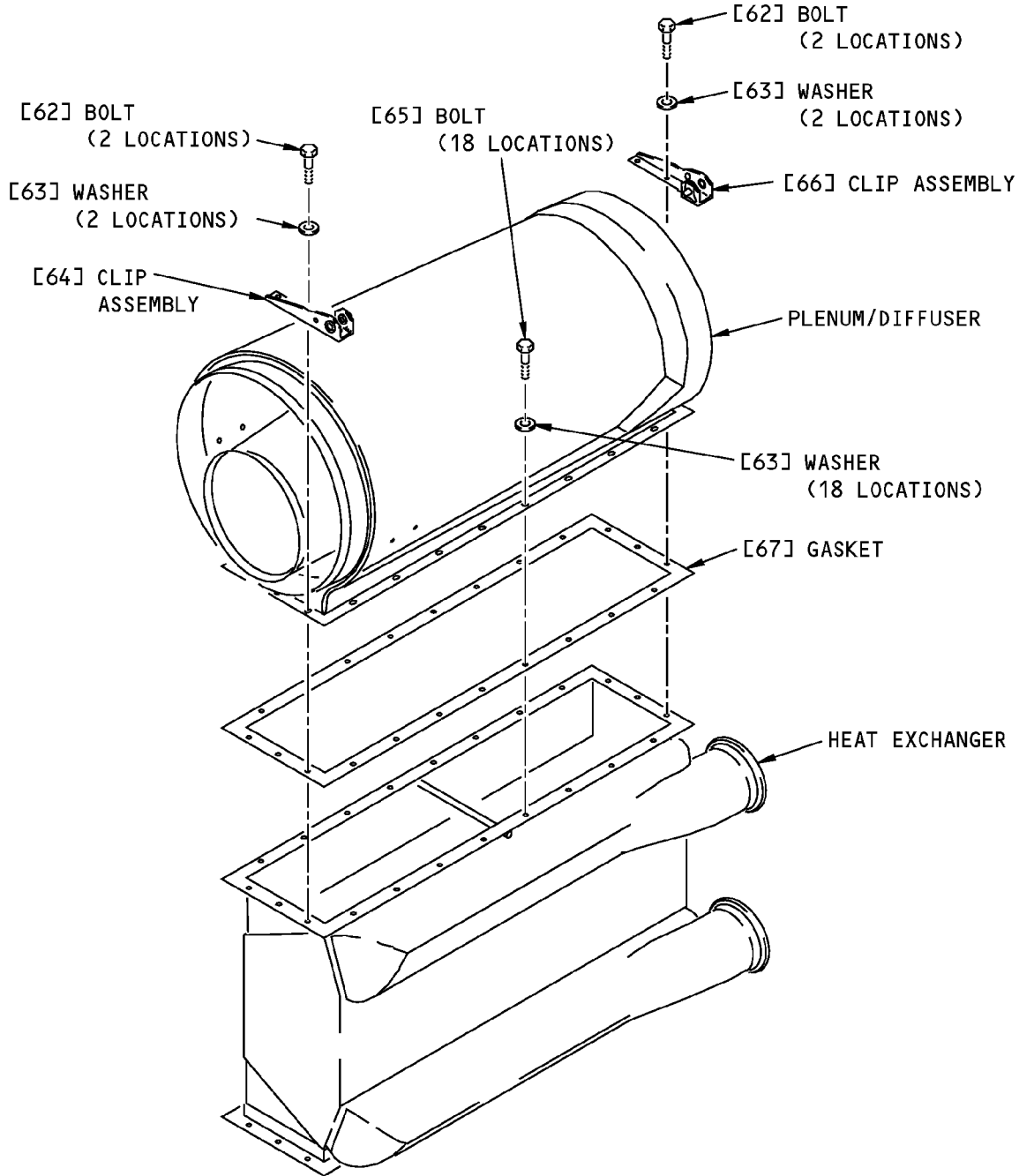
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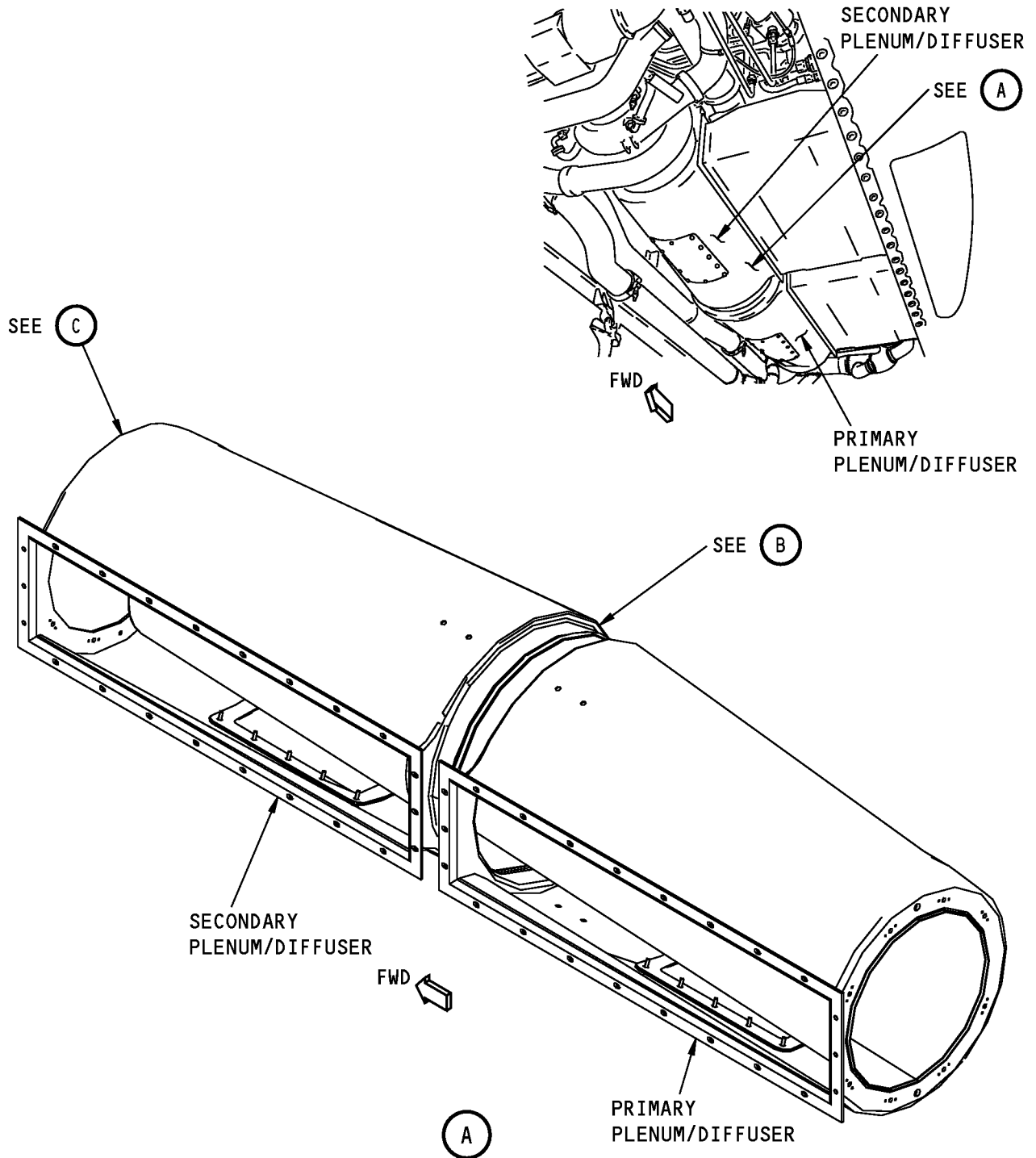
**PRIMARY HEAT EXCHANGER  
(SECONDARY HEAT EXCHANGER IS EQUIVALENT)**



**Heat Exchanger and Plenum/Diffuser Assembly Installation  
Figure 401 (Sheet 7 of 7)/21-51-03-990-802-001**

EFFECTIVITY  
HAP 101-999

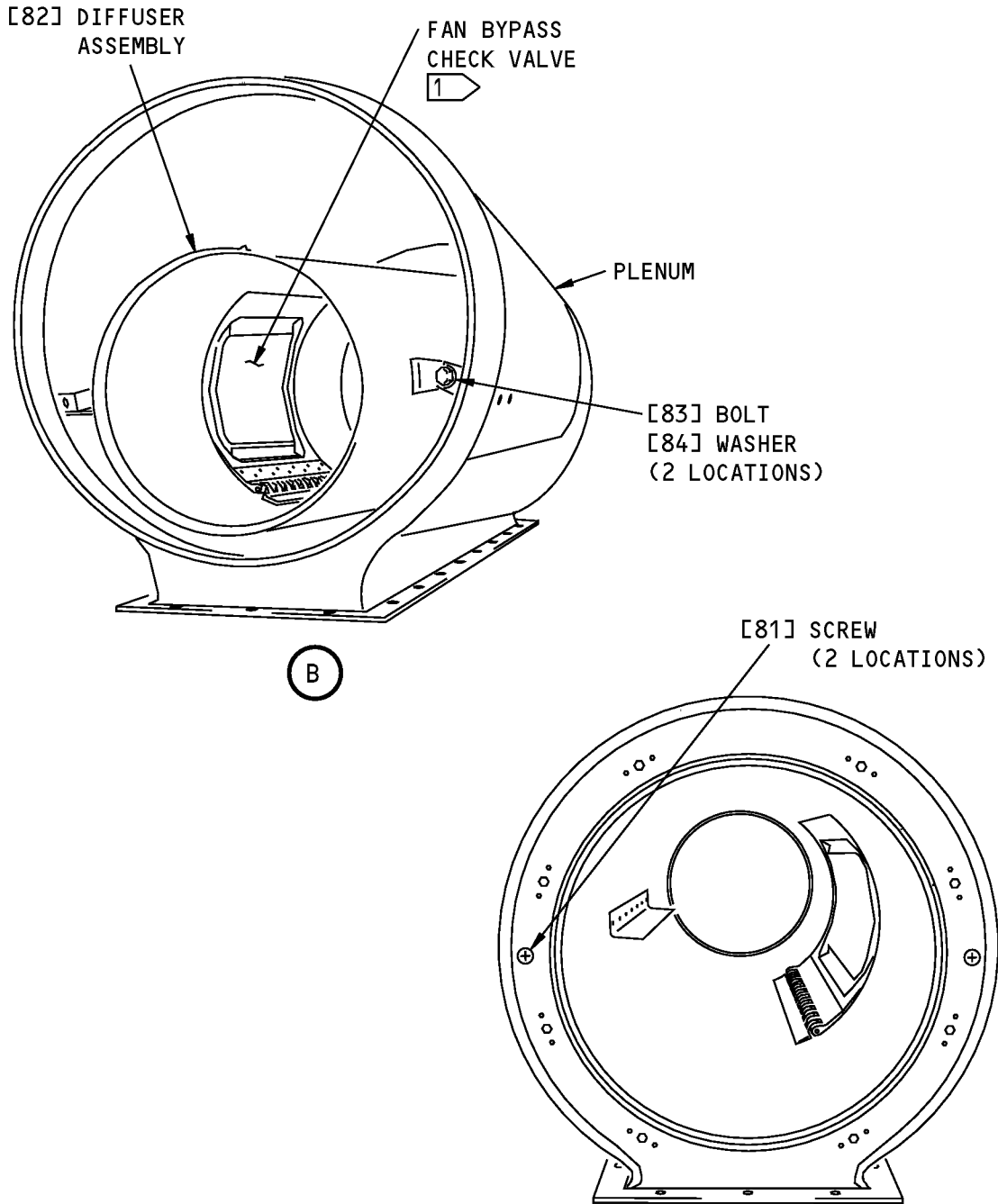
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**Diffuser Assembly Installation  
Figure 402 (Sheet 1 of 2)/21-51-03-990-803-001**

EFFECTIVITY  
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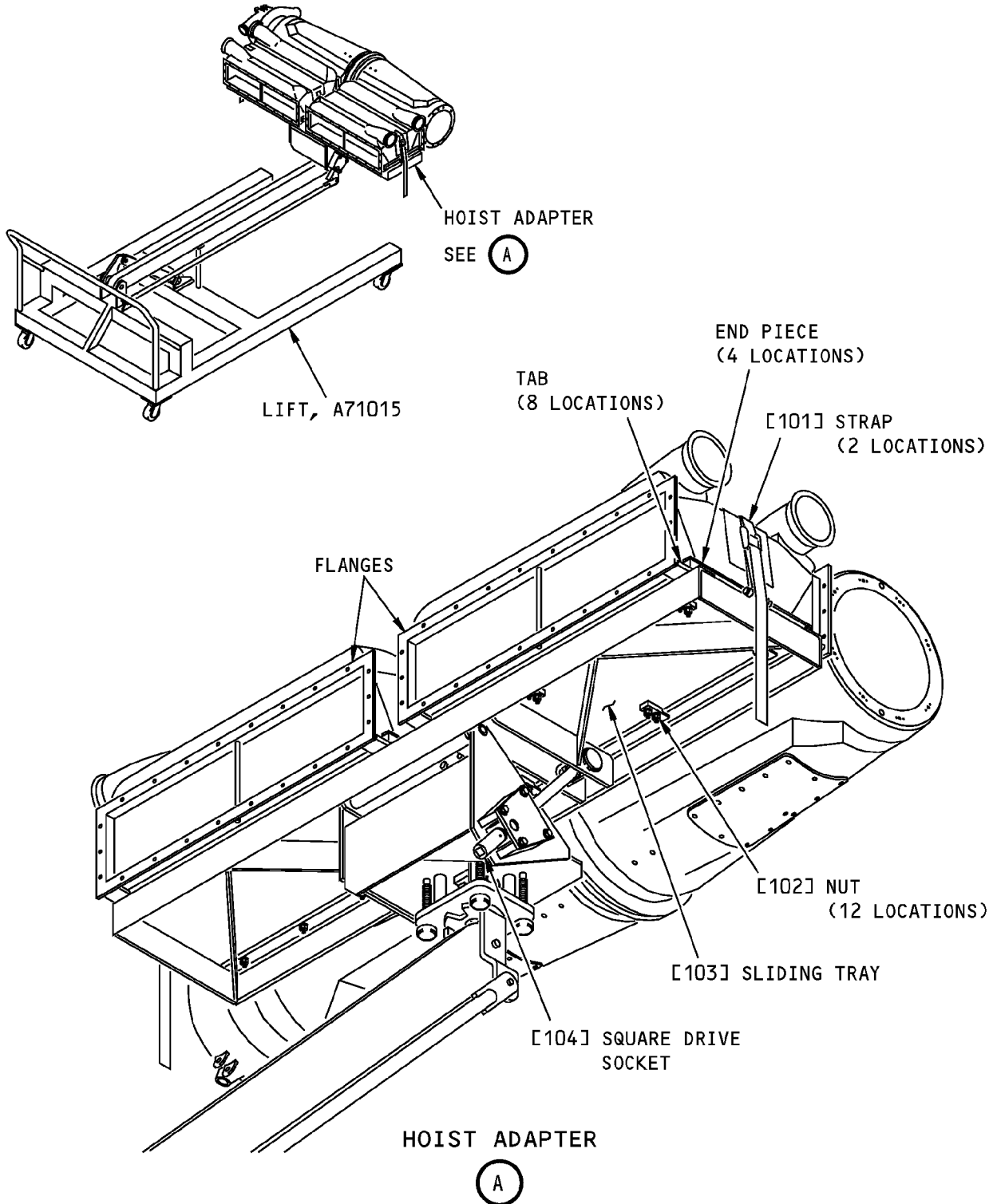
1 INSTALLED ON THE PRIMARY HEAT EXCHANGER ONLY

**Diffuser Assembly Installation  
Figure 402 (Sheet 2 of 2)/21-51-03-990-803-001**

EFFECTIVITY  
HAP 101-999

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**Heat Exchanger Tool Installation  
Figure 403/21-51-03-990-813-001**

EFFECTIVITY  
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TASK 21-51-03-400-801-001

#### 3. Heat Exchanger and Plenum/Diffuser Installation

(Figure 401, Figure 402, Figure 403)

##### 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. Tools/Equipment

**NOTE:** When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other 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, 250 Pound Limit (Part #: A71015-107, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-1608	Jack Adapter - Installation/Removal, Air Conditioning Pack (Part #: C21005-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

##### C. Consumable Materials

Reference	Description	Specification
C00852	Compound - Antiseize, Molybdenum Disulfide-Petrolatum	MIL-PRF-83483
D00649	Lubricant - O-Ring - Krytox GPL206	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF-27617, Type III

##### D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Gasket	21-51-24-01A-050	HAP 101-999
8	Primary plenum/diffuser	21-51-03-06-030	HAP 101-999
		21-51-03-06-033	HAP 101-999
		21-51-03-06-065	HAP 101-999
		21-51-03-06-070	HAP 101-999
9	Primary heat exchanger	21-51-03-06-200	HAP 101-999
20	Packing	21-51-41-05-020	HAP 101-106
24	Packing	21-51-03-05-085	HAP 101-999
27	Packing	21-51-41-05-035	HAP 101-106
30	Packing	21-51-09-03-010	HAP 101-999
		21-51-09-04-010	HAP 101-999
33	Packing	21-51-03-05-095	HAP 101-999
42	Gasket	21-51-03-05-130	HAP 101-999
43	Packing	21-51-03-05-065	HAP 101-999
67	Gasket	21-51-03-05-315	HAP 101-999
		21-51-03-06-195	HAP 101-999

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### E. Location Zones

Zone	Area
118	Electrical and Electronics 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

### G. Assemble the Heat Exchanger and Plenum/Diffuser

SUBTASK 21-51-03-420-005-001

- (1) Do these steps to install the diffuser assembly [82] in the plenum (Figure 402).

**NOTE:** The diffuser assembly with the fan bypass check valve is to be installed in the primary plenum/diffuser assembly.

- (a) Hold the diffuser assembly [82] in its position in the plenum.
- (b) Install the screws [81].
- (c) Install the bolts [83] and the washers [84].

SUBTASK 21-51-03-420-006-001

- (2) To attach the heat exchanger to the plenum/diffuser, do this task:(Figure 401):

**NOTE:** These steps are applicable to the primary or secondary units.

- (a) Put a new gasket [67] on the heat exchanger.
- (b) Do the applicable step that follows:
  - 1) Put the primary heat exchanger [9] on the primary plenum/diffuser [8].
  - 2) Put the secondary plenum/diffuser [39] on the secondary heat exchangers [38].
- (c) Install the clip assembly [64] using the bolts [62] and the washers [63].
- (d) Install the clip assembly [66] using the bolts [62] and the washers [63].
- (e) Install the bolts [65] and the washers [63].

SUBTASK 21-51-03-020-044-001

- (3) When the secondary plenum/diffuser [39] was replaced, do these steps to install the air cycle machine [35]:

- (a) Install a new gasket [42] on the air cycle machine. Align the holes in the gasket with holes on the plenum.
- (b) Carefully put the air cycle machine [35] in its position on the plenum/diffuser assembly [39].
 

**NOTE:** The air cycle machine [35] 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 [40] and the washers [41] that connect the air cycle machine [35] to the secondary plenum/diffuser [39].

### H. Heat Exchanger and Plenum/Diffuser Installation

SUBTASK 21-51-03-020-045-001

- (1) Do these steps to join the primary plenum/diffuser [8] to the secondary plenum/diffuser [39]:

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- (a) Put the flexible duct [61] in its position on the end of the secondary plenum [39].
- (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 [61] over the ends of the plenums.
- (d) Install the clamps [60] that attach the flexible duct [61] to the plenum/diffusers.

SUBTASK 21-51-03-080-001-001

- (2) Remove the covers from the duct openings.

SUBTASK 21-51-03-020-046-001

- (3) Install a new packing [30] on duct of the mix muff.

SUBTASK 21-51-03-020-146-001

- (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 21-51-03-020-023-001

**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 heat exchangers to their position in the ECS bay.
- (c) Install the bolts [59] which attach the heat exchangers [9][38] to the lower wing beam.
- (d) Install the bolts [57] and the washers [58], at nine locations.

SUBTASK 21-51-03-020-147-001

- (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 21-51-03-820-001-001

- (7) Do these steps to install the tie rod assemblies (four locations) on the forward and aft ends of the two heat exchangers:
  - (a) Install the bolts [54], the washers [55] and the bushings [56] on the tie rod assemblies.
  - (b) Adjust the tie rod assemblies to align the duct connections on the heat exchanger and the air cycle machine with the ducts in the ECS bay.
  - (c) Install the lock pins on the tie rods.

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SUBTASK 21-51-03-420-011-001

- (8) 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.  
NOTE: Install the lock pin on the tie rod.
  - (b) Install the bushing [51] in the clevis on the ACM.
  - (c) Put the washer [50] on the shank of the bolt [49].  
NOTE: The countersunk side of the washer must be adjacent to the bolt head.
  - (d) Push the bolt [49] with the washer [50] through the tie rod and bushing [51].
  - (e) Install the washer [52] and the nut [53] on the bolt [49].

SUBTASK 21-51-03-020-027-001

- (9) 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 21-51-03-010-012-001

- (10) Connect the sense line to the air cycle machine.

SUBTASK 21-51-03-010-013-001

- (11) Connect the flex hose to the air cycle machine.

SUBTASK 21-51-03-020-047-001

- (12) Install the clamp [29] that connects the air cycle machine to mix muff.

SUBTASK 21-51-03-020-048-001

- (13) 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, D50063to the packing [43].
  - (b) Install the packing [43] for the compressor inlet duct.
  - (c) Apply a light coat of compound, C00852 to the threads of the bolt [47] and the bolt [44].
  - (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.  
NOTE: Do not tighten the bolt fully.
  - (f) Install the bolt [47] on the ACM compressor inlet flange.
  - (g) Tighten the bolt [47] and the bolt [44] 22 to 26 pound-inches (2.5 to 2.9 newton-meters).

SUBTASK 21-51-03-020-049-001

- (14) Install the inlet duct [36] for the turbine of the ACM:
- (a) Hold the duct in its position while you loosely install the clamp [37] that holds the inlet duct [36] to the heat exchanger.
  - (b) Apply a light coat of Krytox GPL206 lubricant, D00649 or Krytox 240AC perfluoropolyether grease, D50063to the packings [27].
  - (c) Install the packings [27] on the end of the ducts.
  - (d) Move the sleeve [26] over the duct connections.
  - (e) Install the clamshell clamp [25] over the duct connections.
  - (f) Tighten the nut on the clamp [37] 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

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SUBTASK 21-51-03-020-050-001

(15) Install the compressor outlet duct:

- (a) Apply a light coat of Krytox GPL206 lubricant, D00649 or Krytox 240AC perfluoropolyether grease, D50063 to the packings [20][24][33].
- (b) Install the packing [24] on the flange of the duct [21].
- (c) Install the packings [20] on the ends of the ducts.
- (d) Install the packings [33] on the ends of the ducts.
- (e) Hold the compressor outlet duct [21] while you loosely install the clamp [23] that holds the duct to the heat exchanger.
- (f) Move the sleeve [19] over ends of the ducts.
- (g) Move the sleeve [32] over the ends of the ducts.
- (h) Install the clamshell clamp [18].
- (i) Install the clamshell clamp [31].
- (j) Tighten the nut on the clamp [23] 45 to 50 pound-inches (5.1 to 5.6 newton-meters).
- (k) Install the electrical connector [28] on the compressor outlet overheat switch.
- (l) Install the electrical connector [22] for the ram air control temperature sensor.

SUBTASK 21-51-03-020-029-001

(16) Do these steps to install the elbow of the ram air exhaust duct:

- (a) Examine the gasket [3].
  - 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) Install the hose [5] and clamps [4].

SUBTASK 21-51-03-020-030-001

(17) Do these steps to install the heat exchanger inlet duct:

- (a) Examine the gasket on the heat exchanger inlet duct.
  - 1) Install a new gasket if necessary.
- (b) Put the heat exchanger inlet duct in a position which engages the upper flange under the retainer on the lower wing beam.
- (c) Install the screws [16], and the washers [17].
- (d) Move the flexible hose on to the duct.
- (e) Tighten the clamp [14].

SUBTASK 21-51-03-020-051-001

(18) Install the outer seal for the ECS access door:

- (a) Put the deflector [11], the seal [12] and the retainer [13] in their position on the lower wing beam.
- (b) Install the bolts [10], at 30 locations.

### I. Heat Exchanger and Plenum/Diffuser Installation Test

SUBTASK 21-51-03-860-006-001

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

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SUBTASK 21-51-03-860-012-001

- (2) Remove the DO-NOT-OPERATE TAGS from these switches on the P5-10 air conditioning panel:
  - (a) The BLEED 1 and BLEED 2 switches
  - (b) The BLEED APU switch.

SUBTASK 21-51-03-860-041

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

SUBTASK 21-51-03-860-007-001

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

SUBTASK 21-51-03-860-008-001

- (5) Put the applicable L PACK or R PACK switch, on the P5-10 Air Conditioning Panel, to the AUTO position and remove the DO-NOT-OPERATE tags.

SUBTASK 21-51-03-790-001-001

- (6) 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.

## J. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-03-860-009-001

- (1) Put the applicable L PACK or R PACK switches to the OFF position.

SUBTASK 21-51-03-860-010-001

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

SUBTASK 21-51-03-410-003-001

- (3) Close these panels when the heat exchangers for the left pack were removed.

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

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Install this access panel:

<u>Number</u>	<u>Name/Location</u>
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-03-410-004-001

- (4) Close these panels in the specified sequence when the heat exchangers for the right pack were removed.

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Install this access panel:

<u>Number</u>	<u>Name/Location</u>
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-03-860-011-001

- (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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## 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 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 and the air cycle machine as a unit.
- (2) The heat exchangers 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, 250 Pound Limit (Part #: A71015-107, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-1608	Jack Adapter - Installation/Removal, Air Conditioning Pack (Part #: C21005-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

EFFECTIVITY HAP 001-013, 015-026, 028-054
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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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT

SUBTASK 21-51-03-010-023-002

(4) To remove the heat exchangers for the left pack, do these steps:

Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

EFFECTIVITY
HAP 001-013, 015-026, 028-054

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## AIRCRAFT MAINTENANCE MANUAL

### G. Heat Exchanger and Plenum/Diffuser Assembly Removal

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.

- (1) Do these steps to remove the outer seal for the ECS access door:
  - (a) Remove the bolts [10], at 30 locations.
  - (b) Remove the retainer [13], the seal [12] and the deflector [11].

SUBTASK 21-51-03-020-113-002

- (2) Do these steps to remove the ram air exhaust elbow [2] from the primary heat exchanger plenum/diffuser:
  - (a) Remove the clamps [4] and the hose [5].
  - (b) Remove the bolts [6] and the washers [7].
  - (c) Remove the ram air exhaust elbow [2].

SUBTASK 21-51-03-020-114-002

- (3) Do these steps to remove the heat exchanger inlet duct:
  - (a) Loosen the clamp [14].
  - (b) Move the flexible hose off the heat exchanger inlet duct [15].
  - (c) Remove the screws [16], and the washers [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.

- (4) To remove the compressor outlet duct, do these steps:
  - (a) Disconnect the flex hose 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.

**NOTE:** Lift the three latch pawls at the same time to release the clamp.
  - (f) Move the sleeve [25] to the outlet duct [29].
  - (g) Remove the clamp [19] at the heat exchanger.
  - (h) Remove the compressor outlet duct [29].
  - (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

- (5) Disconnect the inlet duct [31] from the turbine of the air cycle machine:
  - (a) Remove the clamp [32].

**NOTE:** Lift the three latch pawls at the same time to release the clamp.

EFFECTIVITY

HAP 001-013, 015-026, 028-054

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- (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

- (6) 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.
  - (b) Move the bonding jumper [46] away from the air cycle machine.  
NOTE: Do not remove the ground clip from the bonding jumper.
  - (c) Remove the bolts [47].
  - (d) Remove and discard the o-ring [43].

SUBTASK 21-51-03-020-117-002

- (7) Disconnect the hoses and sense line from the air cycle machine [5]:
  - (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

- (8) Remove the clamp [40] that connects the air cycle machine to mix muff.

SUBTASK 21-51-03-020-119-002

- (9) Remove the clamp [21] from the outboard duct of the secondary heat exchanger.

SUBTASK 21-51-03-020-120-002

- (10) 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

- (11) 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 21-51-03-020-122-002

- (12) Remove the clamps [1] from primary heat exchanger outlet and bleed air inlet ducts.

SUBTASK 21-51-03-020-148-002

- (13) 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.  
NOTE: Make sure the straps [101] are not caught between the adapter, SPL-1608 and the heat exchangers.

EFFECTIVITY

HAP 001-013, 015-026, 028-054

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- (e) If it is necessary, adjust the sliding tray [103] to make sure both heat exchangers are firmly seated in the trays.
  - 1) Loosen the nuts [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 nuts [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.

- (14) 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 heat exchangers [9][58] to the lower wing beam.
  - (b) Remove the bolts [57], at 16 locations, that attach the heat exchangers [9][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

- (15) 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

- (16) Put covers on the duct openings to keep out unwanted materials.

SUBTASK 21-51-03-020-125-002

- (17) 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.

SUBTASK 21-51-03-020-126-002

- (18) 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 plenum/diffuser [23].
  - (c) Carefully pull the air cycle machine [39] from the plenum/diffuser [23].
  - (d) Remove and discard the gasket [36] on the air cycle machine.

EFFECTIVITY

HAP 001-013, 015-026, 028-054

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SUBTASK 21-51-03-020-127-002

- (19) Do these steps to remove the secondary heat exchanger [58] from the secondary plenum [23] or the primary heat exchanger [9] from the primary plenum [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 [31] 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 [8] from the primary heat exchanger [9] or the secondary plenum [23] from the secondary heat exchanger [58].
    - 6) Remove and discard the gaskets [69].

SUBTASK 21-51-03-020-128-002

- (20) To remove the diffuser from the plenum, do these steps (Figure 402):
- (a) Remove the screws [81].
  - (b) Remove the bolts [83] and washers [84].
  - (c) Remove the diffuser [82] from the plenum.

SUBTASK 21-51-03-212-002

- (21) Inspect the diffuser assembly [82] from the primary plenum/diffuser as follows:
- (a) Make sure that the fan bypass check valve door is installed.
    - 1) If the fan bypass check valve door is not installed, either replace the diffuser assembly with a serviceable unit or replace the check valve door as follows:
      - a) Incorporate instructions in Allied Signal Service Bulletin 2215240-21-2721 for the left hand primary heat exchanger unit or Allied Signal Service Bulletin 2215280-21-2722 for the right hand primary heat exchanger unit to install a replacement check valve door on the diffuser assembly.
  - (b) Make sure that the hinge pin on the check valve door hinge assembly is retained in place by either a rivet at each end of the hinge assembly or bolts located forward and aft of the ends of the hinge pin.
    - 1) If the hinge pin is not retained by the rivets or the bolts, incorporate Allied Signal Service Bulletin 2215240-21-2721 for the left hand primary heat exchanger unit or Allied Signal Service Bulletin 2215280-21-2722 for the right hand primary heat exchanger unit so that the hinge pin is securely retained in the hinge assembly.

————— END OF TASK —————

EFFECTIVITY

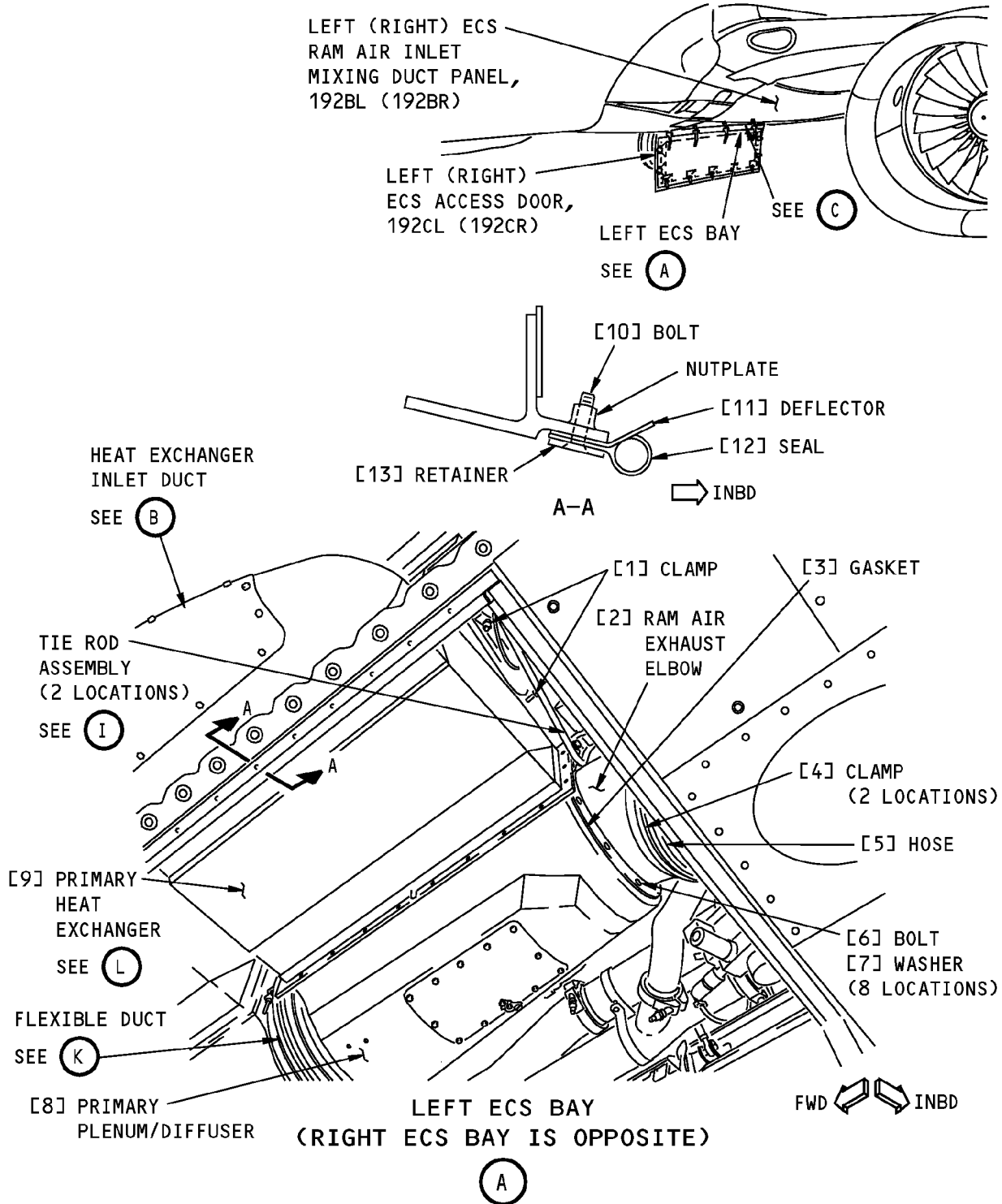
HAP 001-013, 015-026, 028-054

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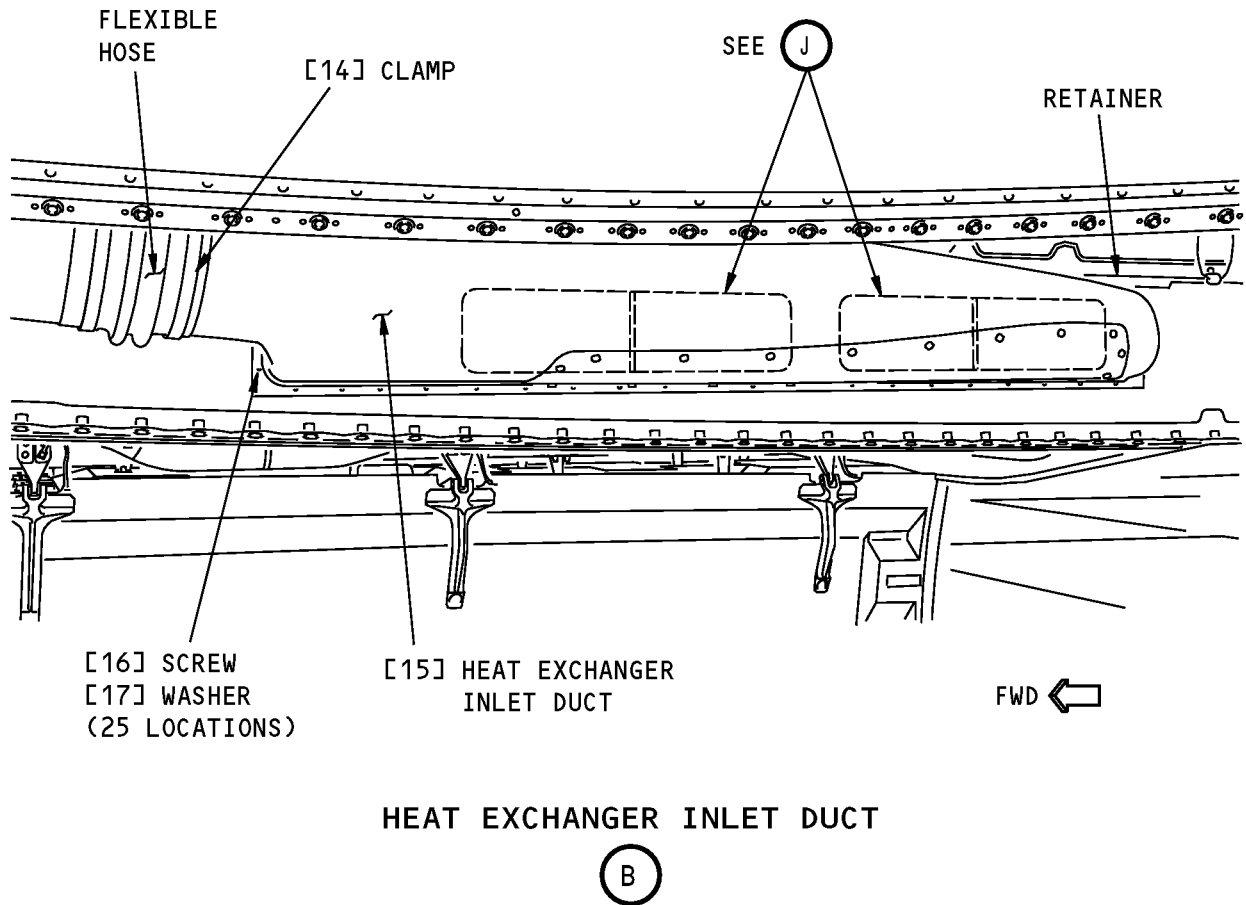
**Heat Exchanger and Plenum/Diffuser Assembly Installation**  
Figure 401 (Sheet 1 of 8)/21-51-03-990-808-002

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**Heat Exchanger and Plenum/Diffuser Assembly Installation**  
**Figure 401 (Sheet 2 of 8)/21-51-03-990-808-002**

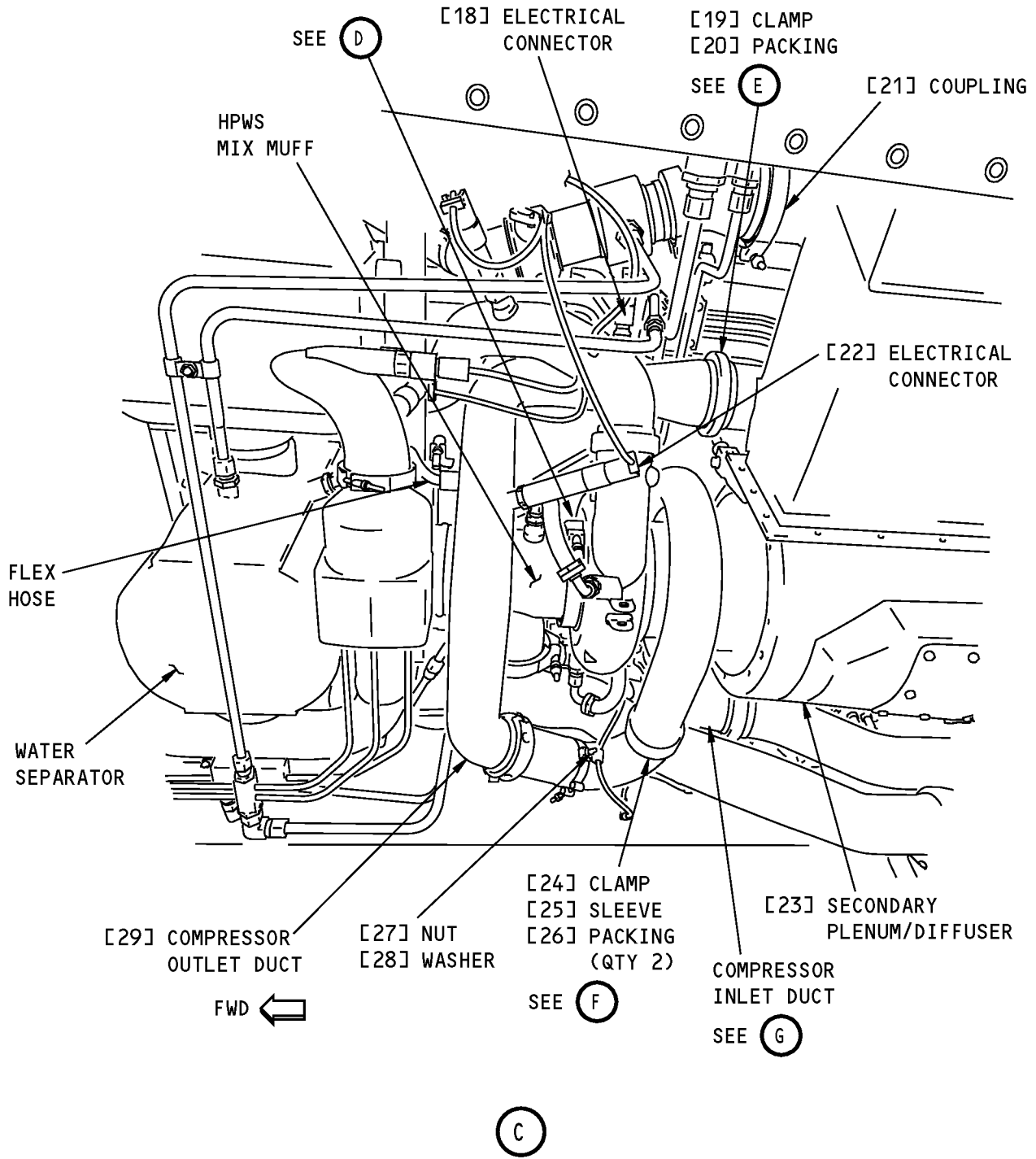
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**Heat Exchanger and Plenum/Diffuser Assembly Installation**  
Figure 401 (Sheet 3 of 8)/21-51-03-990-808-002

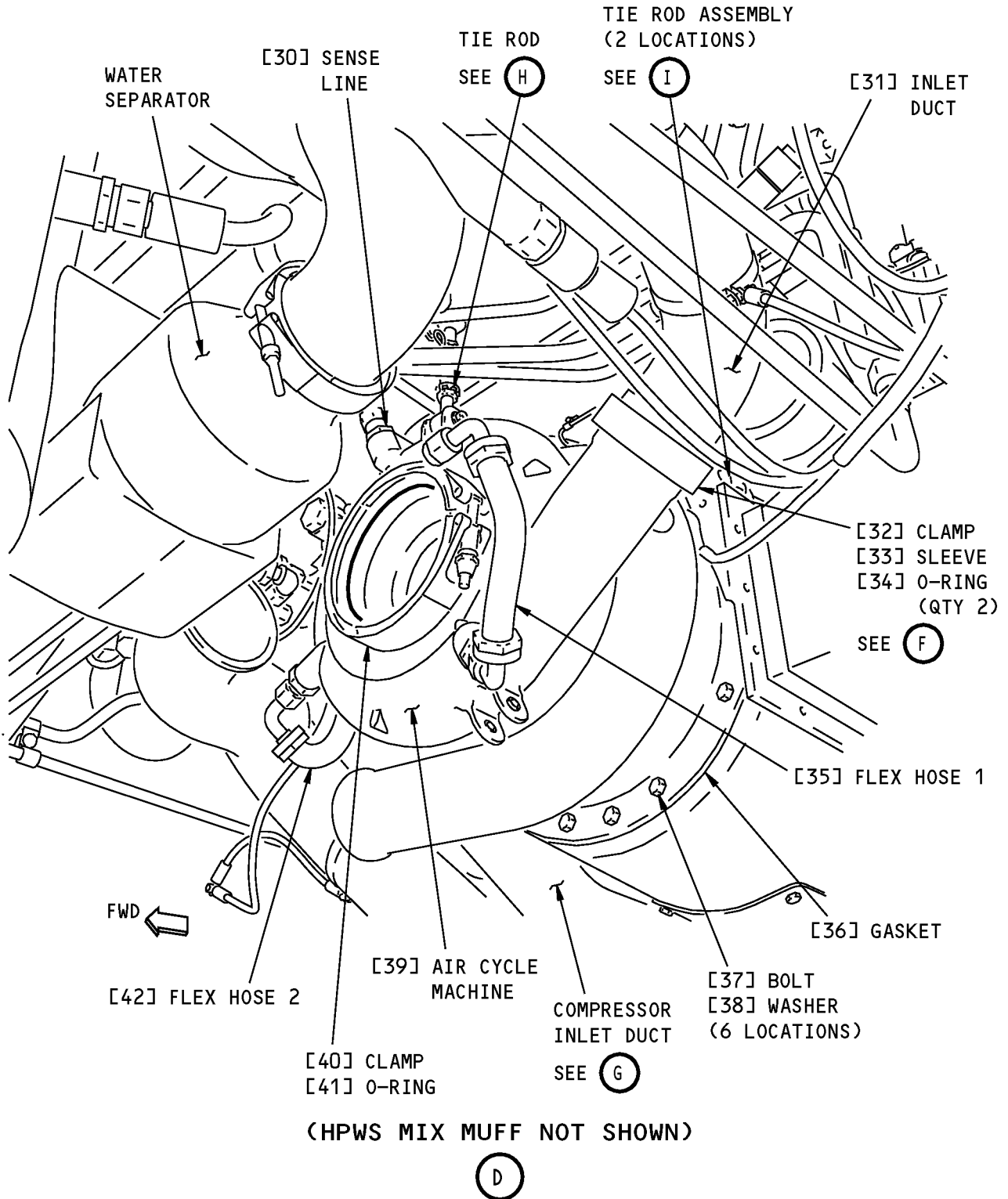
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HAP 001-013, 015-026, 028-054

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**Heat Exchanger and Plenum/Diffuser Assembly Installation**  
Figure 401 (Sheet 4 of 8)/21-51-03-990-808-002

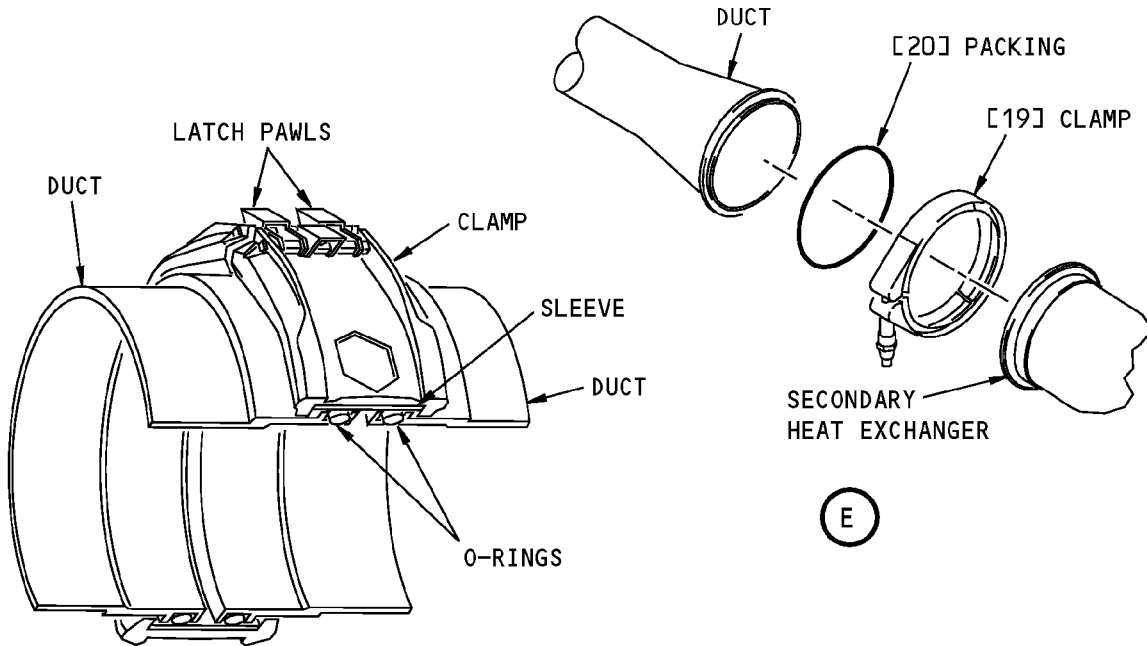
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HAP 001-013, 015-026, 028-054

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**21-51-03**

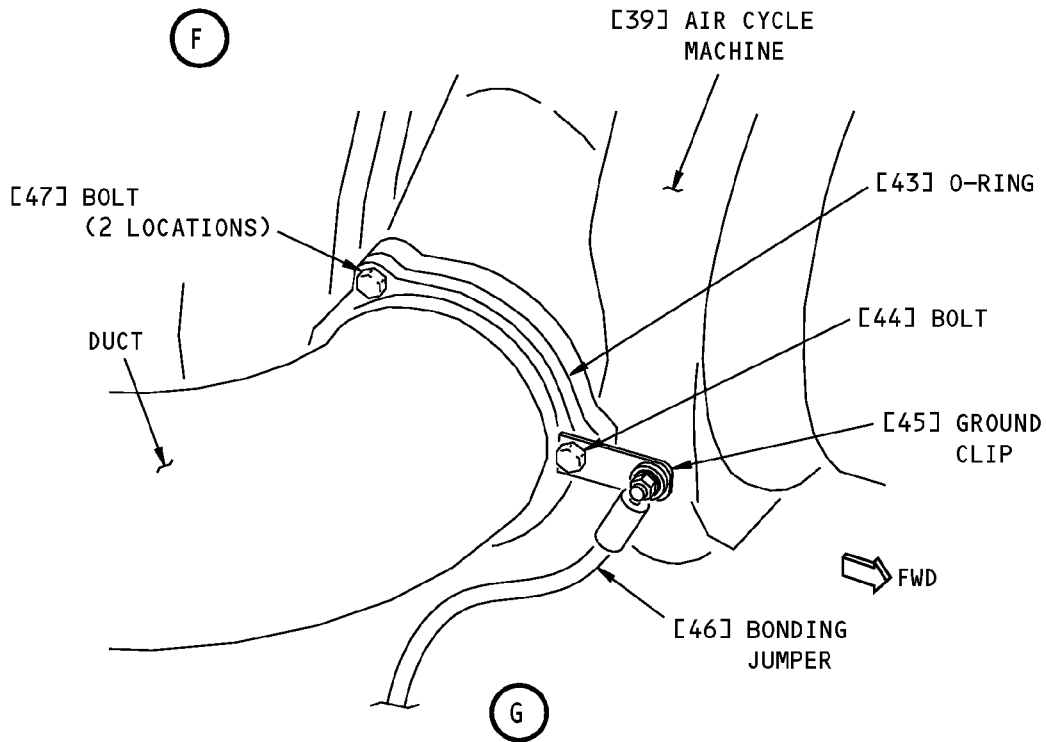
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**CLAMSHELL CLAMP INSTALLATION  
(EXAMPLE)**

**F**



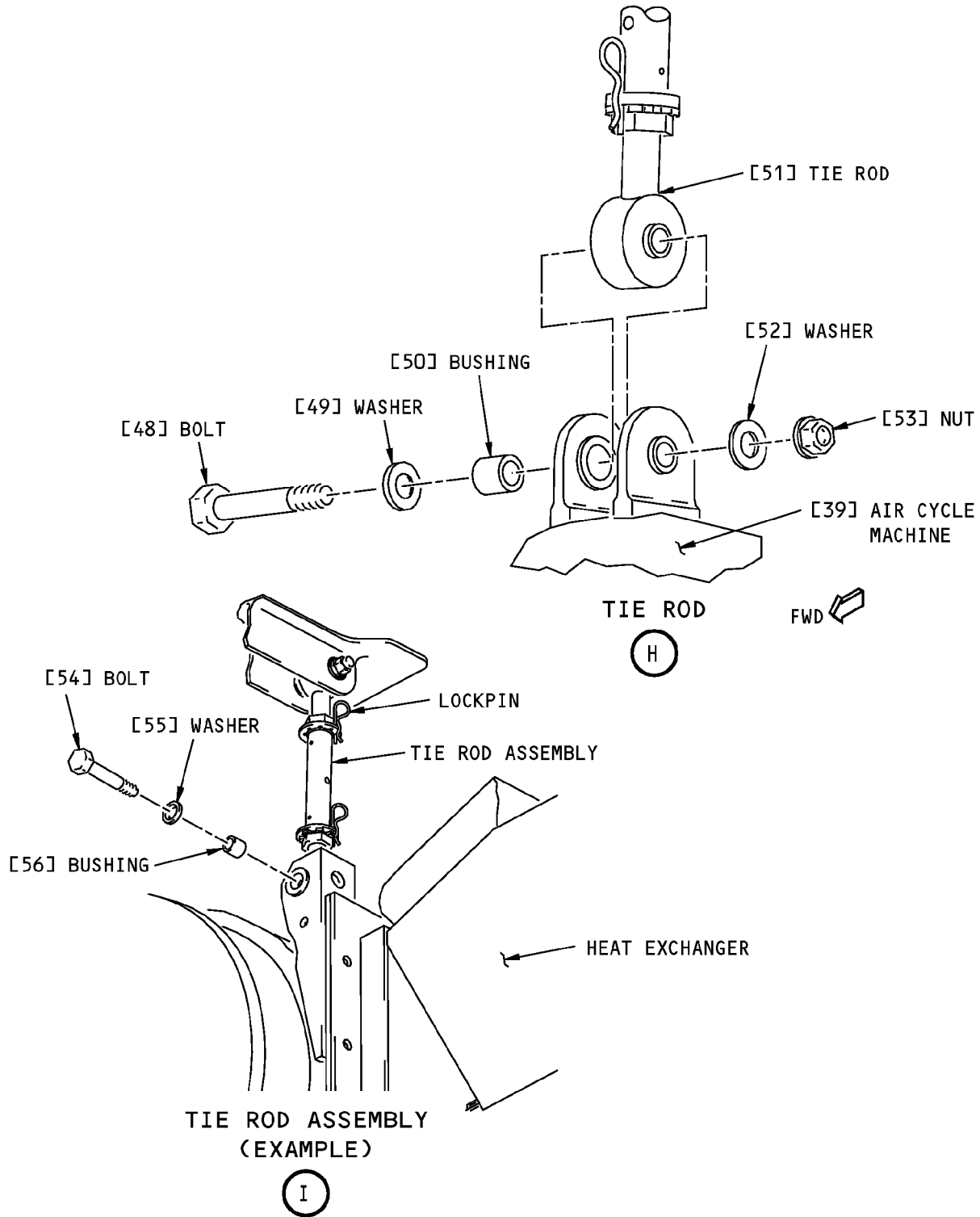
**Heat Exchanger and Plenum/Diffuser Assembly Installation  
Figure 401 (Sheet 5 of 8)/21-51-03-990-808-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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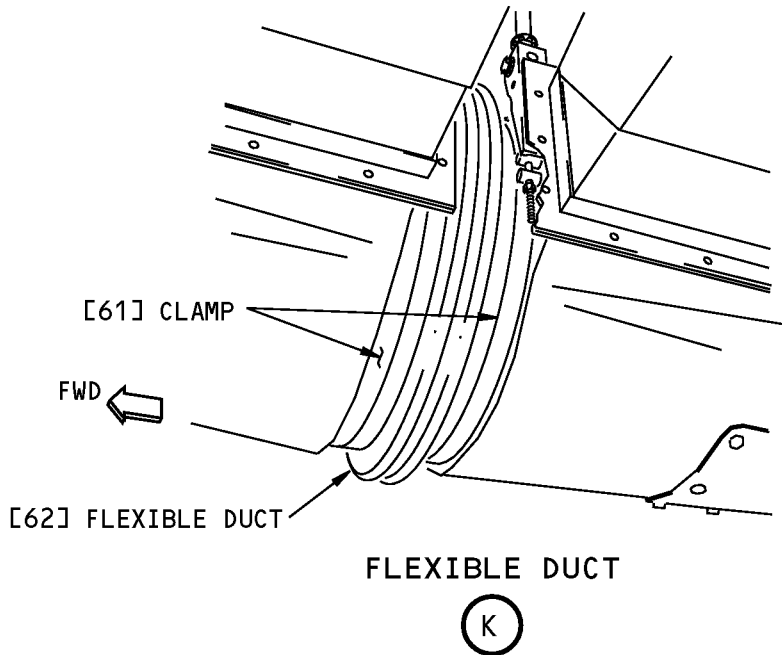
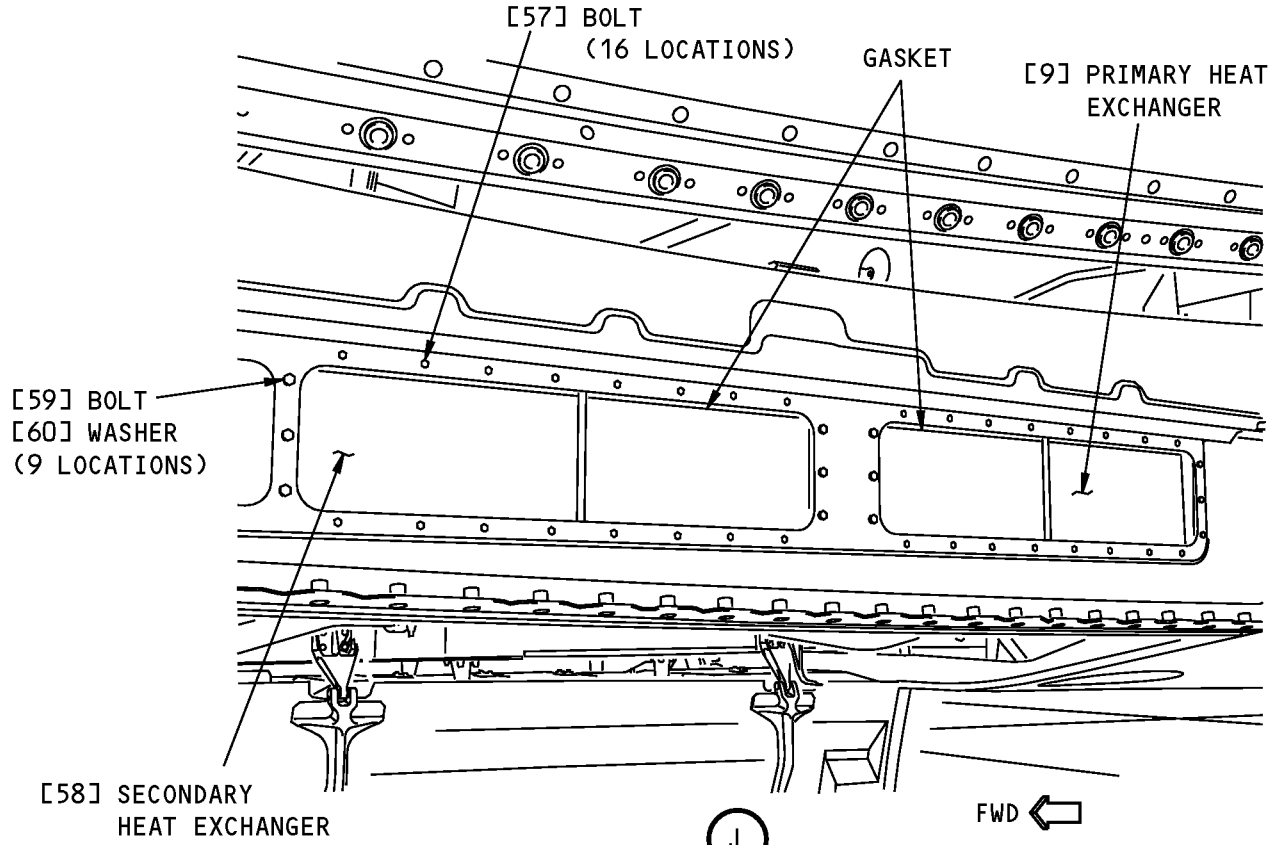


**Heat Exchanger and Plenum/Diffuser Assembly Installation  
Figure 401 (Sheet 6 of 8)/21-51-03-990-808-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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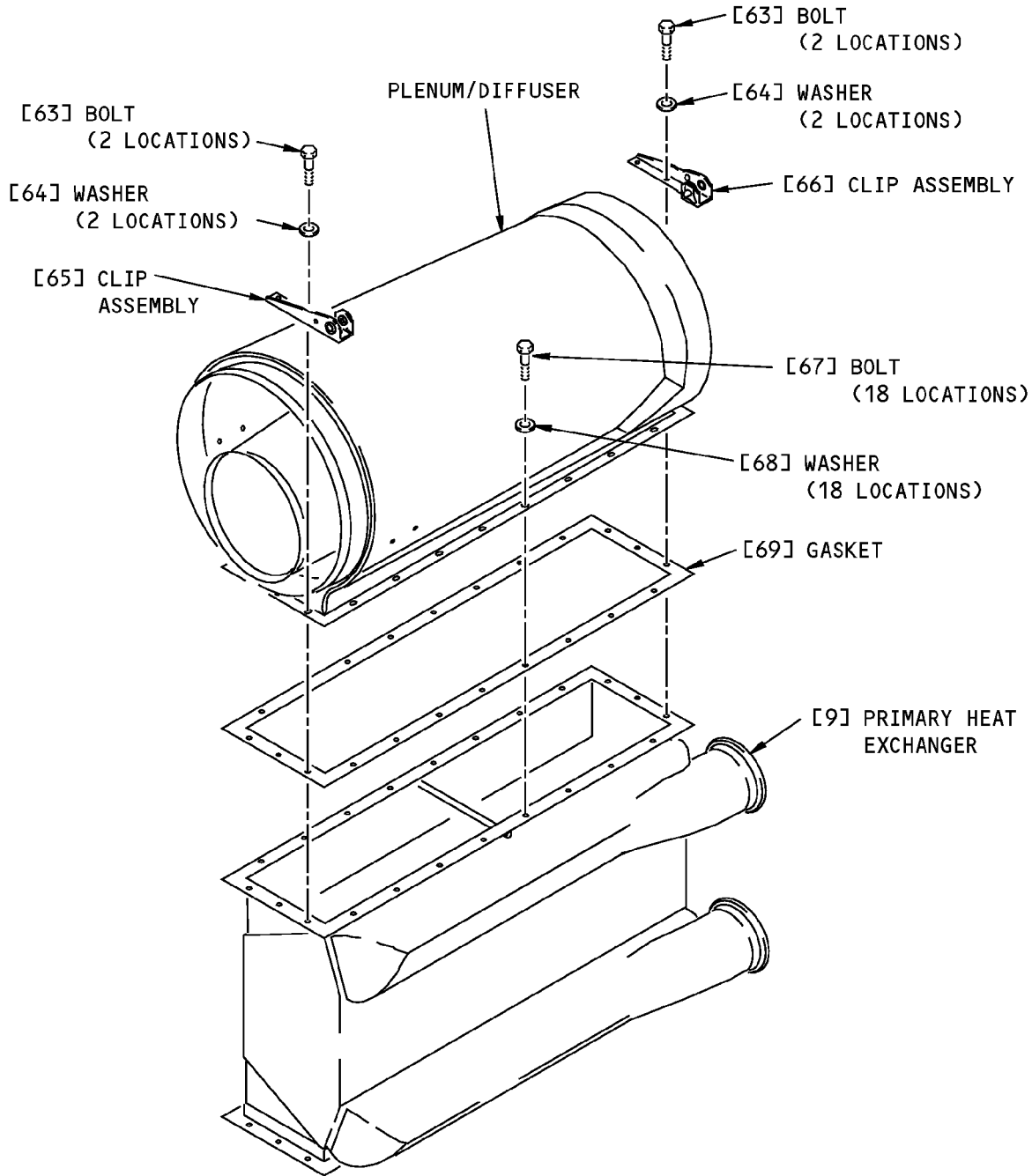
**Heat Exchanger and Plenum/Diffuser Assembly Installation**  
Figure 401 (Sheet 7 of 8)/21-51-03-990-808-002

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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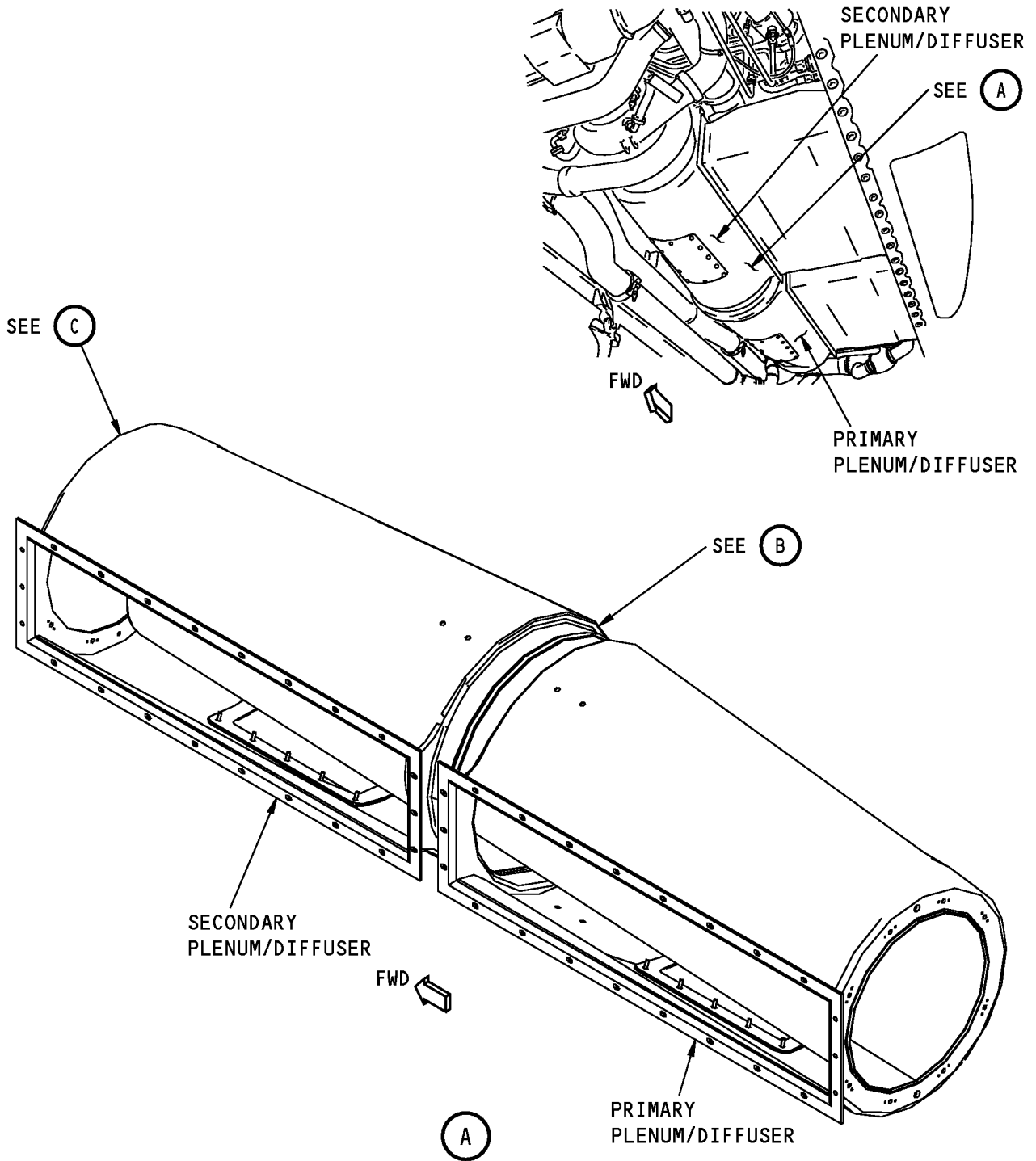
**PRIMARY HEAT EXCHANGER  
(SECONDARY HEAT EXCHANGER IS EQUIVALENT)**



**Heat Exchanger and Plenum/Diffuser Assembly Installation  
Figure 401 (Sheet 8 of 8)/21-51-03-990-808-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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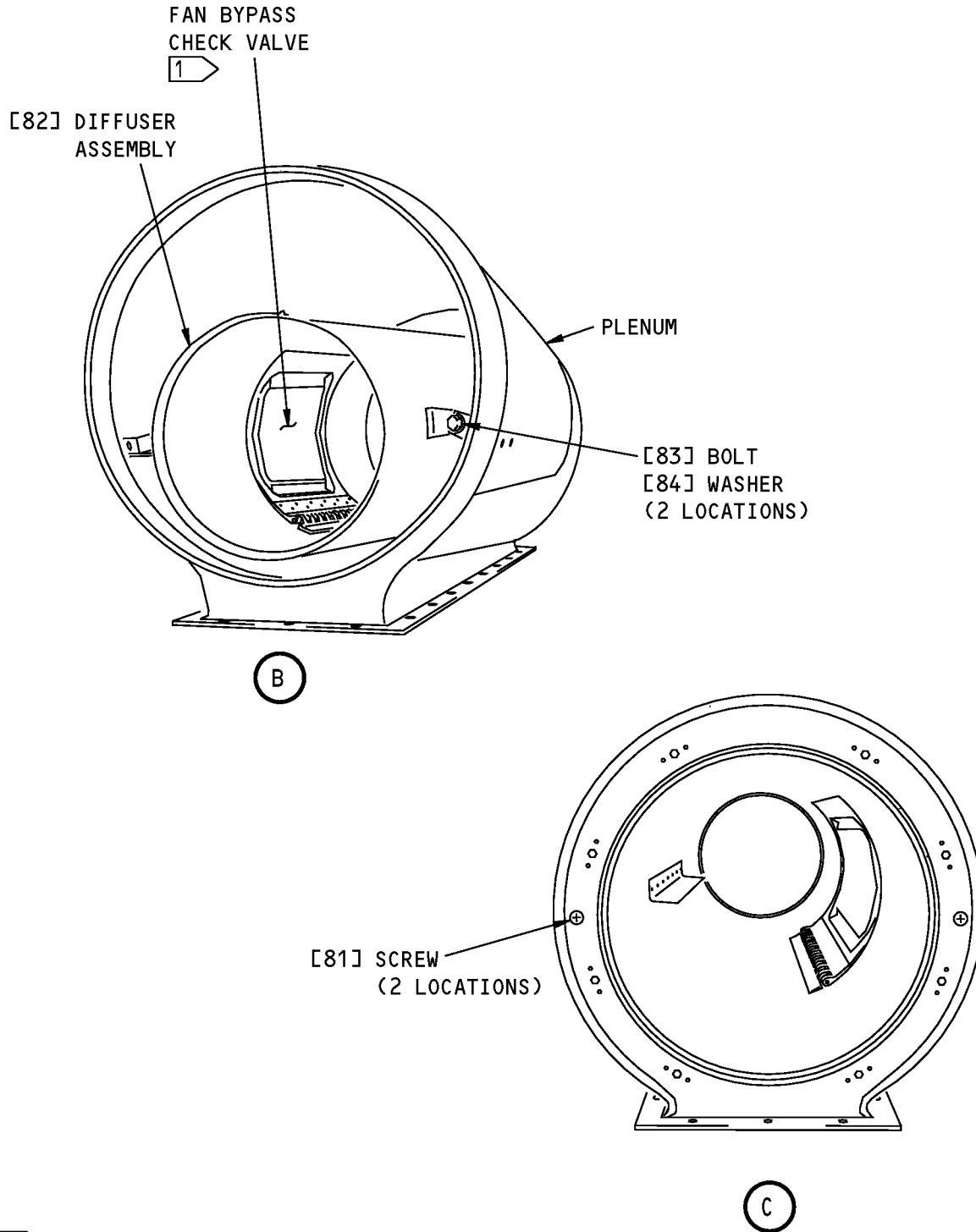
**Diffuser Assembly Installation  
Figure 402 (Sheet 1 of 2)/21-51-03-990-809-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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1 INSTALLED ON THE PRIMARY HEAT EXCHANGER ONLY

**Diffuser Assembly Installation**  
**Figure 402 (Sheet 2 of 2)/21-51-03-990-809-002**

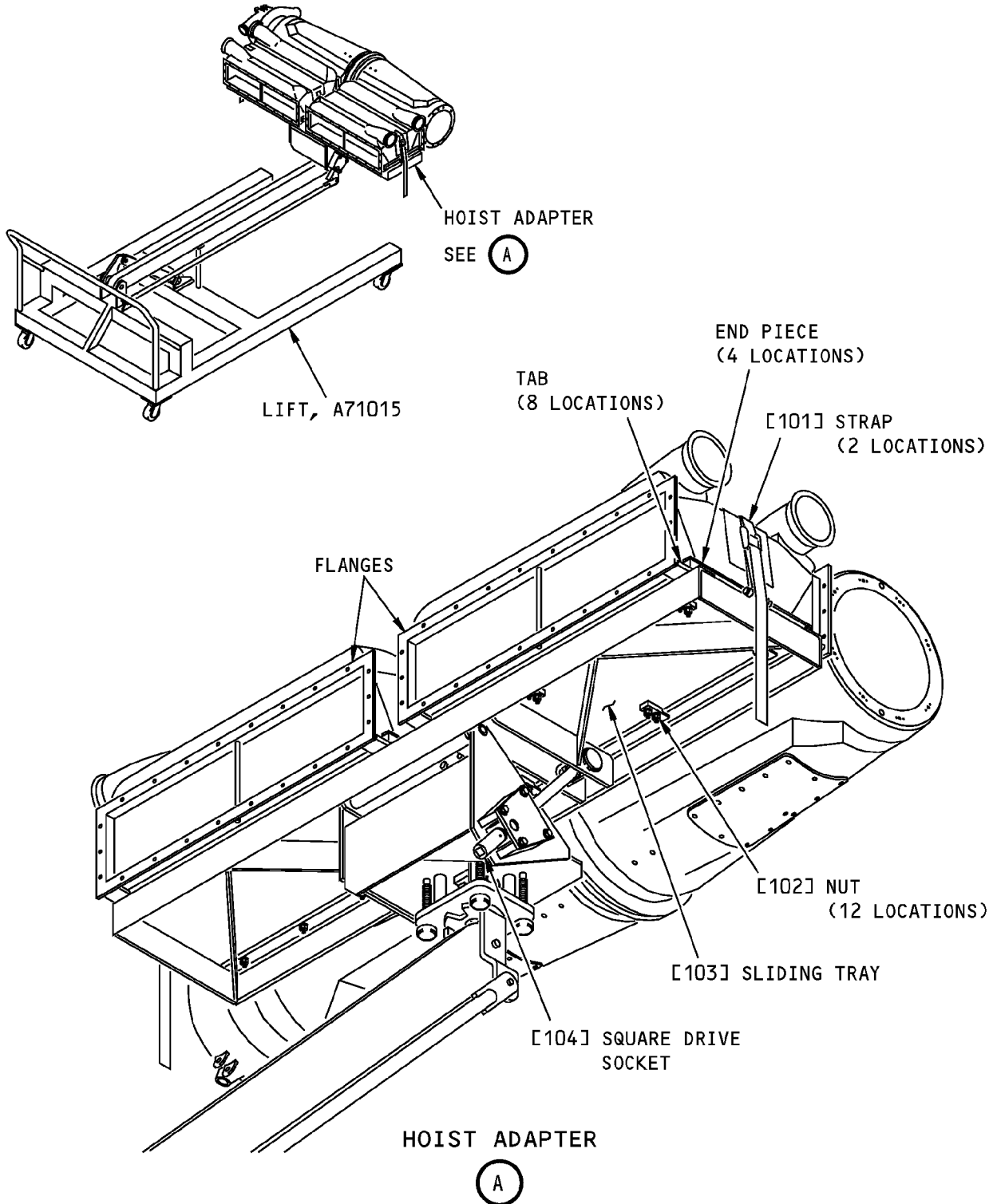
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**Heat Exchanger Tool Installation  
Figure 403/21-51-03-990-814-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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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. 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. Tools/Equipment

**NOTE:** When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other 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, 250 Pound Limit (Part #: A71015-107, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
SPL-1608	Jack Adapter - Installation/Removal, Air Conditioning Pack (Part #: C21005-1, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

##### C. Consumable Materials

Reference	Description	Specification
C00852	Compound - Antiseize, Molybdenum Disulfide-Petrolatum	MIL-PRF-83483
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT-8N	MIL-PRF-907F
D00649	Lubricant - O-Ring - Krytox GPL206	
D50063	Grease - Perfluoropolyether, fuel and oxygen resistant - Krytox 240AC	MIL-PRF-27617, Type III

##### D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
8	Plenum	Not Specified	
9	Heat exchanger	Not Specified	
20	Packing	21-51-03-05A-040	HAP 001-013, 015-026, 028-046, 054
		21-51-03-05A-200	HAP 001-013, 015-026, 028-046, 054
23	Plenum	21-51-03-05A-090	HAP 001-013, 015-026, 028-046, 054
		21-51-03-05A-280	HAP 001-013, 015-026, 028-046, 054
26	Packing	21-51-03-05A-210	HAP 001-013, 015-026, 028-046, 054
34	O-ring	21-51-03-05A-210	HAP 001-013, 015-026, 028-046, 054
36	Gasket	21-51-03-05A-075	HAP 001-013, 015-026, 028-046, 054

EFFECTIVITY HAP 001-013, 015-026, 028-054
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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
36 (cont.)		21-51-03-05A-230	HAP 001-013, 015-026, 028-046, 054
41	O-ring	21-51-17-02-015 21-51-17-04-015	HAP 001-013, 015-026, 028-030 HAP 031-054
43	O-ring	21-51-03-05A-025 21-51-17-05-015	HAP 001-013, 015-026, 028-046, 054 HAP 031-054
58	Heat exchanger	21-51-03-05A-185 21-51-03-05A-138 21-51-03-05A-365 21-51-03-05A-400	HAP 001-013, 015-026, 028-046, 054 HAP 001-013, 015-026, 028-046, 054 HAP 001-013, 015-026, 028-033 HAP 001-013, 015-026, 028-046, 054
69	Gasket	21-51-03-05A-134 21-51-03-05A-395	HAP 001-013, 015-026, 028-046, 054 HAP 001-013, 015-026, 028-046, 054
82	Diffuser	21-51-03-05A-080 21-51-03-05A-235	HAP 001-013, 015-026, 028-046, 054 HAP 001-013, 015-026, 028-046, 054

E. Location Zones

Zone	Area
118	Electrical and Electronics 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

G. Assemble the Heat Exchanger and Plenum/Diffuser

SUBTASK 21-51-03-420-019-002

(1) Do these steps to install the diffuser in the plenum.

**NOTE:** The diffuser assembly with the fan bypass check valve is to be installed in the primary plenum/diffuser assembly.

- (a) Hold the diffuser [82] in its position in the plenum.
- (b) Install the screws [81].
- (c) Install the bolts [83] and the washers [84].

SUBTASK 21-51-03-420-020-002

(2) 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]:

EFFECTIVITY HAP 001-013, 015-026, 028-054
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- (a) Do these steps to attach the heat exchanger to the plenum:
  - 1) Put a new gasket [69] in its position on the heat exchanger.
  - 2) Put the plenum [8] on the heat exchanger [9] or the plenum [23] on the heat exchanger [58].
  - 3) Install the clip assembly [65] using the bolts [63] and the washers [64].
  - 4) Install the clip assembly [66] using the bolts [63] and the washers [64].
  - 5) Install the bolts [67] and the washers [68].

SUBTASK 21-51-03-020-129-002

- (3) 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 plenum/diffuser assembly [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

- (4) 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.
  - (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.

### H. Heat Exchanger and Plenum/Diffuser Installation

SUBTASK 21-51-03-080-005-002

- (1) Remove the covers from the duct openings.

SUBTASK 21-51-03-020-131-002

- (2) Install a new o-ring [41] on duct of the mix muff.

SUBTASK 21-51-03-020-149-002

- (3) 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.

- (4) Do these steps to attach the heat exchangers to the lower wing beam:

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- (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 heat exchanger [9] and heat exchanger [58] to their position in the ECS bay.
- (c) Install the bolts [57] which attach the heat exchangers [9][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

- (5) 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 21-51-03-820-005-002

- (6) Do these steps to install the tie rod assemblies on the forward and aft ends of the two heat exchangers [9][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

- (7) 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.

**NOTE:** Install the lock pin on the tie rod.
  - (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 and the bushing [50].
  - (e) Install the washer [52] and nut [53] on the bolt [48].

SUBTASK 21-51-03-020-133-002

- (8) 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

- (9) 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

- (10) To connect the sense line and the hoses to the ACM, do these steps:
  - (a) Apply a light coat of Never-Seez NSBT-8N compound, D00006 to the threads of the sense line [30].
  - (b) Connect the sense line [30] to the air cycle machine.

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- (c) Apply a light coat of Never-Seez NSBT-8N 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-8N 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

- (11) Install the clamp [40] that connects the air cycle machine to mix muff.

NOTE: Make sure the o-ring [41] is correctly aligned in the duct.

- (a) Tighten the nut on the clamp 60 to 65 pound-inches (6.8 to 7.3 newton-meters).

SUBTASK 21-51-03-020-136-002

- (12) 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 bolts [44] and [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.

NOTE: Do not tighten the bolt fully.

- (f) Install the bolts [47] on the ACM compressor inlet flange.
- (g) Tighten the bolts [44] and [47] to 22 to 26 pound-inches (2.5 to 2.9 newton-meters).

SUBTASK 21-51-03-020-137-002

- (13) 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

- (14) 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.

NOTE: Do not tighten the clamp 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).

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- (i) Apply a light coat of Never-Seez NSBT-8N compound, D00006 to the threads of the flex hose.
- (j) Connect the flex hose 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.
- (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

(15) Do these steps to install the elbow of the ram air exhaust duct:

- (a) Examine the gasket [3].
  - 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) Install the hose [5] and clamps [4].

SUBTASK 21-51-03-020-139-002

(16) 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.
- (c) Install the screws [16], and the washers [17].
- (d) Move the flexible hose on to the duct [15].
- (e) Tighten the clamp [14].

SUBTASK 21-51-03-020-140-002

(17) Install the outer seal for the ECS access door:

- (a) Put the deflector [11], the seal [12] and the retainer [13] in their position on the lower wing beam.
- (b) Install the bolts [10], at 30 locations.

SUBTASK 21-51-03-860-030-002

(18) 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

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT

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### I. 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) Put the L PACK and R PACK switches in the AUTO position.

6) Make sure the leak has been repaired.

### J. 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.

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

Install this access panel:

<u>Number</u>	<u>Name/Location</u>
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.

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Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Install this access panel:

<u>Number</u>	<u>Name/Location</u>
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. To remove electrical power do this task: 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/PAINTING

### 1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has a task to clean the primary and secondary heat exchangers.

#### **TASK 21-51-03-000-801**

### 2. Heat Exchanger and Plenum/Diffuser Assembly Cleaning

(Figure 701)

#### A. General

- (1) This procedure is a scheduled maintenance task.
- (2) 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)
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
COM-2462	Deactivator - Check Valve (Part #: PF80-012-500, Supplier: 3D5B2, A/P Effectivity: 737-ALL)
SPL-1607	Equipment - Backflush, A/C Pack Heat Exchanger (Part #: C21003-71, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: C21003-72, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Opt Part #: C21003-70, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)
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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

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### 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 CLOSE position.

SUBTASK 21-51-03-010-001

- (3) To get access to the Left pack heat exchangers, do this step:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

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.

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SUBTASK 21-51-03-010-006

(9) Remove the plenum/diffuser access panels and the gaskets.

SUBTASK 21-51-03-420-001

(10) If you using the backflusher, SPL-1607 C21003-1 equipment, do these steps to install the heat exchanger cleaning heads:

(a) Install the backflush units (cleaning heads) in these locations:

- 1) The backflush unit C21003-2 unit is used to clean the left pack primary heat exchanger or the right pack secondary heat exchanger.
- 2) The backflush unit C21003-3 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 hole in the plenum/diffuser assembly so that the ends of the supply tubes point outboard toward the exit of the heat exchanger.

(c) Install the four screws and washers to attach the cleaning head to the plenum/diffuser assembly.

- 1) Install the long screw with a washer in the location where the inboard seal on the cleaning head is thickest.

**NOTE:** There is one long screw required for the installation of each cleaning head.

**CAUTION:** DO NOT TIGHTEN THE SCREWS ON THE CLEANING HEAD TOO MUCH. TOO MUCH TORQUE WILL CAUSE DAMAGE TO THE PLENUM/DIFFUSER.

(d) 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.

(e) Do the above steps again to install the cleaning head for the other heat exchanger.

SUBTASK 21-51-03-480-006

(11) If you are using the backflusher, SPL-1607 C21003-45, C21003-53, C21003-70, C21003-71, or C21003-72 to install the heat exchanger cleaning heads, do this step:

(a) Install the backflush unit in these locations:

- 1) The backflush unit C21003-46 is used to clean the left pack primary heat exchanger or the right pack secondary heat exchanger.
- 2) The backflush unit C21003-47 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.

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**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 21-51-03-940-001

- (12) Install the plug assembly into the ram air exhaust outlet.

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:

<u>Number</u>	<u>Name/Location</u>
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:

**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, COM-2462, in the ground pneumatic connector to hold the check valve open.
- 2) Connect an air line to the ground pneumatic connector.

**NOTE:** The air line connector holds the deactivator, COM-2462, in position.

- (d) Connect the other end of the air line that you just connected to the ground pneumatic connector to the air inlet fitting on the backflush equipment air hose.
- (e) Do this step: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-51-03-941-002

- (15) If you want to 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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## AIRCRAFT MAINTENANCE MANUAL

### G. Heat Exchanger Cleaning

SUBTASK 21-51-03-160-001

**CAUTION:** DO NOT USE SOAP OR A DETERGENT SOLUTION TO CLEAN THE HEAT EXCHANGERS. USE COLD WATER ONLY. IF YOU USE SOAP OR A DETERGENT SOLUTION TO CLEAN THE HEAT EXCHANGERS, DAMAGE TO THE AIR CYCLE MACHINE CAN OCCUR.

- (1) If you are using backflusher, SPL-1607 C21003-1, C21003-45, C21003-70, or C21003-71 do these steps to clean the heat exchanger:

**NOTE:** You must do these steps for each of the heat exchangers.

- (a) Make sure that the air supply valve is closed.
- (b) Connect the air hose to the cleaning head.
- (c) Connect the water supply hose to the cleaning head.
- (d) If you are using airplane pneumatic system air for the air source, do these steps:
  - 1) Set the ISOLATION VALVE switch on the P5-10 air conditioning panel to the OPEN position.
  - 2) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803
- (e) If you are using ground 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.
- (f) Slowly open the air supply valve on the manifold of the cleaning tool.
- (g) Open the valve at the water source.
- (h) Slowly open the water supply valve on the manifold of the cleaning tool.
- (i) Clean the heat exchanger for 5 minutes.
- (j) Close the water supply valve on the manifold of the cleaning tool and continue to supply air for an additional 2 minutes.
- (k) Close the air supply valve.
- (l) Disconnect the air hose from the cleaning head.
- (m) Disconnect the water supply hose from the cleaning head.
- (n) Do the steps above, as necessary, for the other heat exchangers.

SUBTASK 21-51-03-020-002

**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.

- (2) If you are using the backflusher, SPL-1607 C21003-53 or C21003-72 to clean the heat exchanger, do this step:

**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:

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### AIRCRAFT MAINTENANCE MANUAL

- 1) Set the ISOLATION VALVE switch on the P5-10 air conditioning panel to the OPEN position.
- 2) 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) Slowly open the water supply valve on the water source (0-60 PSIG).
- (f) Clean the heat exchanger for 5 minutes.
- (g) Close the water supply valve on the water source (0-60 PSIG) and continue to supply air for an additional 2 minutes.
- (h) If you are using airplane pneumatic system air, set the APU BLEED switch on the P5-10 panel to OFF.
- (i) If you are using ground pneumatic air for the air source, set the valve on the ground pneumatic cart to the off position.
- (j) Disconnect the air hose from the cleaning head.
- (k) Disconnect the water supply hose from the cleaning head.
- (l) Do the steps above, as necessary, for the other heat exchangers.

SUBTASK 21-51-03-020-003

- (3) If not already done, close the valve at the water source.

SUBTASK 21-51-03-030-001

- (4) Disconnect the water line from the water source (0-60 PSIG).
- (5) If you used a ground air supply for the air source, do this step:
  - (a) Stop the operation of the ground air source.
  - (b) If installed, open the air supply valve on the backflusher equipment.

**NOTE:** The C21003-53 and C21003-72 backflush equipment do not have this valve.

- (c) Disconnect the ground air supply line from the air hose inlet fitting.

SUBTASK 21-51-03-880-002

- (6) 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.
- NOTE:** The C21003-53 and C21003-72 backflush equipment do not have this valve.
- (c) Disconnect the air line from the ground pneumatic connector and from the air hose inlet fitting.
  - (d) Remove the check valve deactivator from the ground air connector.
  - (e) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

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**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 21-51-03-020-151

- (7) 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

- (8) Install the plenum/diffuser access panels and the gaskets with the bolts and washers.

SUBTASK 21-51-03-410-014

- (9) Put the bonding jumper in its position and install the bolts, washers, and nut.

SUBTASK 21-51-03-420-004

- (10) Install the ram air inlet access panel with the bolts and washers.

SUBTASK 21-51-03-020-152

- (11) Remove the plug assembly from the ram air exhaust outlet.

SUBTASK 21-51-03-880-001

- (12) 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

- (13) 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

Install this access panel:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

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Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Install this access panel:

<u>Number</u>	<u>Name/Location</u>
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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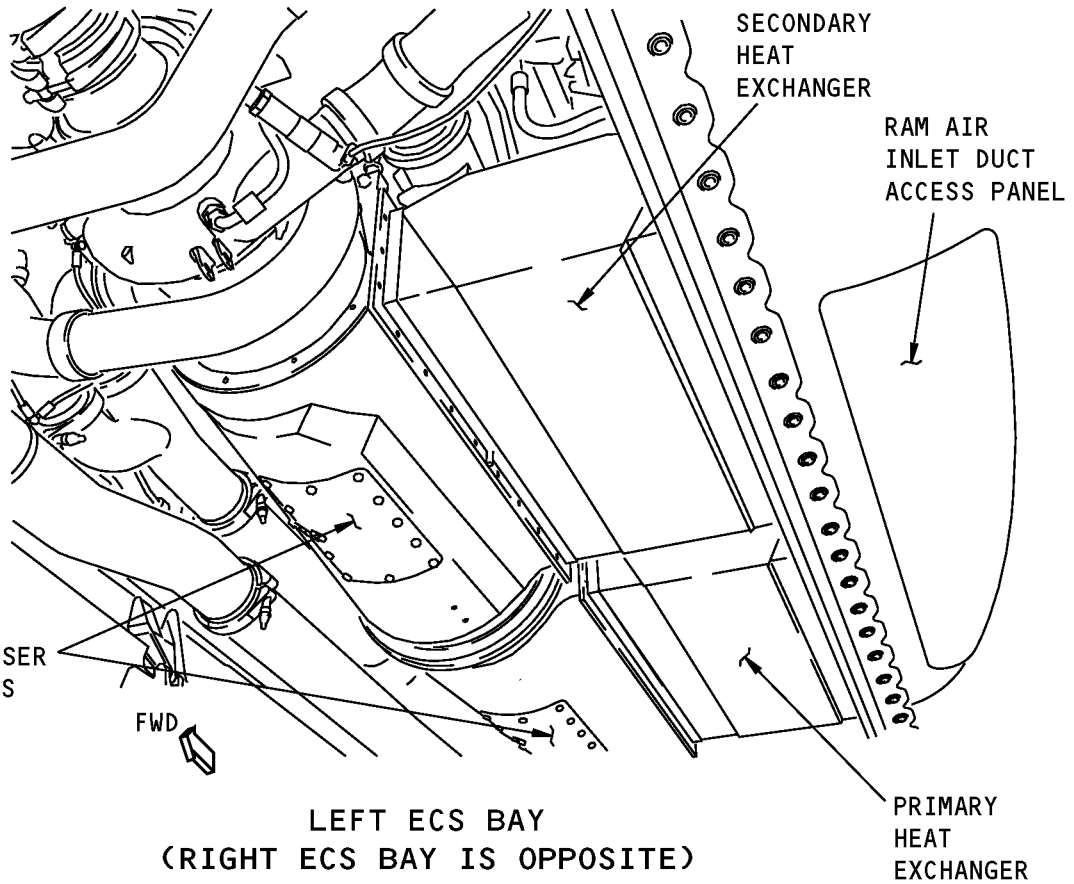
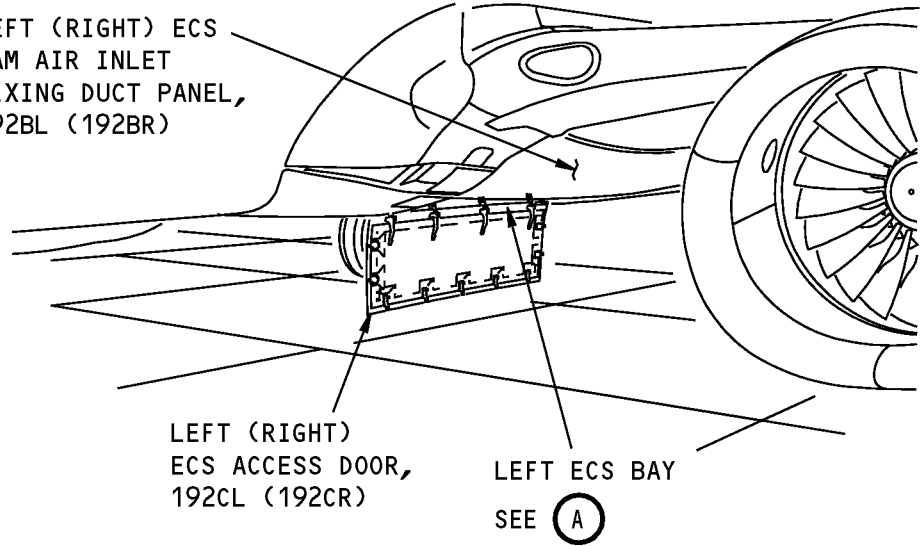
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LEFT (RIGHT) ECS  
RAM AIR INLET  
MIXING DUCT PANEL,  
192BL (192BR)

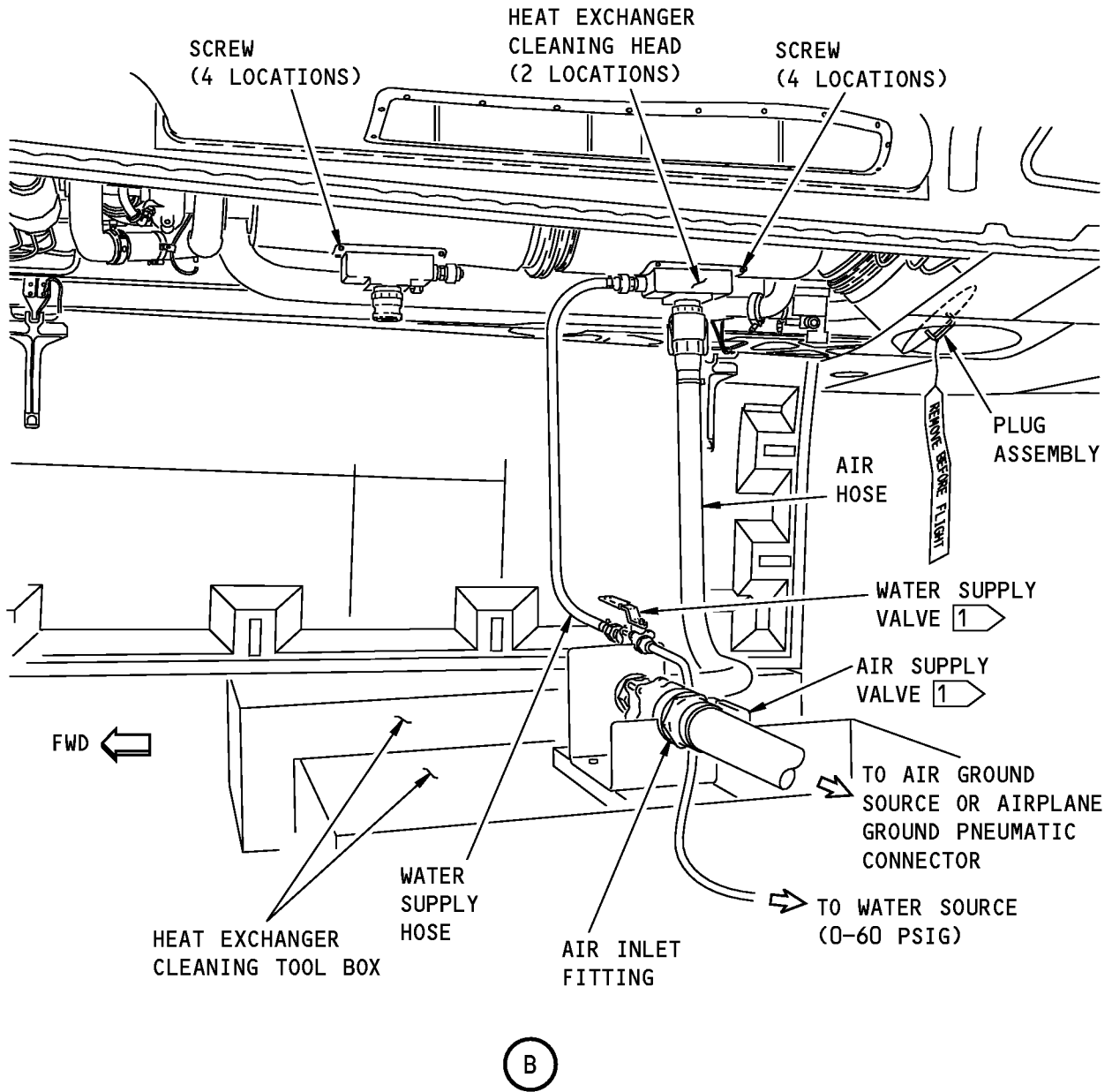


**Heat Exchanger and Plenum/Diffuser Assembly Cleaning**  
Figure 701 (Sheet 1 of 4)/21-51-03-990-801

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1 THE C21003-53 AND C21003-72 BACKFLUSH EQUIPMENT DO NOT HAVE THIS VALVE.

**Heat Exchanger and Plenum/Diffuser Assembly Cleaning  
Figure 701 (Sheet 2 of 4)/21-51-03-990-801**

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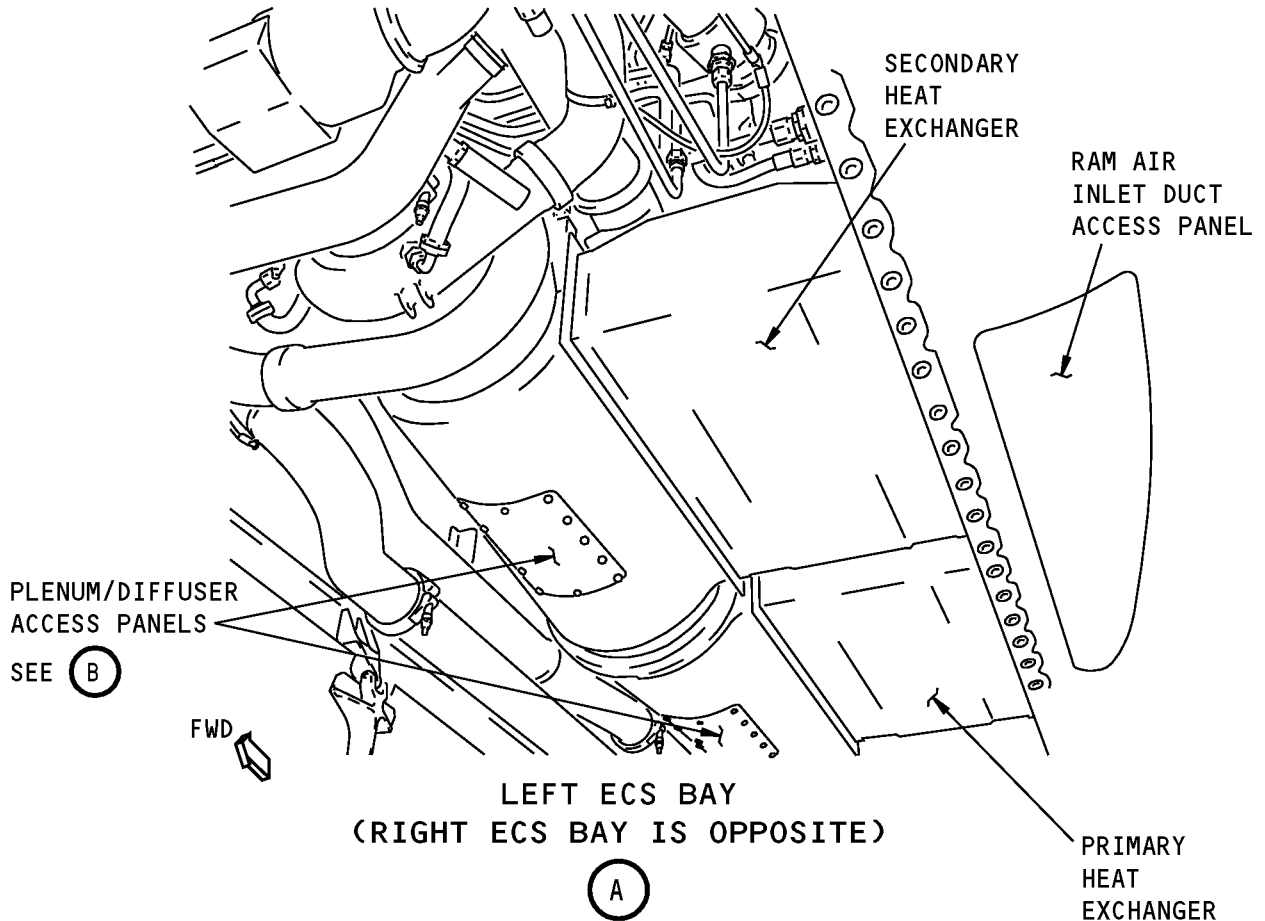
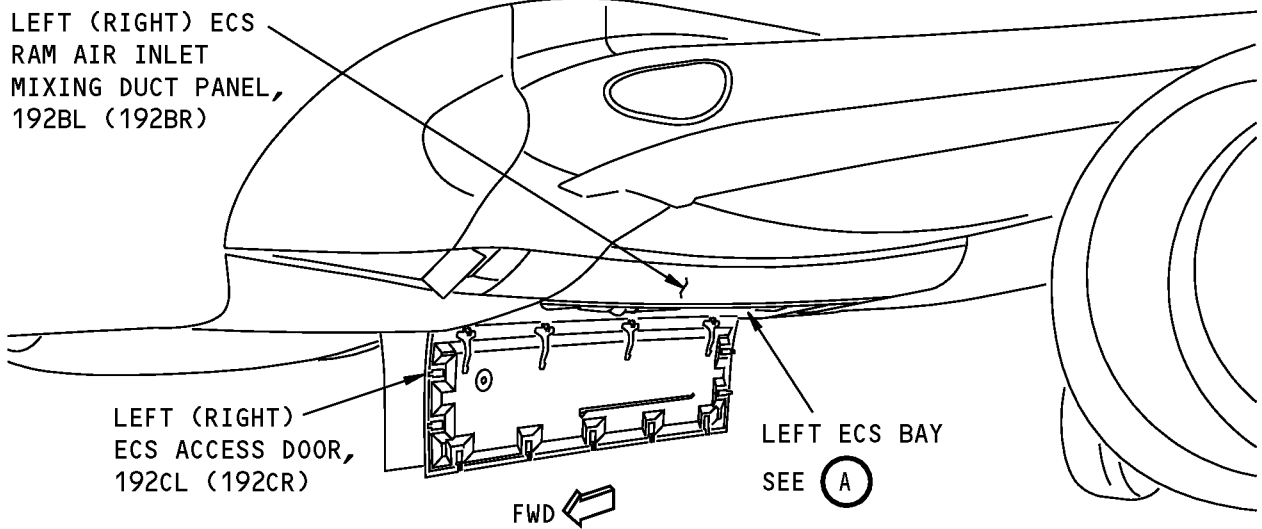
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LEFT (RIGHT) ECS  
RAM AIR INLET  
MIXING DUCT PANEL,  
192BL (192BR)

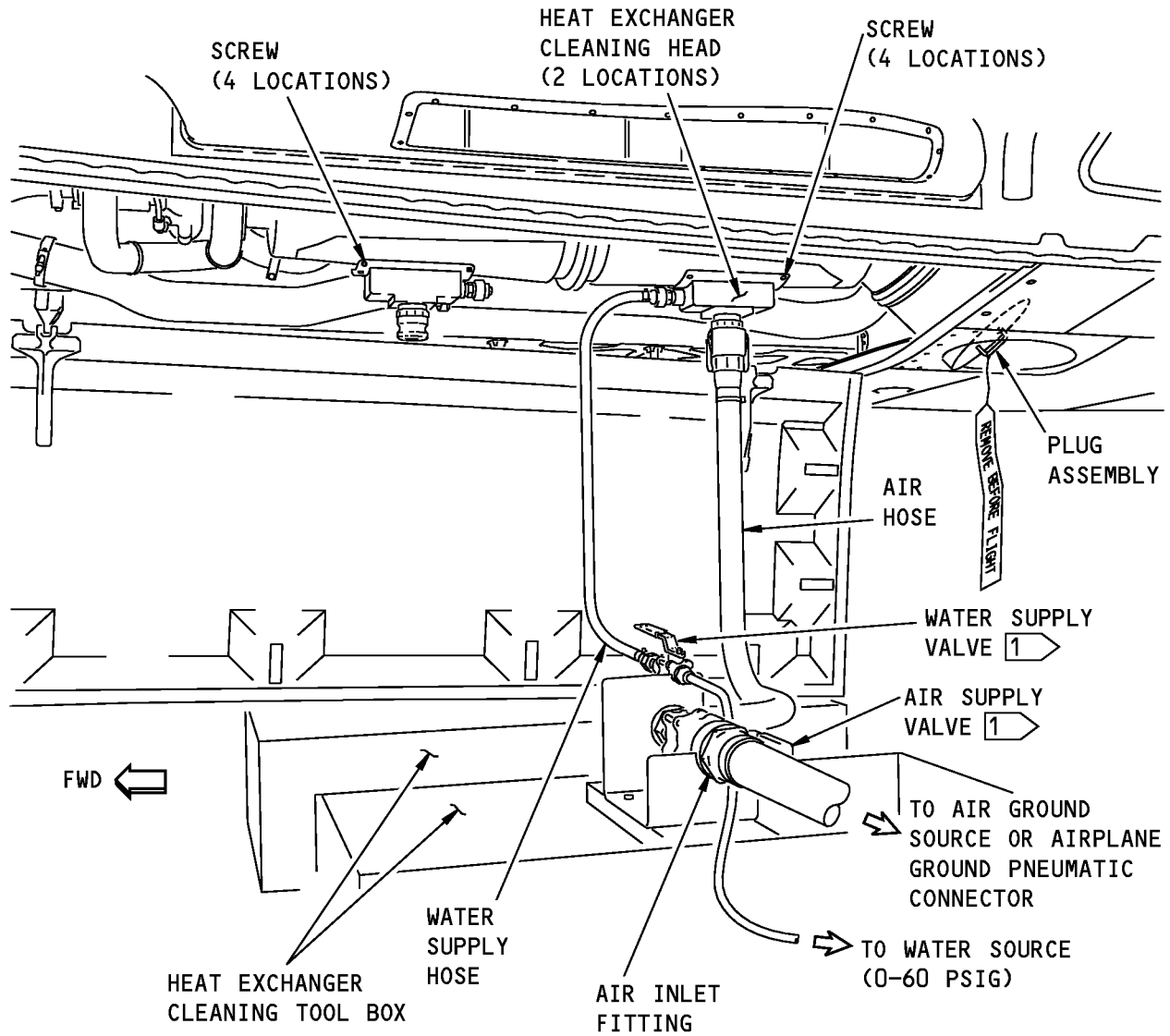


**Heat Exchanger and Plenum/Diffuser Assembly Cleaning**  
Figure 701 (Sheet 3 of 4)/21-51-03-990-801

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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1 THE C21003-53 AND C21003-72 BACKFLUSH EQUIPMENT DO NOT HAVE THIS VALVE.

**Heat Exchanger and Plenum/Diffuser Assembly Cleaning  
Figure 701 (Sheet 4 of 4)/21-51-03-990-801**

EFFECTIVITY
HAP 001-013, 015-026, 028-054

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## AIRCRAFT MAINTENANCE MANUAL

### 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 installed 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 low pressure water system mix muff must be removed to get access to the air cycle machine.

#### **TASK 21-51-04-000-801-001**

#### 2. Air Cycle Machine (ACM) Removal

(Figure 401)

##### A. References

Reference	Title
21-51-09-000-801	Low Pressure Water System 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

##### D. Prepare for the Removal

SUBTASK 21-51-04-860-001-001

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

SUBTASK 21-51-04-860-002-001

**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 21-51-04-860-003-001

- (3) 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.
  - (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 21-51-04-010-001-001

- (4) To remove the air cycle machine for the left pack, do this step:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-04-010-002-001

- (5) To remove the air cycle machine for the right pack, do these steps:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

SUBTASK 21-51-04-860-004-001

**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.

- (6) Remove the Mix Muff. To do this, do this task: Low Pressure Water System Mix Muff Removal, TASK 21-51-09-000-801.

### E. Air Cycle Machine Removal

SUBTASK 21-51-04-010-013-001

- (1) To remove the compressor outlet duct, do these steps:

- (a) Remove the clamp [2] from the compressor outlet duct [5].

**NOTE:** Lift the three latch pawls at the same time to release the clamp.

- (b) Slide the sleeve [3] onto the outlet duct [5].  
(c) Remove the compressor outlet duct [5].  
(d) Remove and discard the O-rings [4].

SUBTASK 21-51-04-010-014-001

- (2) Remove the compressor inlet duct:

- (a) Remove the clamp [8], at two locations.

**NOTE:** Lift the three latch pawls at the same time to release each clamp.

- (b) Slide the sleeves [9] away from the ACM and onto the adjacent ducts.  
(c) Remove the inlet duct [11].  
(d) Remove and discard the O-rings [10].

SUBTASK 21-51-04-020-001-001

- (3) To remove the air cycle machine, do these steps:

- (a) Remove the flex hose [12] from the air cycle machine [1].  
(b) Disconnect the sense line [6] from the air cycle machine [1].  
(c) If you need to replace the air cycle machine [1], then do the steps that follow:

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- 1) Remove the union [18] and discard the O-ring [19]

NOTE: Keep the union [18] for use with the new air cycle machine.

- 2) Remove the plug [28] and discard the O-ring [29].

NOTE: Keep the plug [28] for use with the new air cycle machine.

- (d) Remove the bolt [27] that holds the ground clip [17] to the air cycle machine [1].

- (e) Move the bonding jumper [16] away from the ACM.

NOTE: Do not remove the ground clip from the bonding jumper.

- (f) Remove the bolt [25].

- (g) Remove the bolt [14] and washer [15] that hold the air cycle machine [1] 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.

- (h) Remove the nut [24] and the washer [23] from the bolt [20] that holds the air cycle machine [1] to the tie rod [7].

**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.

- (i) Remove the bolt [20] and the washer [21] from the tie rod [7].

- (j) Carefully lower the air cycle machine [1] and remove it from the air conditioning bay.

- (k) Remove the bushing [22] from the tie rod [7].

- (l) Remove and discard the O-ring [26].

- (m) Remove the gasket [13].

- (n) Examine the gasket [13] for damage or deterioration.

- (o) Discard the gasket [13] if there is damage or deterioration.

SUBTASK 21-51-04-620-001-001

- (4) Put covers on the duct openings to prevent the entry of unwanted materials.

————— **END OF TASK** —————

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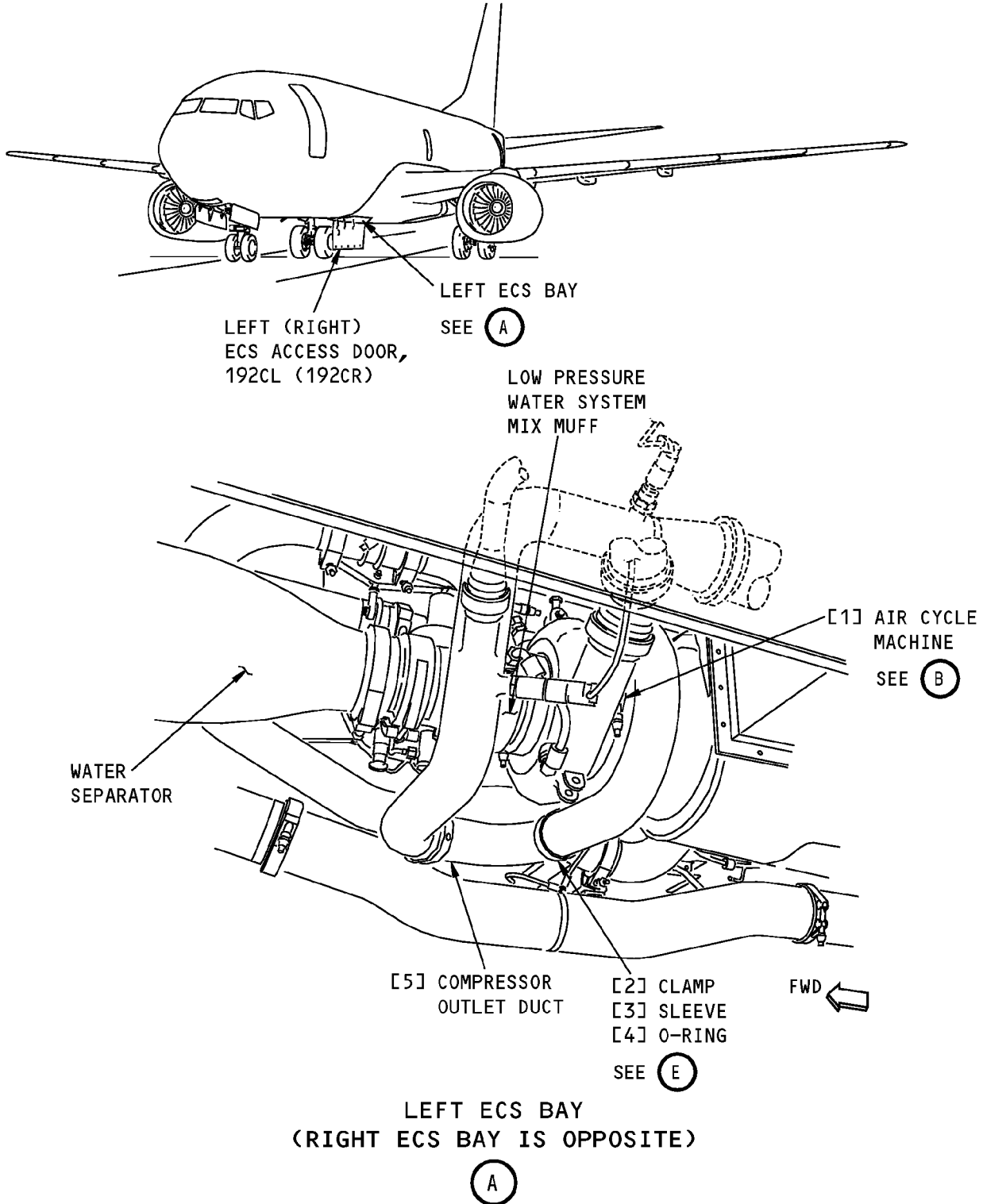
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**Air Cycle Machine Installation  
Figure 401 (Sheet 1 of 4)/21-51-04-990-801-001**

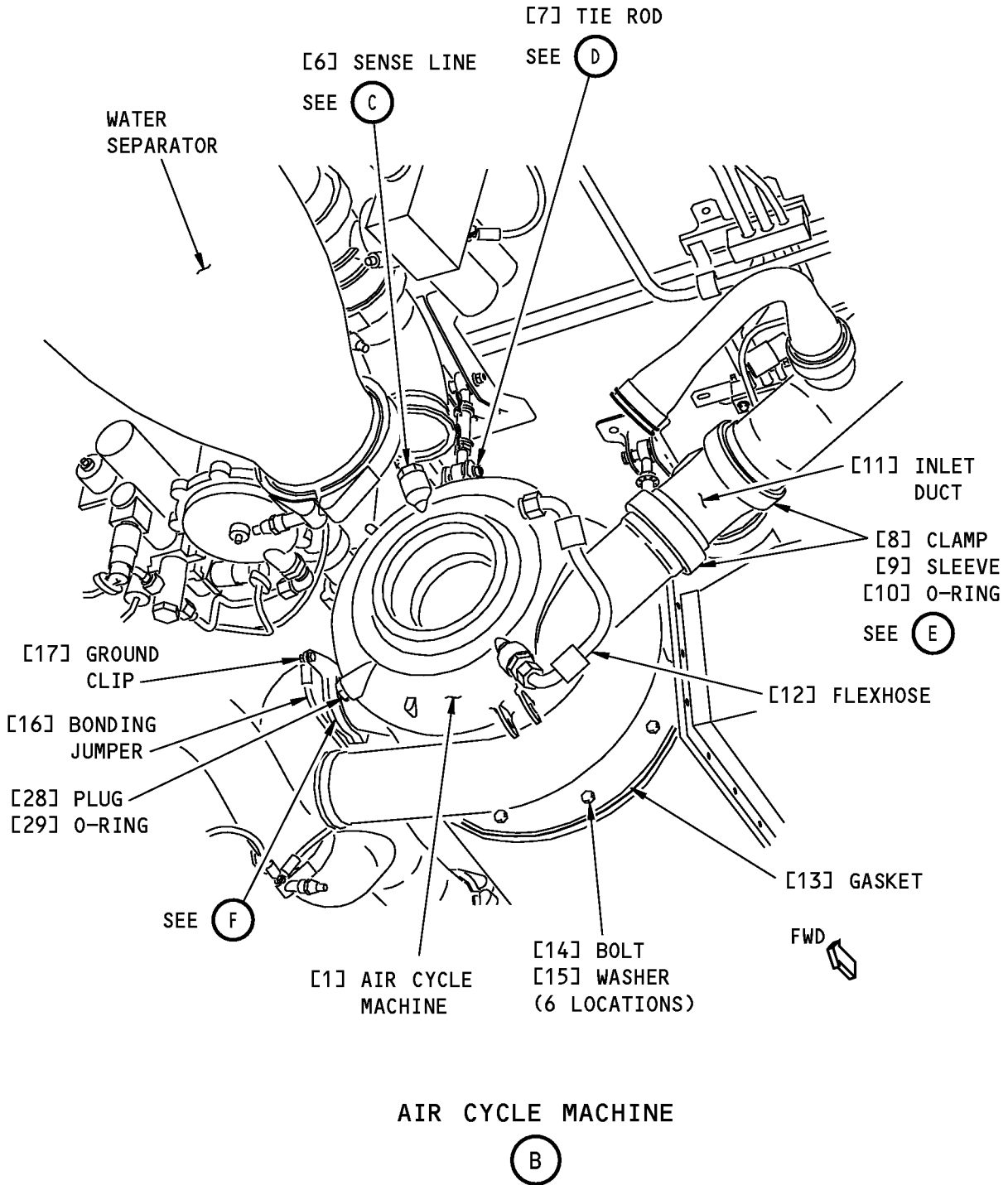
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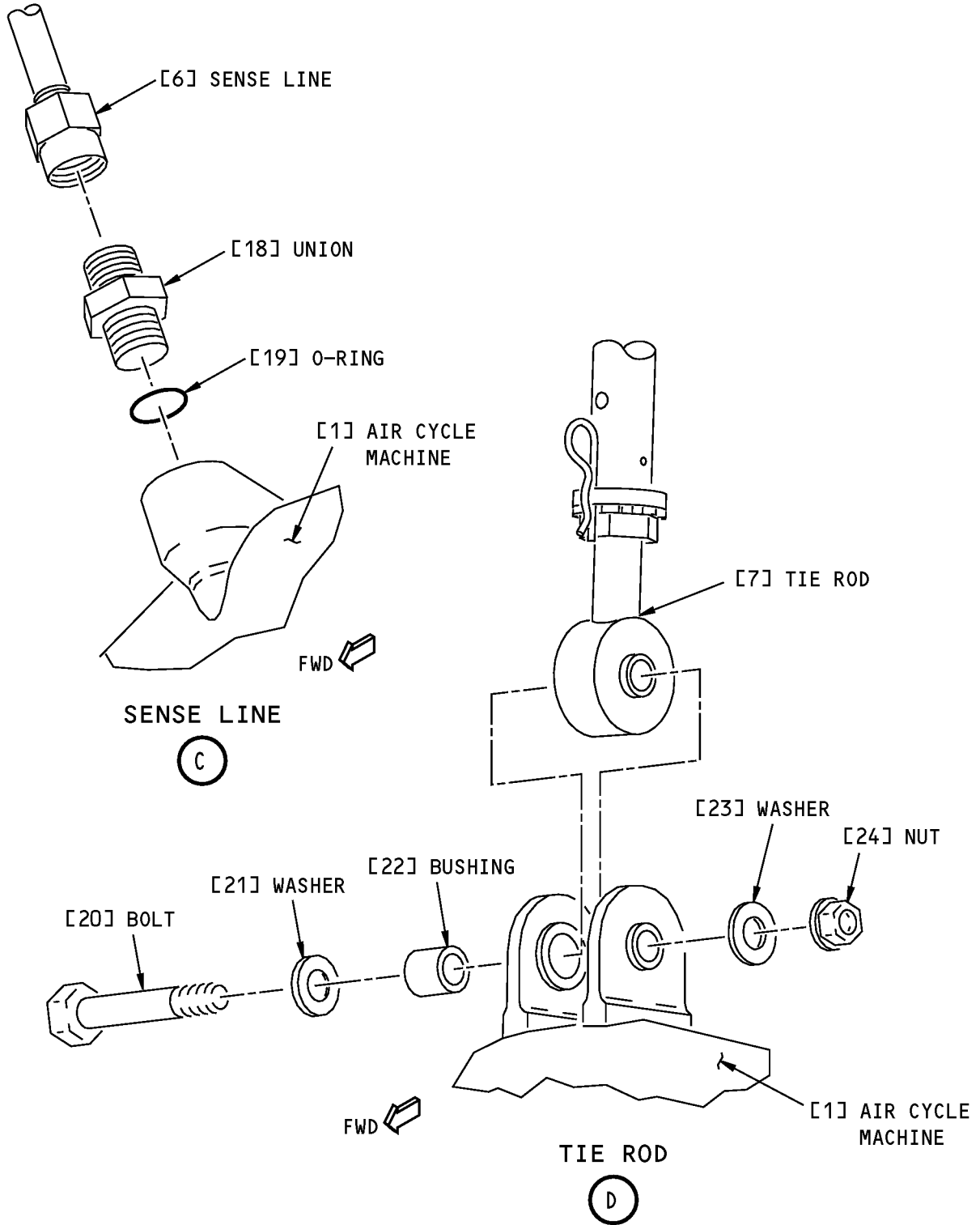
**Air Cycle Machine Installation  
Figure 401 (Sheet 2 of 4)/21-51-04-990-801-001**

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**Air Cycle Machine Installation**  
**Figure 401 (Sheet 3 of 4)/21-51-04-990-801-001**

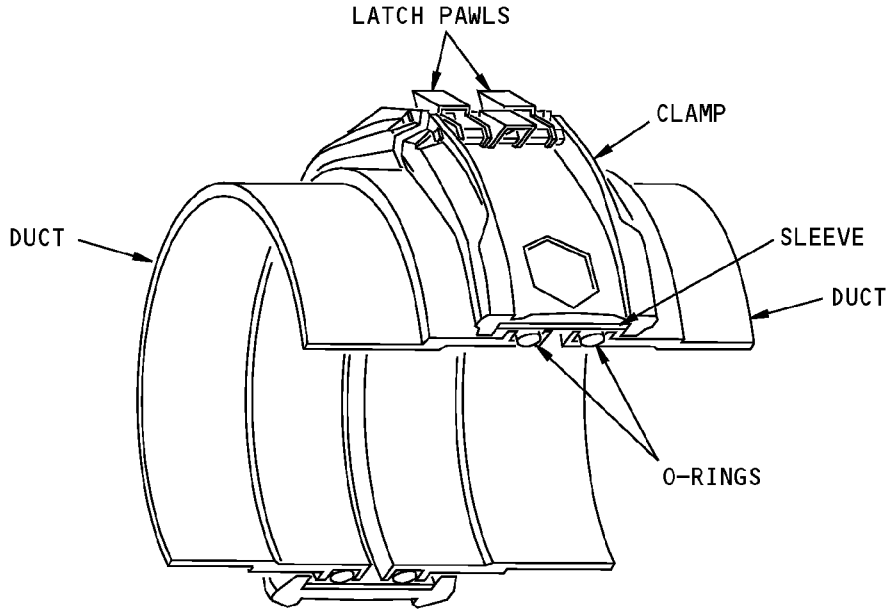
EFFECTIVITY  
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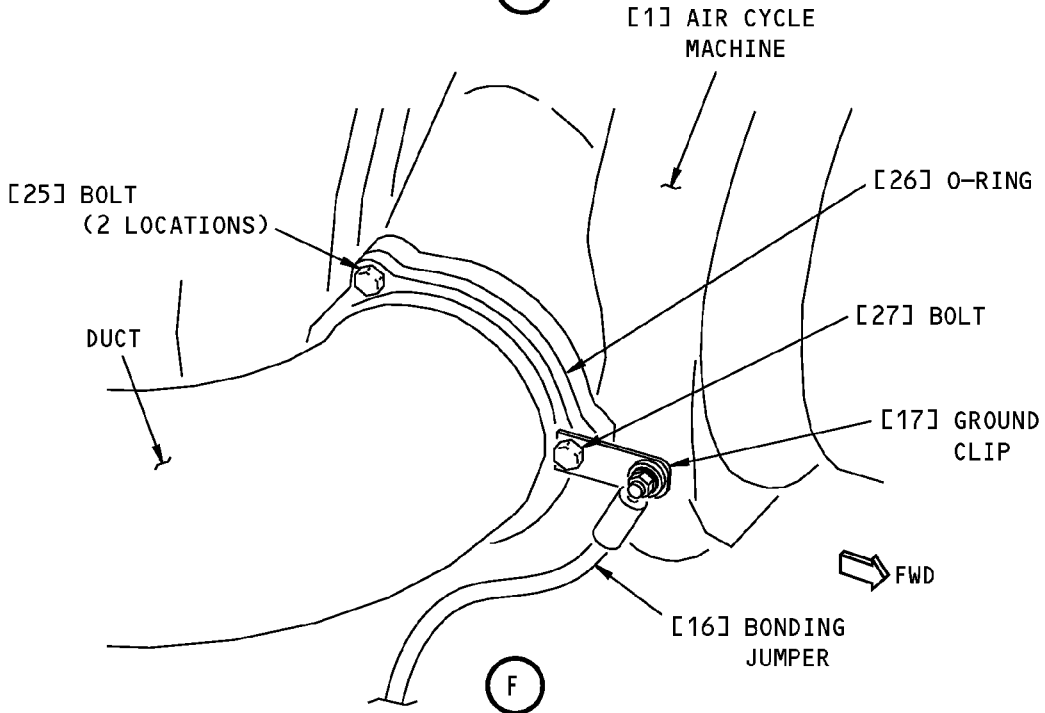
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**CLAMSHELL CLAMP INSTALLATION  
(EXAMPLE)**

**E**



**Air Cycle Machine Installation  
Figure 401 (Sheet 4 of 4)/21-51-04-990-801-001**

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### AIRCRAFT MAINTENANCE MANUAL

TASK 21-51-04-400-801-001

#### 3. Air Cycle Machine (ACM) Installation

(Figure 401)

##### A. References

Reference	Title
21-51-09-400-801	Low Pressure Water System Mix Muff Installation (P/B 401)
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-8N	MIL-PRF-907F
D00504	Grease - Petrolatum	VV-P-236
G01061	Water - Distilled	

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Air cycle machine	21-51-04-01-025	HAP 101-999
4	O-ring	21-51-03-05-095	HAP 101-999
10	O-ring	21-51-41-05-035	HAP 101-106
13	Gasket	21-51-03-05-130	HAP 101-999
19	O-ring	21-51-53-02-065	HAP 101
		21-51-53-02-066	HAP 101-999
		21-51-53-03-130	HAP 101-999
26	O-ring	21-51-03-05-065	HAP 101-999
29	O-ring	21-51-03-01-210	HAP 101-999

##### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

##### F. Air Cycle Machine Installation

SUBTASK 21-51-04-630-001-001

(1) Remove the duct covers.

SUBTASK 21-51-04-210-001-001

(2) Make sure there are no unwanted materials in the ducts.

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SUBTASK 21-51-04-420-001-001

(3) To install the air cycle machine, do these steps:

(a) Install the gasket [13].

**NOTE:** The holes in the gasket [13] must be aligned with the bolt holes in the ACM.

(b) Do these steps to install the O-ring [26]:

- 1) If a lubricant is required to aide in working the O-ring [26] into its installed position, use distilled water, G01061, to wet the surface of the O-ring [26].
- 2) If the use of the distilled water, G01061, is not adequate to install the O-ring [26] or if a lubricant is needed to hold the O-ring [26] in place for the installation, apply a light coat of grease, D00504 to the O-ring [26].

(c) Reinstall the bushing [22] in the tie rod [7].

(d) Put the air cycle machine [1] into its position.

**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.

(e) Push the bolt [20] with the washer [21] through the tie rod [7] and bushing [22].

**NOTE:** The counterbored side of the washer [21] must be next to the head of the bolt [20].

**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.

(f) Install the washer [23] and the nut [24] on the bolt [20].

**NOTE:** Do not fully tighten the nut [24].

(g) Apply a light coat of compound, C00852 to the threads of the bolt [14].

(h) Install the bolts [14] and washers [15] that hold the air cycle machine [1] to the secondary heat exchanger.

**NOTE:** Do not fully tighten the bolts [14].

(i) Apply a light coat of compound, C00852 to the threads of the bolt [25] and the bolt [27].

(j) Put the ground clip [17] onto the shank of the bolt [27].

**NOTE:** Do not remove the ground clip [17] from the bonding jumper [16].

(k) Install the ground clip [17] and bolt [27] on the ACM compressor inlet flange.

**NOTE:** Do not fully tighten the bolt [27].

(l) Install the bolts [25] on the ACM compressor inlet flange.

**NOTE:** Do not fully tighten the bolts [25].

(m) If a new air cycle machine is installed, then do these steps:

- 1) Put a new O-ring [19] onto the union [18].
- 2) Apply a light coat of Never-Seez NSBT-8N compound, D00006 to the threads of the union [18].
- 3) Install the union [18] onto the air cycle machine [1].
- 4) Put a new O-ring [29] onto the plug [28].

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- 5) Apply a light coat of Never-Seez NSBT-8N compound, D00006 to the threads of the plug [28].
- 6) Install the plug [28] onto the air cycle machine [1].
- (n) Apply a light coat of Never-Seez NSBT-8N compound, D00006 to the threads of the sense line [6].
- (o) Reconnect the sense line [6] to the air cycle machine [1].
- (p) Apply a light coat of Never-Seez NSBT-8N compound, D00006 to the threads of the flex hose [12].
- (q) Install the flex hose [12] on the ACM.
- (r) Tighten the bolt [14] 40 to 45 pound-inches (4.5 to 5 newton-meters).
- (s) Tighten the bolt [25] and the bolt [27] 22 to 26 pound-inches (2.5 to 2.9 newton-meters).
- (t) Tighten the nut [24] 50 to 65 pound-inches (5.6 to 7.3 newton-meters).

SUBTASK 21-51-04-410-013-001

- (4) Do these steps to install the inlet duct [11]:
  - (a) Apply a light coat of grease, D00504 to the O-rings [10].
  - (b) Install the O-rings [10].
  - (c) Put the inlet duct [11] into its position.
  - (d) Slide the sleeves [9] toward the ACM and over the duct connections.
  - (e) Install the clamps [8] over the duct connections.

SUBTASK 21-51-04-410-014-001

- (5) Do these steps to install the compressor outlet duct [5]:
  - (a) Apply a light coat of grease, D00504 to the O-rings [4].
  - (b) Install the O-rings [4].
  - (c) Put the compressor outlet duct [5] into its position.
  - (d) Slide the sleeve [3] over the outlet duct [5] connections.
  - (e) Install the clamp [2] over the duct connections.

SUBTASK 21-51-04-860-005-001

- (6) Do this task: Low Pressure Water System Mix Muff Installation, TASK 21-51-09-400-801.

### G. ACM Installation Test

SUBTASK 21-51-04-860-006-001

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

SUBTASK 21-51-04-860-007-001

- (2) Put the applicable pack L PACK or R PACK switch on the P5-10 air conditioning panel to the AUTO position:

SUBTASK 21-51-04-790-001-001

- (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.

### H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-04-860-008-001

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

SUBTASK 21-51-04-410-001-001

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-04-410-002-001

- (3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

SUBTASK 21-51-04-860-009-001

- (4) Put these switches on the P5 forward overhead panel to the OFF position:

- (a) L PACK
- (b) R PACK

SUBTASK 21-51-04-860-010-001

- (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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### 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	Air Conditioning Access Door
192CR	Air Conditioning 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.
  - (c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

EFFECTIVITY HAP 001-013, 015-026, 028-054
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SUBTASK 21-51-04-010-003-002

- (4) When the air cycle machine for the left pack will be removed, open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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:
- Disconnect the flex hose from the duct.
  - Remove the electrical connector [1] from the ram air control sensor.
  - Remove the electrical connector [4] from the compressor discharge overheat switch.
  - Remove the nut [9] and the washer [10] that hold the bonding jumper to the clamp on the duct.
  - Remove the clamshell clamp [6] at the ACM.  
**NOTE:** Lift the three latch pawls at the same time to release the clamp.
  - Move the sleeve [7] to the outlet duct [11].
  - Remove the coupling [2] at the heat exchanger.
  - Remove the compressor outlet duct [11].
  - Remove and discard the packing [3] at the heat exchanger.
  - 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 21-51-04-020-002-002

- (3) To disconnect the hoses and sense line from the air cycle machine [5], do these steps:
- Remove the flex hose 1 [19] from the ACM.
  - Disconnect the flex hose 2 [23] from the ACM.
  - Disconnect the sense line [12] from the ACM.
  - 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

- (4) To remove the air cycle machine, do these steps:

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- (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].
- (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

- (5) Put covers on the duct openings to prevent the entry of unwanted materials.

————— **END OF TASK** —————

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HAP 001-013, 015-026, 028-054

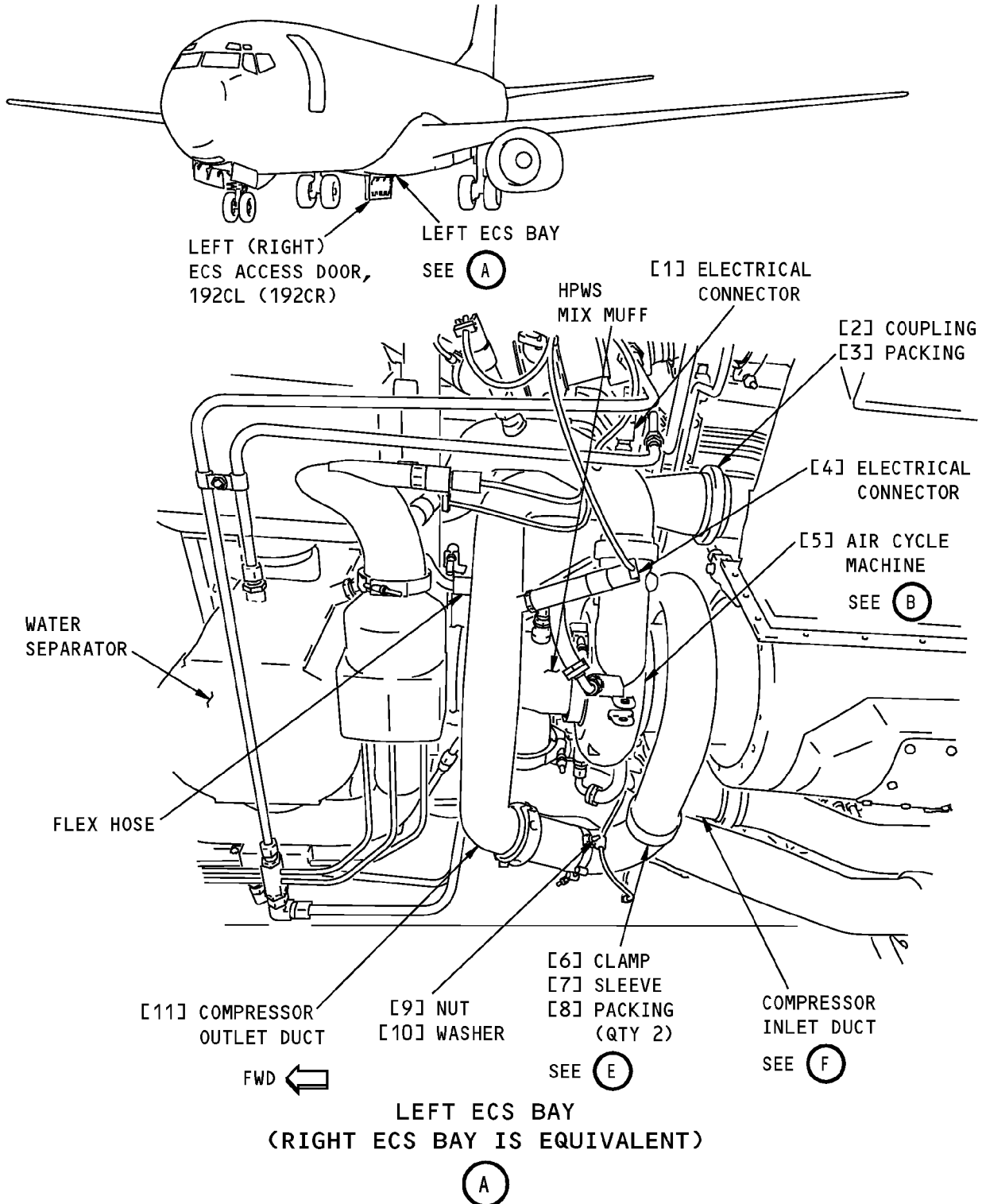
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**Air Cycle Machine Installation**  
**Figure 401 (Sheet 1 of 4)/21-51-04-990-802-002**

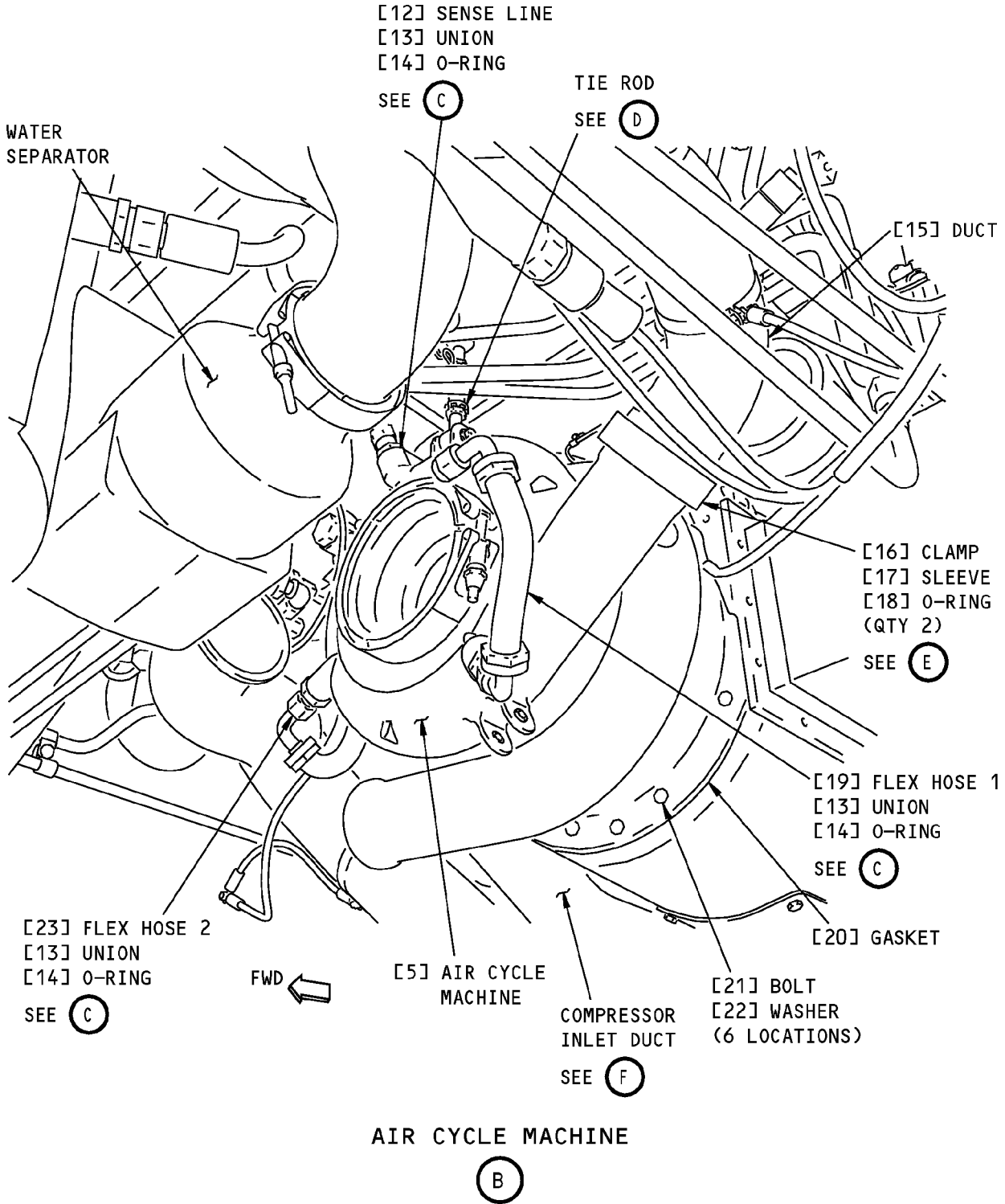
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HAP 001-013, 015-026, 028-054

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**Air Cycle Machine Installation  
 Figure 401 (Sheet 2 of 4)/21-51-04-990-802-002**

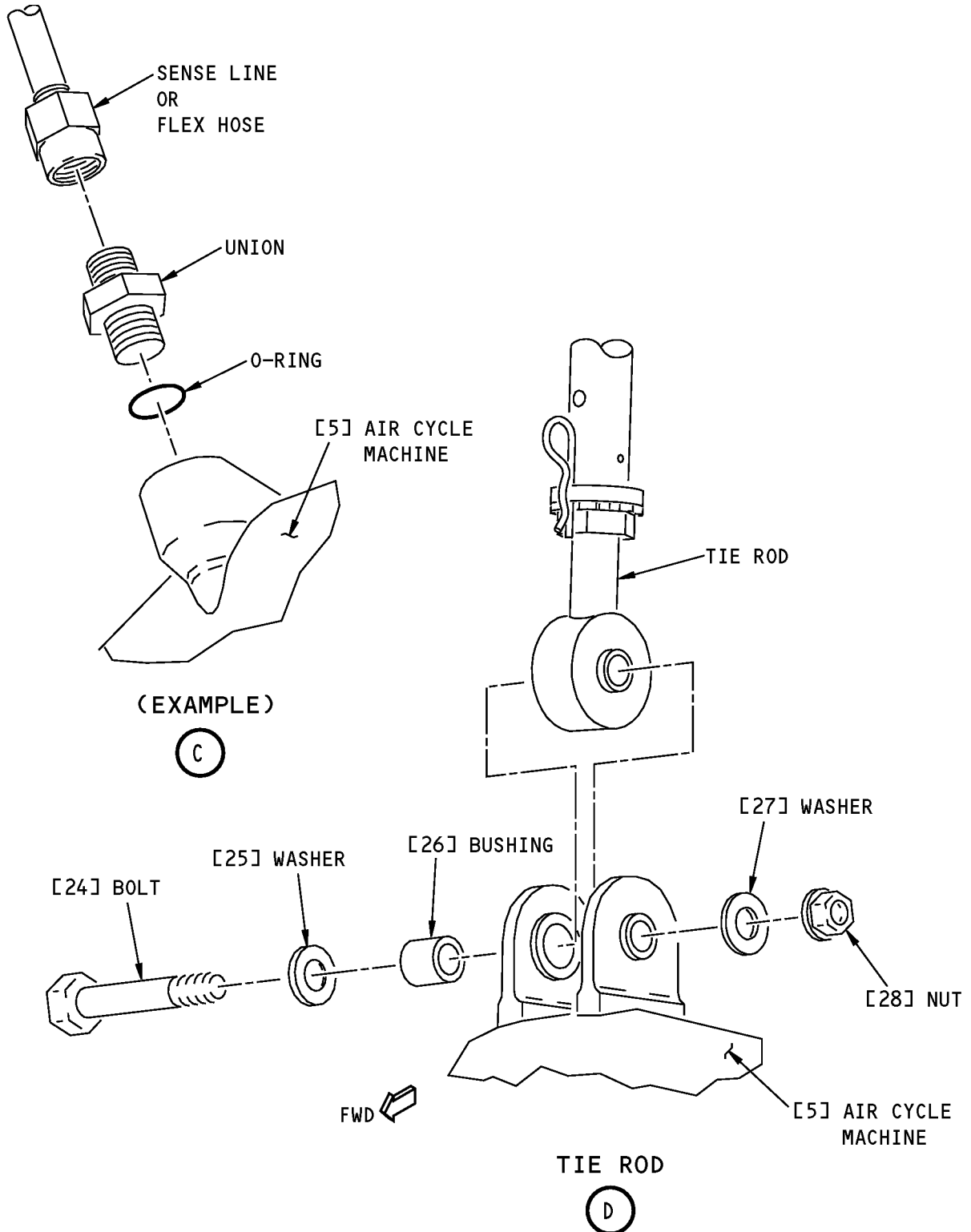
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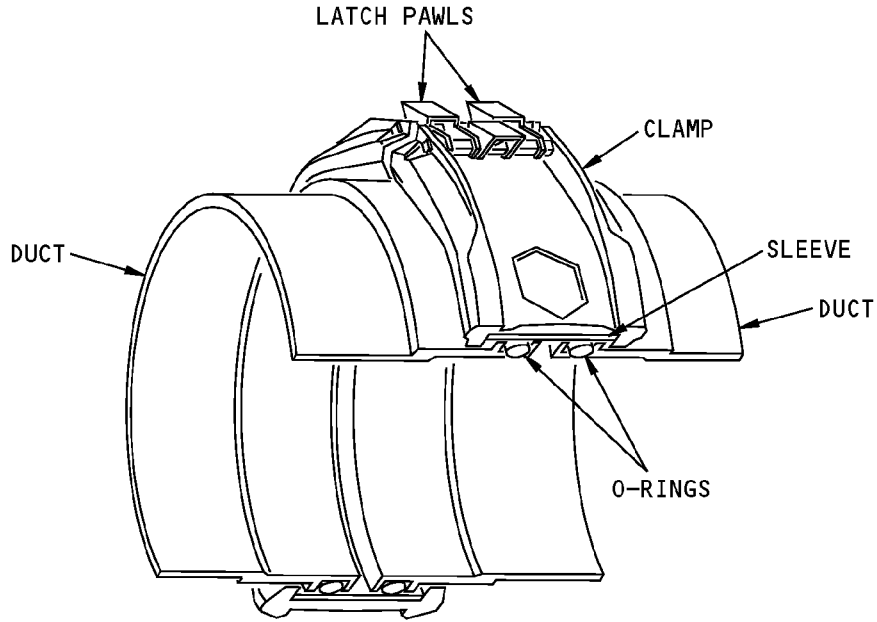


**Air Cycle Machine Installation  
Figure 401 (Sheet 3 of 4)/21-51-04-990-802-002**

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HAP 001-013, 015-026, 028-054

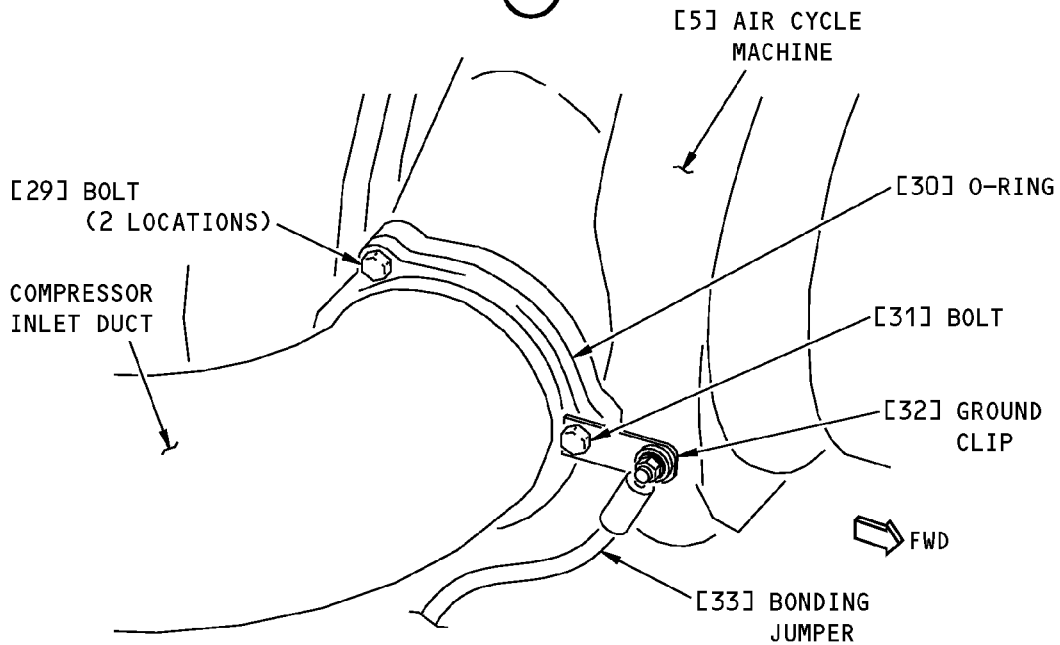
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**CLAMSHELL CLAMP INSTALLATION  
(EXAMPLE)**

**E**



**COMPRESSOR INLET DUCT**

**F**

**Air Cycle Machine Installation  
Figure 401 (Sheet 4 of 4)/21-51-04-990-802-002**

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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)
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-8N	MIL-PRF-907F
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	HAP 001-013, 015-026, 028-046, 054
		21-51-03-05A-200	HAP 001-013, 015-026, 028-046, 054
5	Air cycle machine	21-51-04-01-025	HAP 001-013, 015-026, 028-046, 054
8	Packing	21-51-03-05A-210	HAP 001-013, 015-026, 028-046, 054
14	O-ring	21-51-53-04-213	HAP 031-046, 054
		21-51-53-04A-201	HAP 047-053
		21-51-53-05-197	HAP 031-046, 054
		21-51-53-18-260	HAP 001-013, 015-026, 028-030
		21-51-53-19-300	HAP 001-013, 015-026, 028-030
18	O-ring	21-51-41-07-035	HAP 031-047, 054
		21-51-41-08-035	HAP 031-054
20	Gasket	21-51-03-05A-075	HAP 001-013, 015-026, 028-046, 054
		21-51-03-05A-230	HAP 001-013, 015-026, 028-046, 054
30	O-ring	21-51-03-05A-025	HAP 001-013, 015-026, 028-046, 054

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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
30 (cont.)		21-51-03-05A-185	HAP 001-013, 015-026, 028-046, 054

#### 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	Air Conditioning Access Door
192CR	Air Conditioning 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:

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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- 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)
- 5) Condensor (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.

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**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].

**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-8N 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-8N 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-8N compound, D00006 to the threads of the flex hose 1 [19].

- (e) Install the flex hose 1 [19] on the ACM.

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- (f) Apply a light coat of Never-Seez NSBT-8N compound, D00006 to the threads of the flex hose 2 [23].
- (g) Connect the flex hose 2 [23] to the ACM.

SUBTASK 21-51-04-860-015-002

- (5) Do this task: High Pressure Water Separator Mix Muff Installation, TASK 21-51-17-400-801.

SUBTASK 21-51-04-410-003-002

- (6) 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-8N 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.
- (m) Install the nut [9] and the washer [10] that hold the bonding jumper to the clamp on the duct.

### 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.

**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.

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### 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-04-410-005-002

(3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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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737-600/700/800/900

# AIRCRAFT MAINTENANCE MANUAL

## WATER SEPARATOR - MAINTENANCE PRACTICES

### 1. General

A. This procedure contains scheduled maintenance task data.

B. This procedure has these tasks:

- (1) An inspection of the coalescer bag pressure indicator.

NOTE: This task is a scheduled maintenance task.

- (2) A removal of the water separator
- (3) A removal of the coalescer bag
- (4) A cleaning of the coalescer bag
- (5) An installation of the coalescer bag
- (6) An installation of the water separator.

### **TASK 21-51-05-400-803**

### 2. Coalescer Bag Pressure Indicator Inspection

(Figure 201)

A. General

- (1) This procedure is a scheduled maintenance task.

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)

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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

E. Coalescer Bag Inspection

SUBTASK 21-51-05-410-005

- (1) Open this access panel:

Number	Name/Location
192CL	Air Conditioning Access Door

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## 737-600/700/800/900 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 21-51-05-410-006

- (2) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

then do this step:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

SUBTASK 21-51-05-860-015

- (3) Supply pneumatic power. To supply pneumatic power, do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801

SUBTASK 21-51-05-212-001

- (4) Make sure the aft outflow valve is fully open.

SUBTASK 21-51-05-860-024

- (5) Set the CONT CABIN and PASS CABIN temperature selector switches on the P5-17 temperature control panel to MANUAL COOL.

SUBTASK 21-51-05-860-016

- (6) Set the L PACK (R PACK) switch on the P5-10 air conditioning panel to AUTO.

SUBTASK 21-51-05-210-003

- (7) Make sure the indicator disk on the pressure indicator assembly is in the black area.

NOTE: The circumference of the indicator disk is white.

SUBTASK 21-51-05-100-001

- (8) If the indicator disk on the pressure indicator assembly is in the red area, clean the coalescer bag. To clean the coalescer bag, do this task: Coalescer Bag Cleaning, TASK 21-51-05-100-801.

SUBTASK 21-51-05-860-020

- (9) Set the L PACK (R PACK) switch on the P5-10 panel to OFF.

SUBTASK 21-51-05-211-001

- (10) Do the above steps as applicable to inspect the coalescer bag pressure indicator for the right pack.

SUBTASK 21-51-05-860-022

- (11) Set the CONT CABIN and PASS CABIN temperature selector switches on the P5-17 panel to AUTO NORMAL.

SUBTASK 21-51-05-860-017

- (12) Stop the air conditioning packs. To stop the packs, 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 21-51-05-860-018

- (1) 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 21-51-05-410-007

(2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-05-410-008

(3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

then do this step:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

————— **END OF TASK** —————

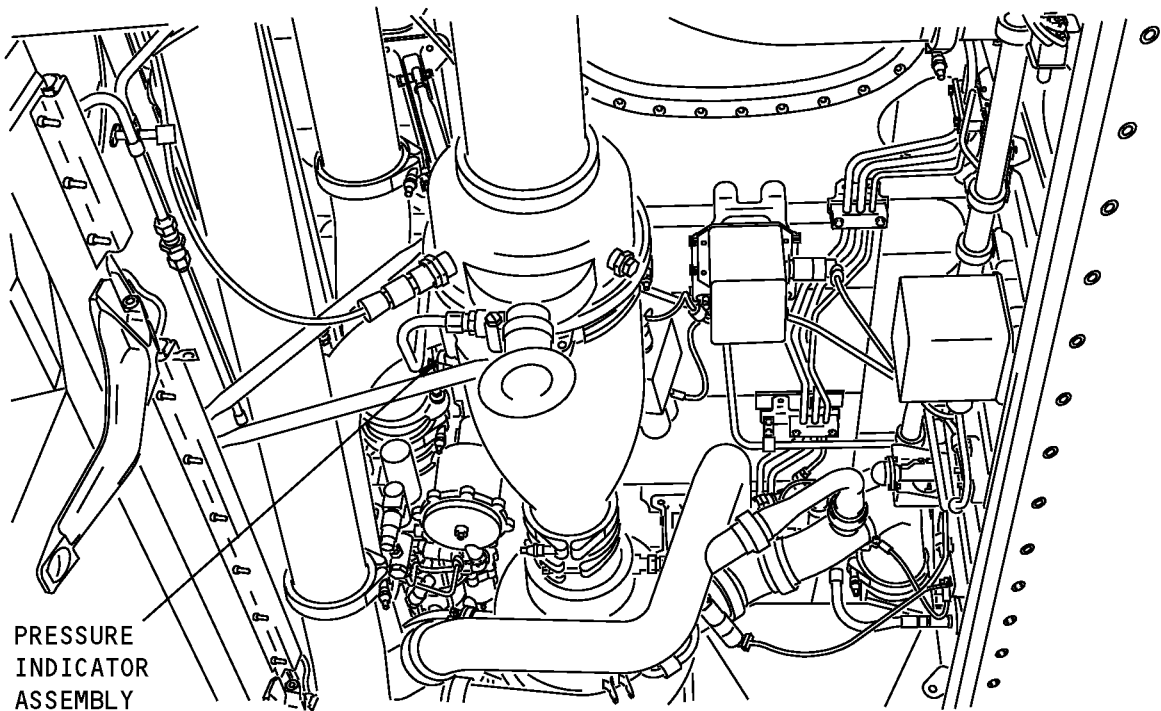
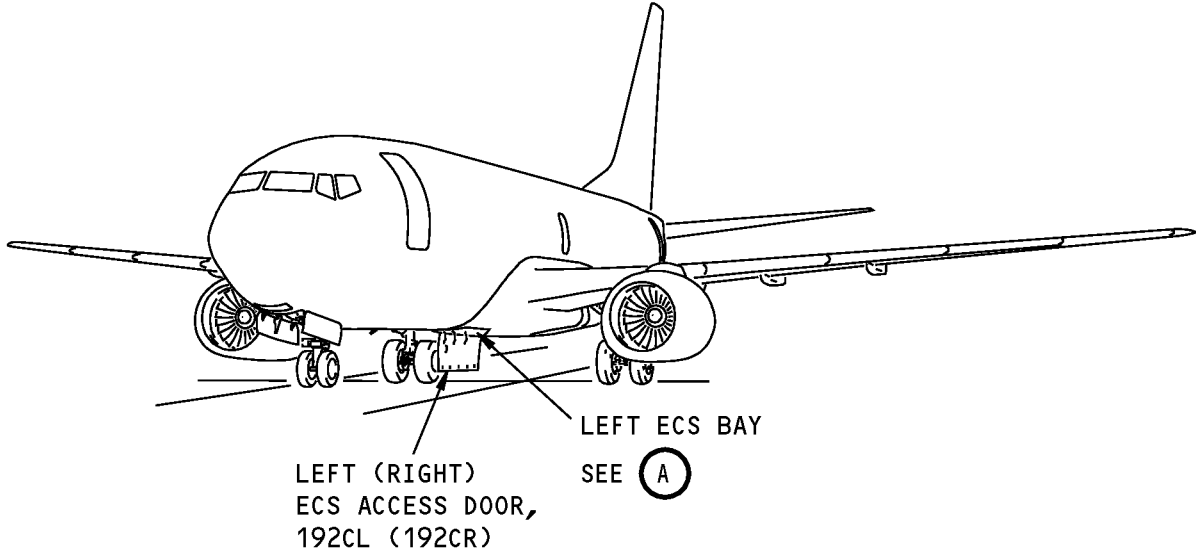
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PRESSURE  
INDICATOR  
ASSEMBLY

SEE (B)

FWD

LEFT ECS BAY  
(RIGHT ECS BAY IS OPPOSITE)

(A)

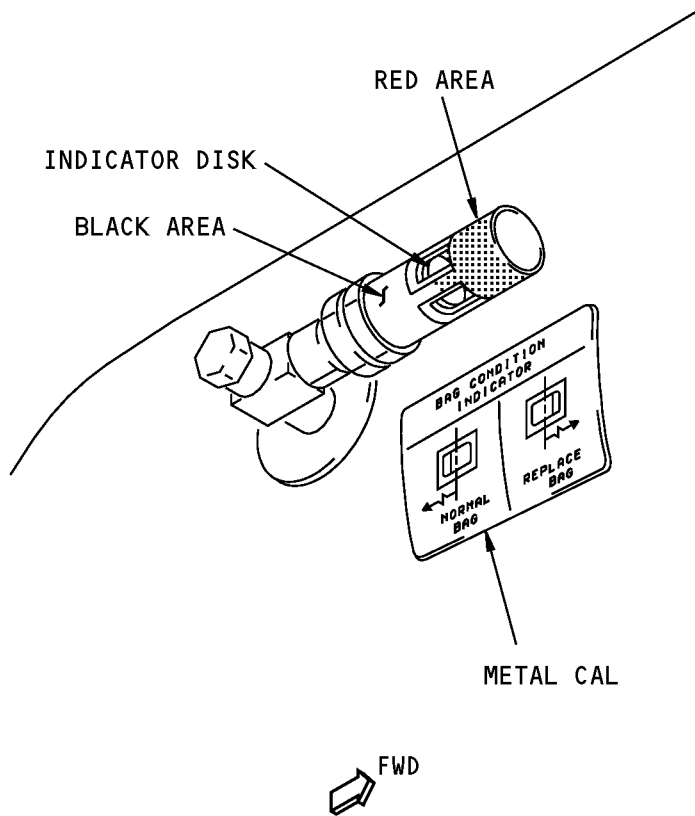
**Water Separator Maintenance Practices  
Figure 201 (Sheet 1 of 2)/21-51-05-990-801**

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**PRESSURE INDICATOR ASSEMBLY**

**B**

**Water Separator Maintenance Practices  
Figure 201 (Sheet 2 of 2)/21-51-05-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

#### TASK 21-51-05-000-801

### 3. Water Separator Removal

(Figure 202)

#### A. References

Reference	Title
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
21-51-32-000-801	Low Limit (35 Degree Fahrenheit) Temperature Sensor 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
211	Flight Compartment - Left
212	Flight Compartment - Right

#### C. Access Panels

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

#### D. Prepare for the Removal

SUBTASK 21-51-05-860-001

- (1) Stop the air conditioning packs. To stop the packs, do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-51-05-860-002

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

SUBTASK 21-51-05-010-001

- (3) To get access to the water separator [5]  
for the left cooling pack, open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-05-010-002

- (4) To get access to the water separator [5] for the right cooling pack:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

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## AIRCRAFT MAINTENANCE MANUAL

### E. Water Separator Removal

SUBTASK 21-51-05-020-001

- (1) Disconnect the electrical connector [1] from the low limit (35°F) temperature sensor [10].

SUBTASK 21-51-05-010-008

- (2) Do this step if you are going to install a new water separator:

- (a) Remove the low limit (35°F) temperature sensor [10]. To remove it, do this task: Low Limit (35 Degree Fahrenheit) Temperature Sensor Removal, TASK 21-51-32-000-801.

SUBTASK 21-51-05-020-002

- (3) Do these steps if you are going to install a new water separator:

**CAUTION:** THE OVERBOARD DRAIN SEAL MUST BE INSTALLED IN THE CORRECT POSITION. IF YOU DO NOT INSTALL THE OVERBOARD DRAIN SEAL IN THE CORRECT POSITION, DAMAGE TO THE SEAL, THE WATER SEPARATOR OR THE ECS ACCESS DOOR CAN OCCUR.

- (a) Make a note of the position of the seal on the water separator.
- (b) Loosen the hose clamp [9].
- (c) Remove the hose clamp [9] and seal [8] from the water separator [5].

SUBTASK 21-51-05-020-003

- (4) Do these steps to disconnect the drain tube from the water separator [5]:

- (a) Loosen the drain tube nut [2].
- (b) Do these steps if you are going to install a new water separator:
  - 1) Remove the lockwire from the union [6].
  - 2) Remove the union [6].
  - 3) Remove and discard the O-ring [3].

SUBTASK 21-51-05-020-016

- (5) Do these steps if you are going to install a new water separator:

- (a) Remove the lockwire from the plug [18].
- (b) Remove the plug [18].
- (c) Remove and discard the O-ring [19].

SUBTASK 21-51-05-020-004

- (6) Remove the coupling [7].

SUBTASK 21-51-05-020-005

- (7) Remove the coupling [11].

SUBTASK 21-51-05-020-006

- (8) Open the clamp [4].

SUBTASK 21-51-05-020-007

- (9) Remove the water separator [5].

————— END OF TASK —————

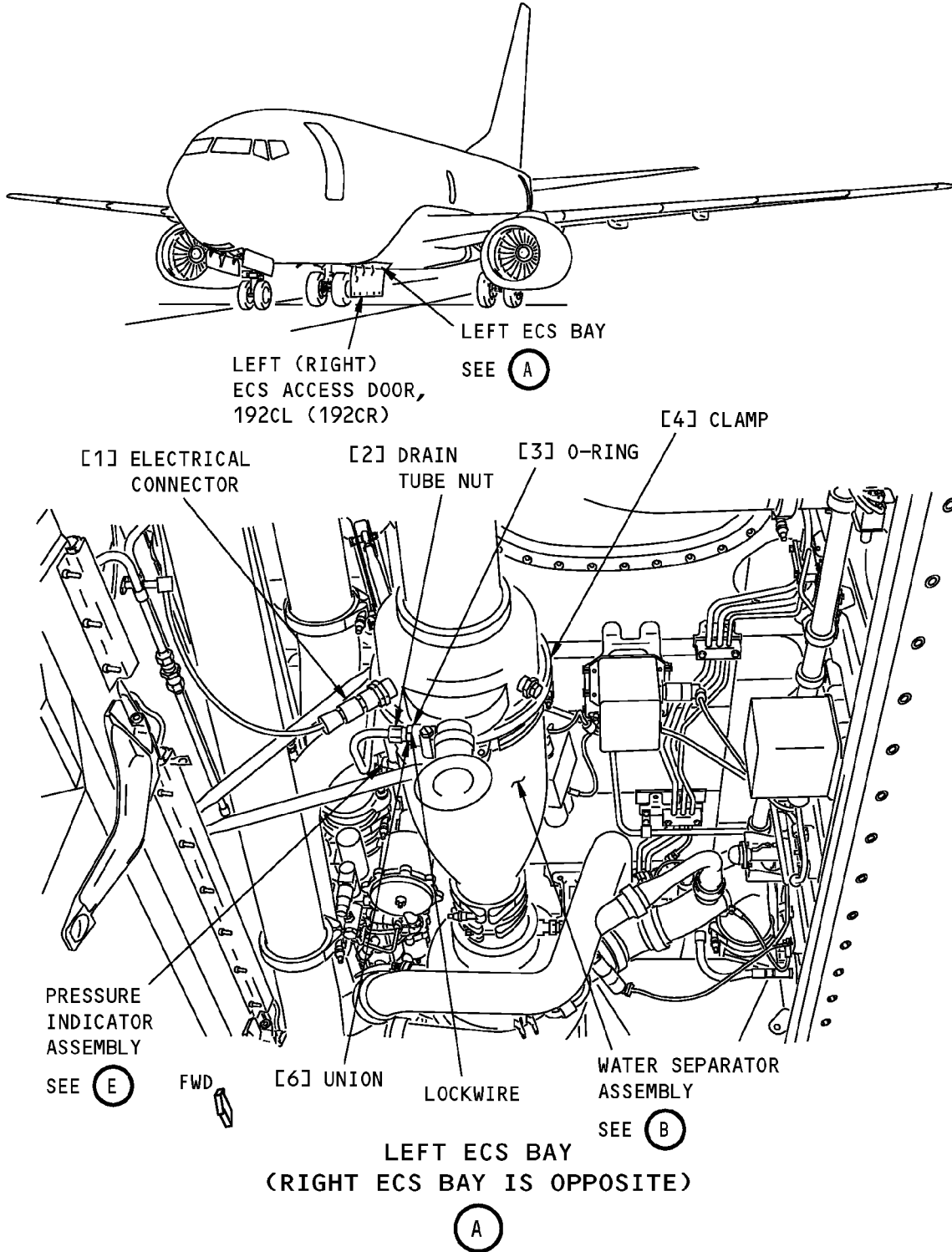
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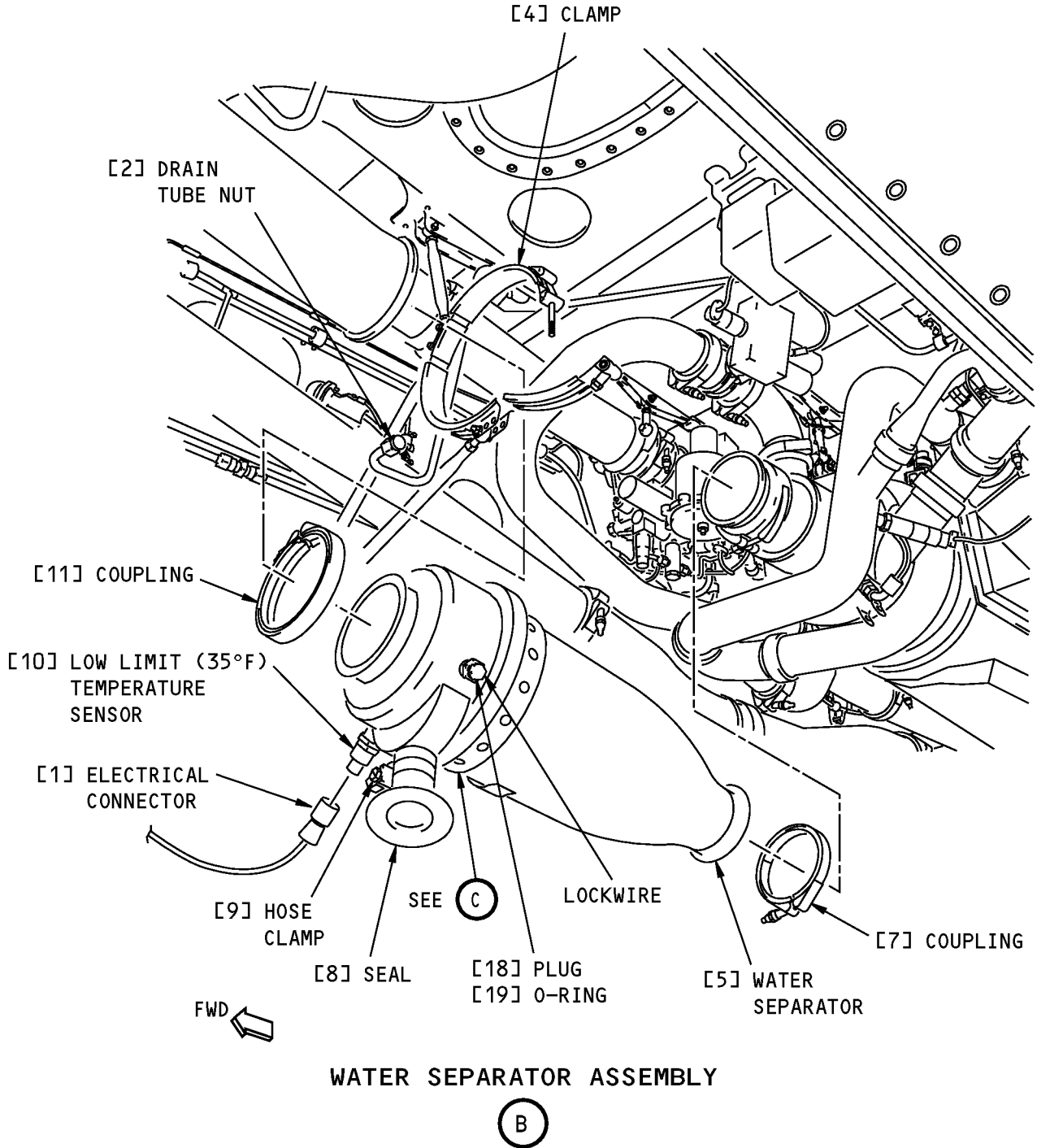


**Water Separator Installation  
Figure 202 (Sheet 1 of 4)/21-51-05-990-802**

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**Water Separator Installation**  
**Figure 202 (Sheet 2 of 4)/21-51-05-990-802**

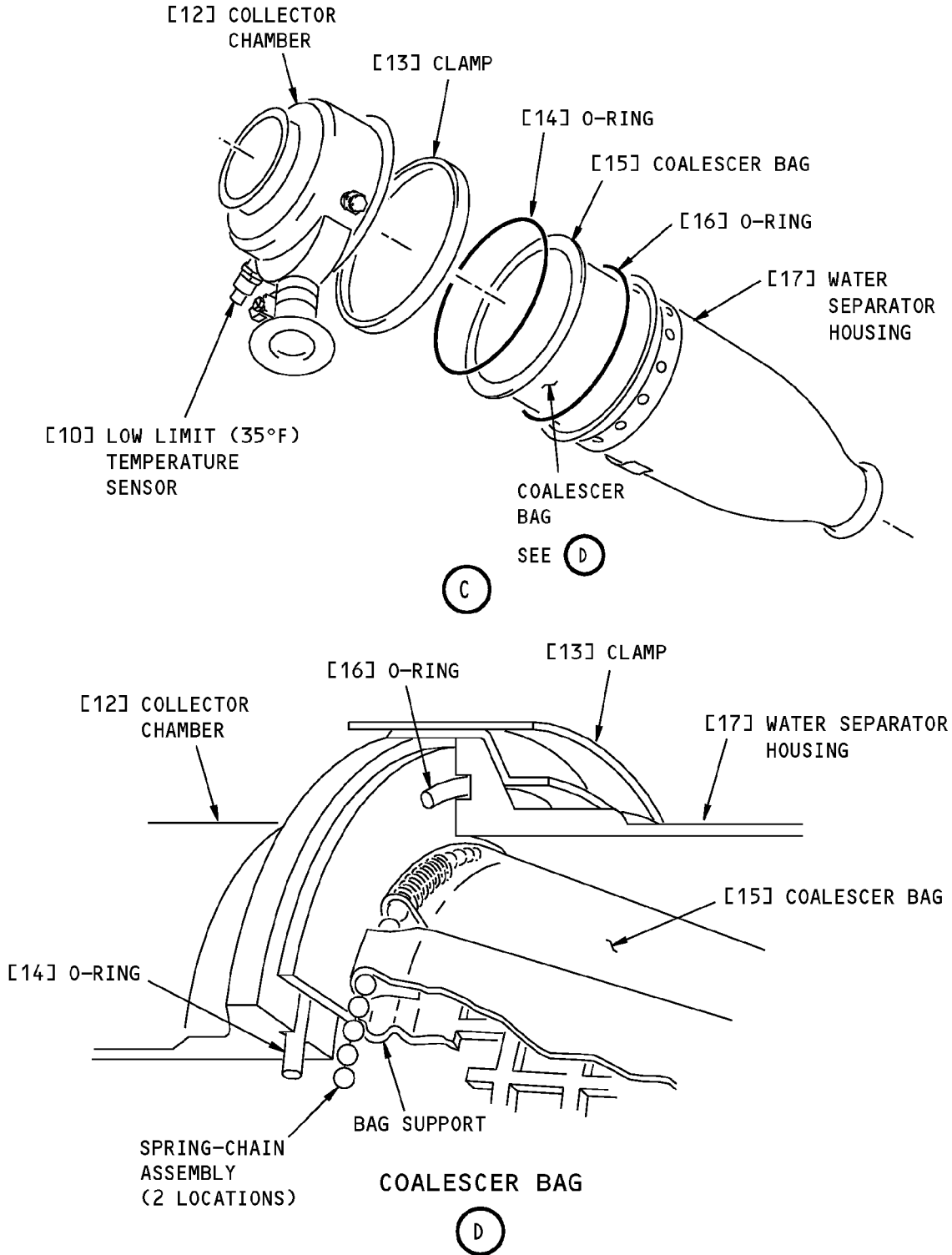
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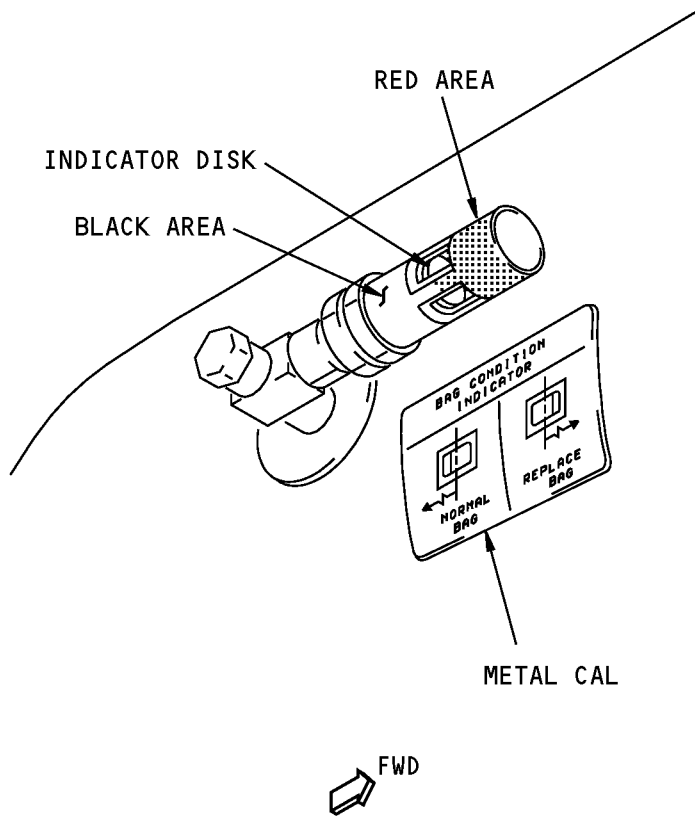
**Water Separator Installation**  
**Figure 202 (Sheet 3 of 4)/21-51-05-990-802**

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**PRESSURE INDICATOR ASSEMBLY**

**E**

**Water Separator Installation  
Figure 202 (Sheet 4 of 4)/21-51-05-990-802**

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# AIRCRAFT MAINTENANCE MANUAL

**TASK 21-51-05-020-801**

## 4. Coalescer Bag Removal

(Figure 202)

### A. General

- (1) This procedure is a scheduled maintenance task.

### B. References

Reference	Title
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)

### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

### E. Prepare for the Removal

SUBTASK 21-51-05-860-003

- (1) Stop the air conditioning packs. To stop the packs, do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

SUBTASK 21-51-05-860-004

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

SUBTASK 21-51-05-010-003

- (3) To get access to the water separator [5] for the left cooling pack, open this access panel:

Number	Name/Location
192CL	Air Conditioning Access Door

SUBTASK 21-51-05-010-004

- (4) To get access to the water separator [5] for the right cooling pack, open these access panels in this sequence:

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

### F. Remove the Coalescer Bag

SUBTASK 21-51-05-010-005

- (1) Remove the water separator [5]. To remove it, do this task: Water Separator Removal, TASK 21-51-05-000-801.

**NOTE:** It is not necessary to to remove the 35°F temperature sensor [10] or the union [6] from the water separator [5].

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SUBTASK 21-51-05-020-008

(2) Remove the clamp [13] which attaches the collector chamber [12] to the water separator housing [17].

SUBTASK 21-51-05-020-009

(3) Remove and discard the O-ring [14].

SUBTASK 21-51-05-020-010

(4) Remove the coalescer bag [15] and the bag support from the water separator housing [17].

SUBTASK 21-51-05-020-011

(5) Remove and discard the O-ring [16].

SUBTASK 21-51-05-020-012

(6) Loosen the spring-chain assemblies.

SUBTASK 21-51-05-020-013

(7) Remove the coalescer bag [15] from the bag support.

**END OF TASK**

## TASK 21-51-05-100-801

### 5. Coalescer Bag Cleaning

(Figure 202)

#### A. General

(1) This procedure is a scheduled maintenance task.

#### B. References

Reference	Title
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)

#### C. Consumable Materials

Reference	Description	Specification
B00541	Cleaner - General Purpose Household Detergent	

#### D. Location Zones

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

#### E. Access Panels

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

#### F. Prepare to Clean the Coalescer Bag

SUBTASK 21-51-05-860-005

(1) Stop the air conditioning packs. To stop the packs, do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

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SUBTASK 21-51-05-860-006

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

SUBTASK 21-51-05-010-006

(3) To get access to the water separator [5]  
for the left cooling pack, open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-05-010-007

(4) To get access to the water separator [5] for the right cooling pack:  
Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

### G. Clean the Coalescer Bag

SUBTASK 21-51-05-020-014

(1) Remove the coalescer bag [15]. To remove it, do this task: Coalescer Bag Removal, TASK 21-51-05-020-801.

SUBTASK 21-51-05-020-015

(2) Do these steps to remove the spring-chain assemblies from the hem of the coalescer bag [15] before you wash it:

**NOTE:** These steps remove the spring-chain assemblies from the coalescer bag [15] and replace them with string. After the coalescer bag [15] is clean, you can use the string to help put the spring-chain assemblies back into the hems of the coalescer bag [15].

- Disconnect the ends of the spring-chain assemblies.
- Tie a piece of string onto the loose end of each spring-chain assembly.
- Pull each spring-chain assembly out of the hem of the coalescer bag [15].

**NOTE:** The piece of string should now be in the hem of the coalescer bag [15].

- Cut the string off of the spring-chain assemblies and tie the loose ends of the string together.

SUBTASK 21-51-05-110-001

(3) Do this step to clean the coalescer bag [15]:

- Put the coalescer bag in a washer with lukewarm water and any general purpose household detergent cleaner, B00541 and clean as follows:
  - Wash the coalescer bag until it is clean.
  - Rinse the coalescer bag in clean warm water until the rinse water from the bag is clear.
  - Allow the coalescer bag to fully air dry.

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SUBTASK 21-51-05-420-001

- (4) Install the coalescer bag [15]. To install it, do this task: Coalescer Bag Installation, TASK 21-51-05-400-801.

————— **END OF TASK** —————

**TASK 21-51-05-400-801**

**6. Coalescer Bag Installation**

(Figure 202)

**A. General**

- (1) This procedure is a scheduled maintenance task.

**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)
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. Expendables/Parts**

AMM Item	Description	AIPC Reference	AIPC Effectivity
15	Coalescer bag	21-51-05-02-065	HAP 101-105

**D. Location Zones**

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

**E. Access Panels**

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

**F. Install the Coalescer Bag**

SUBTASK 21-51-05-420-002

- (1) Put the coalescer bag [15] over the bag support.

SUBTASK 21-51-05-420-003

- (2) Do these steps to install the spring-chain assemblies into the coalescer bag [15]:
- Untie the ends of the strings that are in the hems of the coalescer bag [15].
  - At the forward end of the coalescer bag, tie one end of the chain to the string and pull the chain through the hem.
  - At the aft end of the coalescer bag, tie one end of the chain to the string and pull the chain through the hem.
  - Make sure the spring-chain assemblies ride in the grooves on the bag support.
  - Tighten the spring-chain assemblies to keep the coalescer bag [15] on the bag support.

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SUBTASK 21-51-05-420-004

- (3) Put a new O-ring [16] on the water separator housing [17].

SUBTASK 21-51-05-420-005

- (4) Put the coalescer bag [15] and the bag support into the water separator housing [17].

SUBTASK 21-51-05-420-006

- (5) Install a new O-ring [14] into the groove in the collector chamber [12].

SUBTASK 21-51-05-420-007

- (6) Put the collector chamber [12] onto the water separator housing [17].

SUBTASK 21-51-05-420-008

- (7) Install the clamp [13] around the collector chamber and water separator housing [17].

SUBTASK 21-51-05-420-009

- (8) Install the water separator [5]. To install it, do this task: Water Separator Installation, TASK 21-51-05-400-802.

### G. Coalescer Bag Installation Test

SUBTASK 21-51-05-860-007

- (1) Supply pneumatic power. To supply pneumatic power, do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801

SUBTASK 21-51-05-860-008

- (2) Operate the air conditioning packs. To do this, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-51-05-210-001

- (3) Make sure the indicator disk on the pressure indicator assembly is in the black area.

**NOTE:** The circumference of the indicator disk is white.

SUBTASK 21-51-05-860-009

- (4) Stop the air conditioning packs. To stop the packs, do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

### H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-05-860-010

- (1) 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 21-51-05-410-001

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-05-410-002

- (3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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(Continued)

Number	Name/Location
192DR	ECS High Pressure Access Door

END OF TASK

TASK 21-51-05-400-802

7. Water Separator Installation

(Figure 202)

A. General

(1) This procedure is a scheduled maintenance task.

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)
21-51-32-400-801	Low Limit (35 Degree Fahrenheit) Temperature Sensor 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)

C. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT-8N	MIL-PRF-907F
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~C32

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Water separator	21-51-05-01-240	HAP 101-105
19	O-ring	21-51-05-01-155	HAP 101-105

E. Location Zones

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

F. Access Panels

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

G. Water Separator Installation

SUBTASK 21-51-05-420-021

(1) Do these steps when a replacement water separator [5] is being installed:

(a) Install a new O-ring [19] on the plug [18].

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- (b) Apply a thin coat of Never-Seez NSBT-8N compound, D00006 to the threads of the plug [18].
- (c) Install the plug [18] on the water separator [5].
- (d) Install new lockwire, G01048 on the plug [18].

SUBTASK 21-51-05-420-010

- (2) Do these steps when a replacement water separator [5] is being installed:
  - (a) Install a new O-ring [3] on the union [6].
  - (b) Apply a thin coat of Never-Seez NSBT-8N compound, D00006 to the threads of the union [6].
  - (c) Install the union [6] on the water separator [5].
  - (d) Install new lockwire, G01048 on the union [6].

SUBTASK 21-51-05-420-011

- (3) Do these steps when a replacement water separator [5] is being installed:

**CAUTION:** THE OVERBOARD DRAIN SEAL MUST BE INSTALLED IN THE CORRECT POSITION. IF YOU DO NOT INSTALL THE OVERBOARD DRAIN SEAL IN THE CORRECT POSITION, DAMAGE TO THE SEAL, WATER SEPARATOR, OR THE ECS ACCESS DOOR CAN OCCUR.

- (a) Use the note you made to put the seal [8] in the correct position on the water separator [5].
- (b) Put the seal [8] and the hose clamp [9] onto the water separator [5].
- (c) Tighten the hose clamp [9].

SUBTASK 21-51-05-420-012

- (4) Put the water separator [5] into the clamp [4].

**NOTE:** Make sure the seal [8] points in the downward direction.

SUBTASK 21-51-05-420-013

- (5) Install the clamp [4] but do not tighten it.

**NOTE:** You may have to turn the water separator [5] to install the drain tube nut [2].

SUBTASK 21-51-05-420-014

- (6) Install the coupling [7] but do not tighten it.

SUBTASK 21-51-05-420-015

- (7) Install the coupling [11] but do not tighten it.

SUBTASK 21-51-05-420-016

- (8) Do these steps to connect the drain tube to the water separator [5]:

- (a) Turn the water separator [5] until it is aligned with the drain tube nut [2].
- (b) Install the drain tube nut [2] and tighten.

SUBTASK 21-51-05-420-017

- (9) Close and tighten the clamp [4] 30 to 35 pound-inches (3.4 to 3.9 Newton-meters).

SUBTASK 21-51-05-420-018

- (10) Tighten the coupling [7] 60 to 65 pound-inches (6.8 to 7.3 Newton-meters).

SUBTASK 21-51-05-420-019

- (11) Tighten the coupling [11] 60 to 65 pound-inches (6.8 to 7.3 Newton-meters).

SUBTASK 21-51-05-420-020

- (12) Do this task if a replacement water separator is being installed:

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- (a) Install the low limit (35°F) temperature sensor [10]. To install the low limit (35°F) temperature sensor, do this task: Low Limit (35 Degree Fahrenheit) Temperature Sensor Installation, TASK 21-51-32-400-801.

SUBTASK 21-51-05-420-022

- (13) Install the electrical connector [1] on low limit (35°F) temperature sensor [10].

#### H. Water Separator Installation Test

SUBTASK 21-51-05-860-011

- (1) Supply pneumatic power. To supply pneumatic power, do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801

SUBTASK 21-51-05-860-012

- (2) Operate the air conditioning packs. To do this, do this task: Supply Conditioned Air with a Cooling Pack, TASK 21-00-00-800-803.

SUBTASK 21-51-05-210-002

- (3) Make sure there is no air leakage at the water separator [5] connections.

SUBTASK 21-51-05-860-013

- (4) Shutdown the air conditioning packs. To shutdown the packs, do this task: Remove Conditioned Air from the Airplane, TASK 21-00-00-800-802.

#### I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-05-860-014

- (1) 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 21-51-05-410-003

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-05-410-004

- (3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

————— **END OF TASK** —————

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## AIRCRAFT MAINTENANCE MANUAL

### WATER SPRAY INJECTOR - REMOVAL/INSTALLATION

#### 1. General

A. This procedure has these tasks:

- (1) A removal of the water spray injector.
- (2) An installation of the water spray injector.

#### **TASK 21-51-06-000-801**

#### 2. Water Spray Injector 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-06-860-001

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

SUBTASK 21-51-06-010-001

- (2) Do these steps to get access to the water spray injector [2] for the left cooling pack:

Open this access panel:

Number	Name/Location
192CL	Air Conditioning Access Door

Open this access panel:

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-06-010-002

- (3) Do these steps to get access to the water spray injector [2] 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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-06-010-003

- (4) Remove the access panel on the bottom of the ram air inlet duct.

**E. Water Spray Injector Removal**

SUBTASK 21-51-06-020-001

- (1) Remove the water line [1] from the water spray injector [2].

SUBTASK 21-51-06-020-002

- (2) Remove the air line [3] from the water spray injector [2].

SUBTASK 21-51-06-020-003

- (3) Remove the nut [5] and the washer [4].

**NOTE:** You must reach through the access hole in the ram air inlet to remove the nut [5] and washer [4].

SUBTASK 21-51-06-020-004

- (4) Remove the water spray injector [2].

**END OF TASK**

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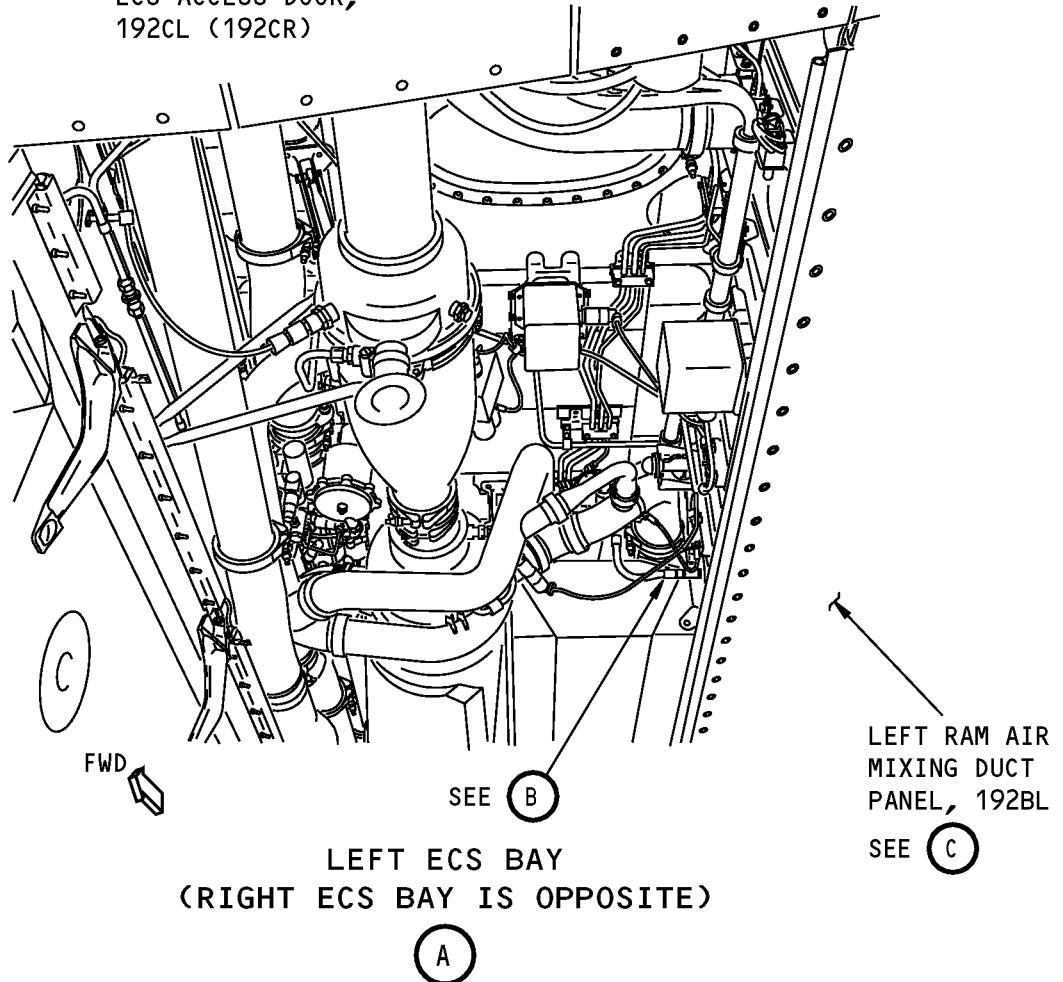
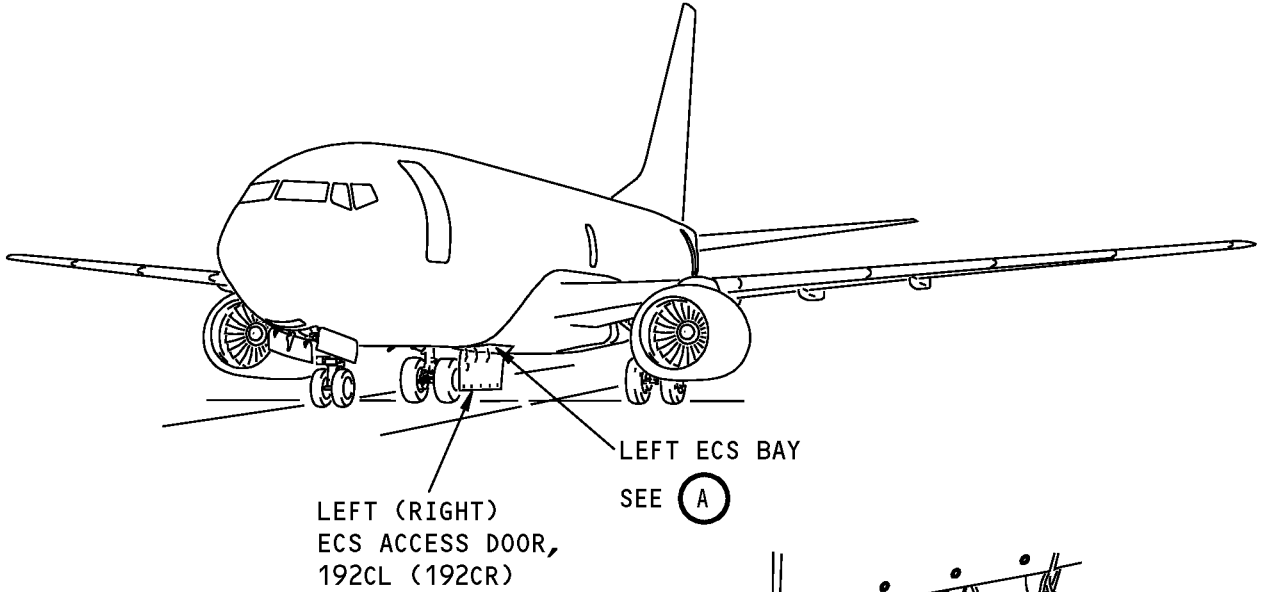
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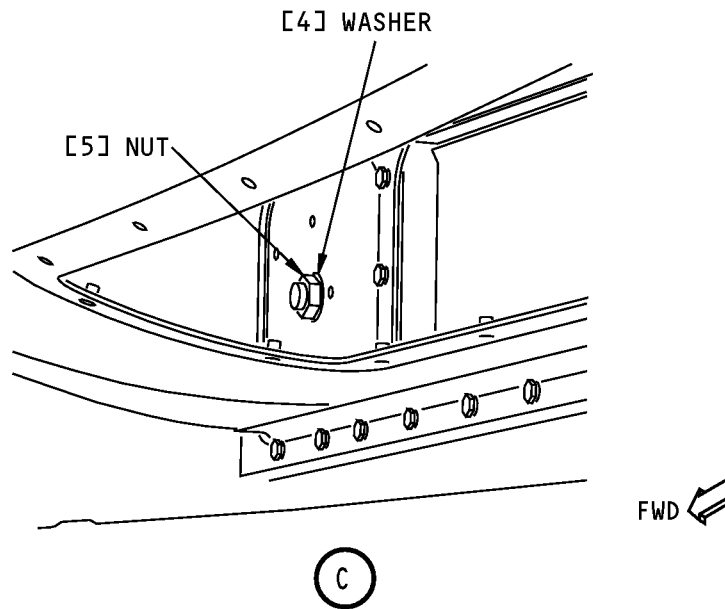
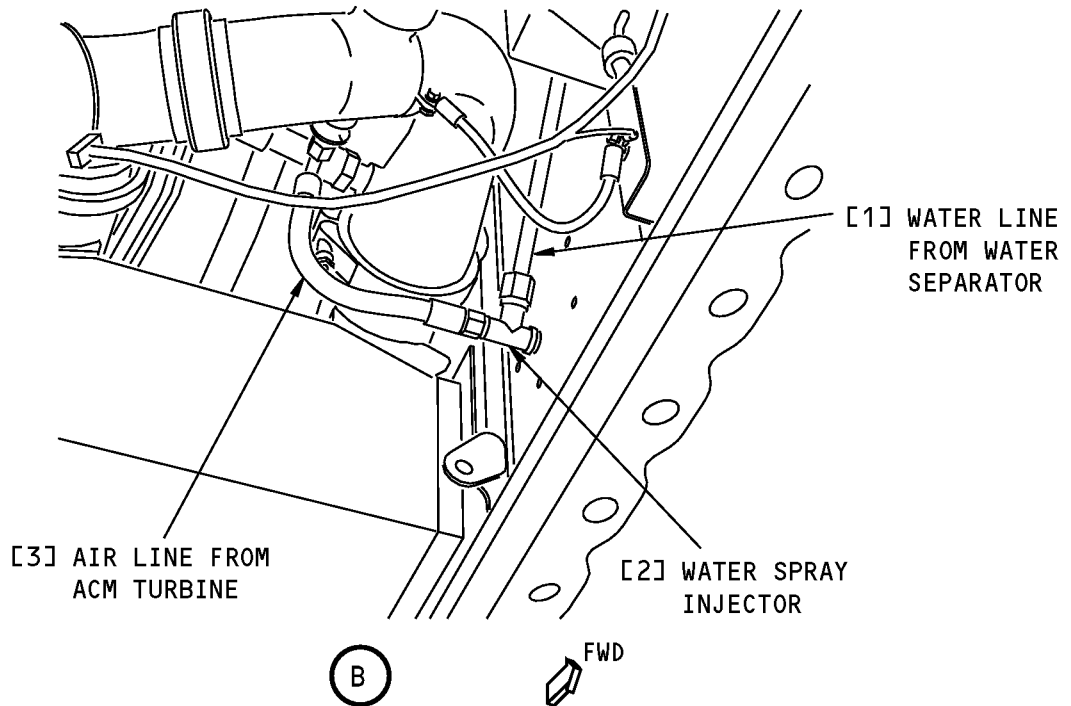


**Water Spray Injector Installation  
Figure 401 (Sheet 1 of 2)/21-51-06-990-801**

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**Water Spray Injector Installation  
Figure 401 (Sheet 2 of 2)/21-51-06-990-801**

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#### TASK 21-51-06-400-801

#### 3. Water Spray Injector 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. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Injector	21-51-53-02-095	HAP 101-999
		21-51-53-03-105	HAP 101-999

##### C. Location Zones

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

##### D. Access Panels

Number	Name/Location
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

##### E. Water Spray Injector Installation

SUBTASK 21-51-06-420-001

- (1) Put the water spray injector [2] in its position.

SUBTASK 21-51-06-420-002

- (2) Install the washer [4] and the nut [5].

**NOTE:** You must reach through the access hole in the ram air inlet to install the washer [4] and nut [5].

SUBTASK 21-51-06-420-003

- (3) Connect the water line [1] to the water spray injector [2].

SUBTASK 21-51-06-420-004

- (4) Connect the air line [3] to the water spray injector [2].

##### F. Water Spray Injector - Post Installation Test

SUBTASK 21-51-06-860-003

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

SUBTASK 21-51-06-860-004

- (2) Set the L(R) PACK switches to HIGH on the P5-10 panel.

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SUBTASK 21-51-06-860-005

- (3) Set the CONT CAB and PASS CAB zone temperature selectors to the MANUAL-C (fully cold) position.

SUBTASK 21-51-06-710-001

- (4) Use a flashlight to see that a spray of air and water comes out of the L(R) water spray injector.

NOTE: The quantity of water is a function of the air humidity and the pack air flow.

SUBTASK 21-51-06-860-008

- (5) Set the CONT CAB and PASS CAB zone temperature selectors to the OFF position.

SUBTASK 21-51-06-860-006

- (6) Set the L(R) PACK switches to the OFF position.

SUBTASK 21-51-06-860-007

- (7) 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 21-51-06-410-001

- (1) Install the access panel to the bottom of the ram air inlet duct.

SUBTASK 21-51-06-410-002

- (2) Do these steps if you installed the water spray injector [2] for the left cooling pack:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-06-410-003

- (3) Do these steps if you installed the water spray injector [2] for the right cooling pack:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

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SUBTASK 21-51-06-860-002

- (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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# AIRCRAFT MAINTENANCE MANUAL

## 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.

B. There is a conditioned air check valve for each pack. The valves are installed in the mix bay at the aft end of the forward cargo compartment.

#### **TASK 21-51-07-000-801-001**

### 2. Conditioned Air Check Valve Removal

(Figure 401)

A. References

Reference	Title
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)
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
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 21-51-07-860-001-001

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

SUBTASK 21-51-07-860-002-001

**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 21-51-07-860-003-001

- (3) 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.
  - (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 21-51-07-010-001-001

- (4) Open the forward cargo compartment door.

SUBTASK 21-51-07-010-002-001

- (5) Remove the 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.

D. Conditioned Air Check Valve Removal

SUBTASK 21-51-07-020-001-001

- (1) Remove the conditioned air check valve [2] as follows:

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- (a) Loosen the clamps [1] that attach the conditioned air check valve [2] to the ducts.
- (b) Move the clamps [1] away from the joints.
- (c) Remove the conditioned air check valve [2].

SUBTASK 21-51-07-620-001-001

- (2) Put covers on the duct openings to prevent the entry of unwanted materials.

————— **END OF TASK** —————

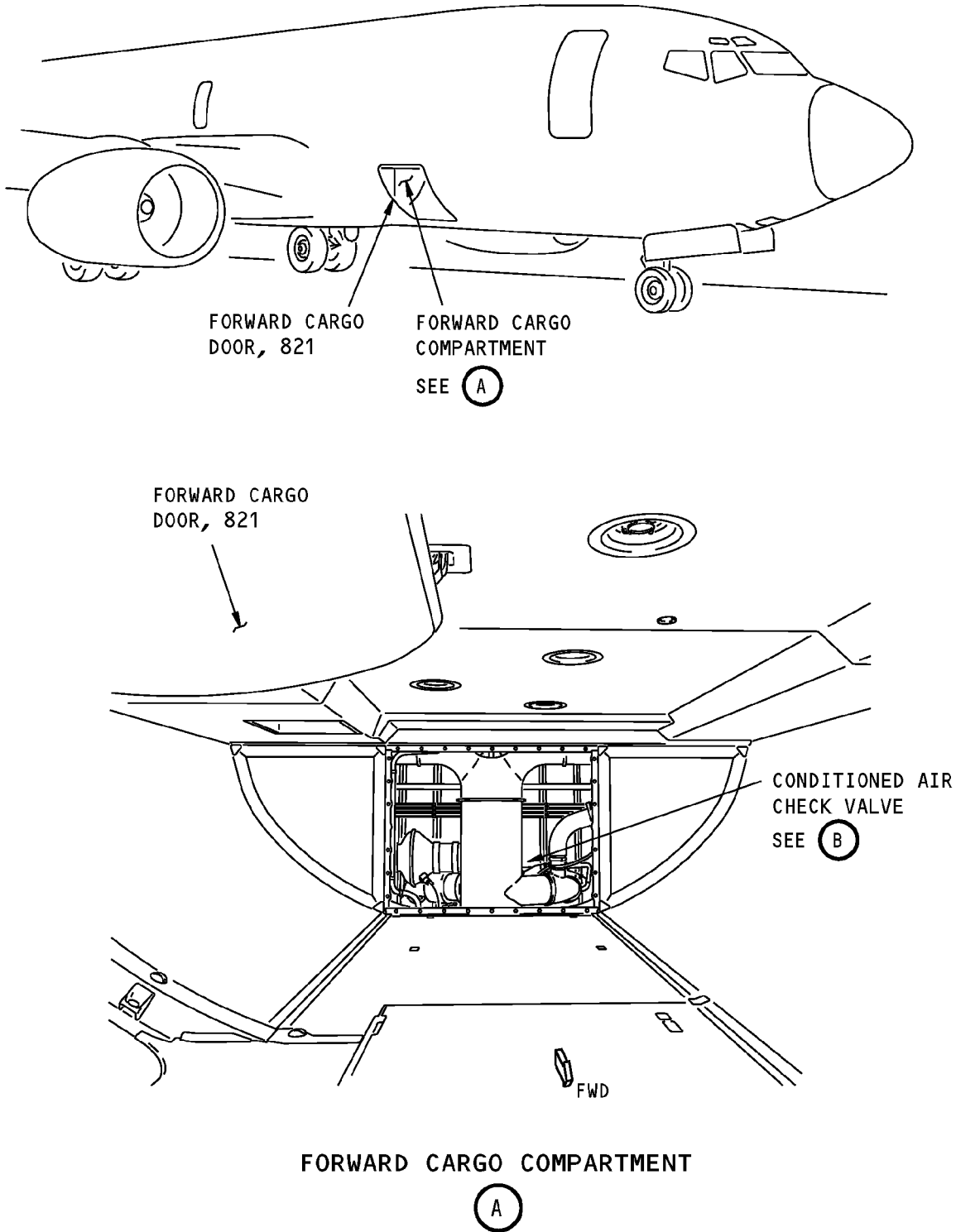
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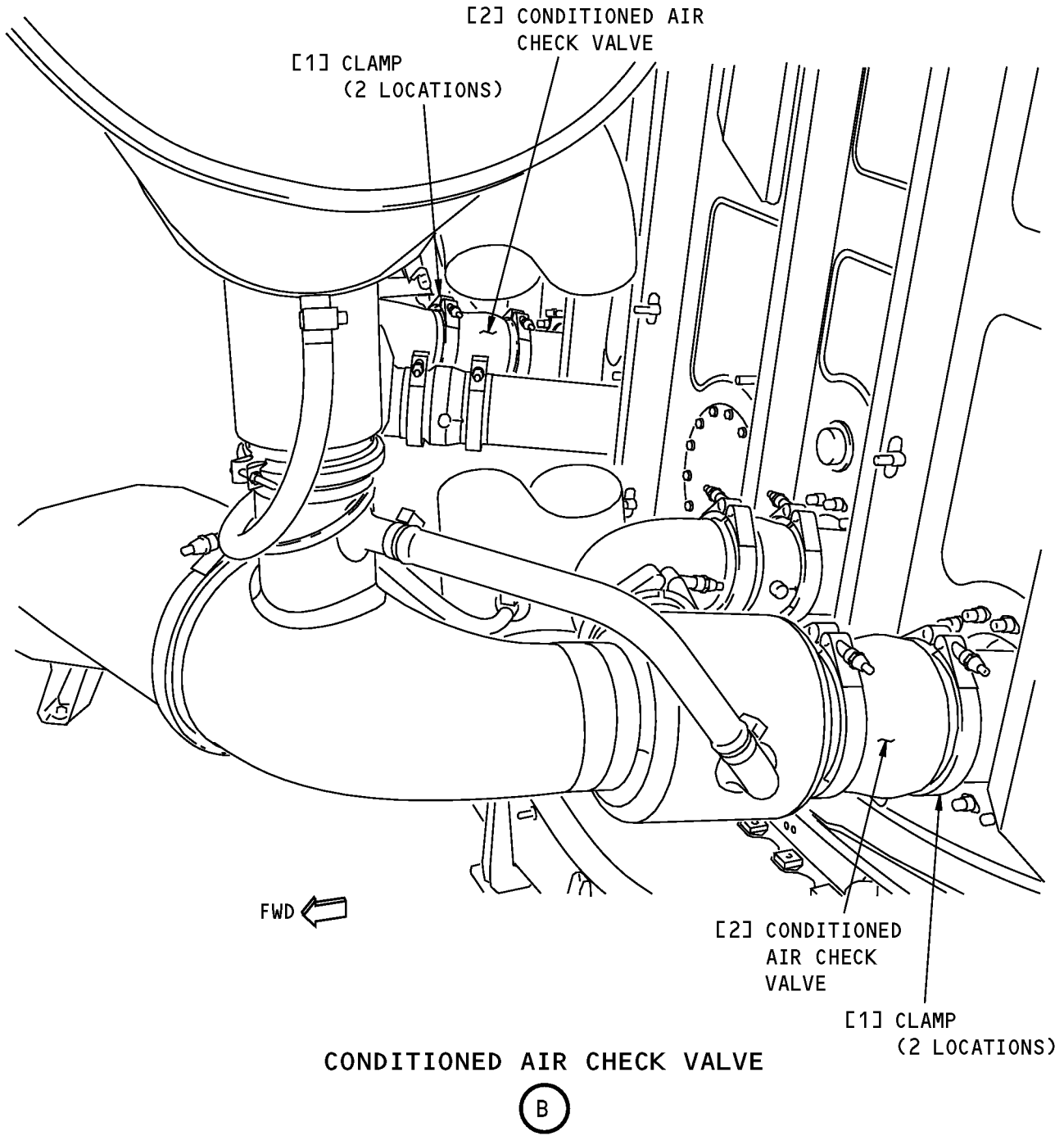
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**Conditioned Air Check Valve Installation  
Figure 401 (Sheet 1 of 2)/21-51-07-990-801-001**

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**Conditioned Air Check Valve Installation  
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TASK 21-51-07-400-801-001

#### 3. Conditioned Air Check Valve 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)
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
2	Valve	21-21-51-05-070	HAP 101

##### C. Location Zones

Zone	Area
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

##### D. Conditioned Air Check Valve Installation

SUBTASK 21-51-07-630-001-001

(1) Remove the duct covers.

SUBTASK 21-51-07-420-001-001

(2) Install the conditioned air check valve [2] as follows:

(a) Put the conditioned air check valve [2] in its position.

NOTE: The flow arrow on the valve must point forward.

(b) Put the clamps [1] over the joints.

(c) Tighten the clamps [1].

SUBTASK 21-51-07-860-009-001

(3) 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.

##### E. Conditioned Air Check Valve Installation Test

SUBTASK 21-51-07-860-004-001

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

SUBTASK 21-51-07-860-005-001

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

SUBTASK 21-51-07-790-001-001

(3) Do a soap bubble test of the joints at the ends of the conditioned air check valve.

NOTE: No leakage is permitted.

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- (a) If there is leakage, tighten the clamps 5-10 pound-inches (0.6-1.1 newton-meters).
- (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.

### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-07-860-006-001

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

SUBTASK 21-51-07-860-007-001

- (2) Put these switches on the P5-10 air conditioning panel to the OFF position:

- (a) L PACK
- (b) R PACK

SUBTASK 21-51-07-410-001-001

- (3) Install the 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 21-51-07-860-008-001

- (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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# AIRCRAFT MAINTENANCE MANUAL

## 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	Air Conditioning Access Door
192CR	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-07-010-004-002

(5) For the right conditioned air check valve open these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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 condenser 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** —————

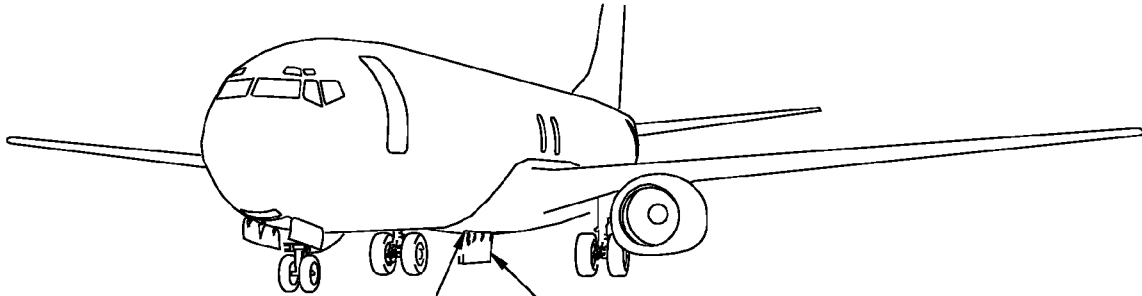
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HAP 001-013, 015-026, 028-054

D633A101-HAP

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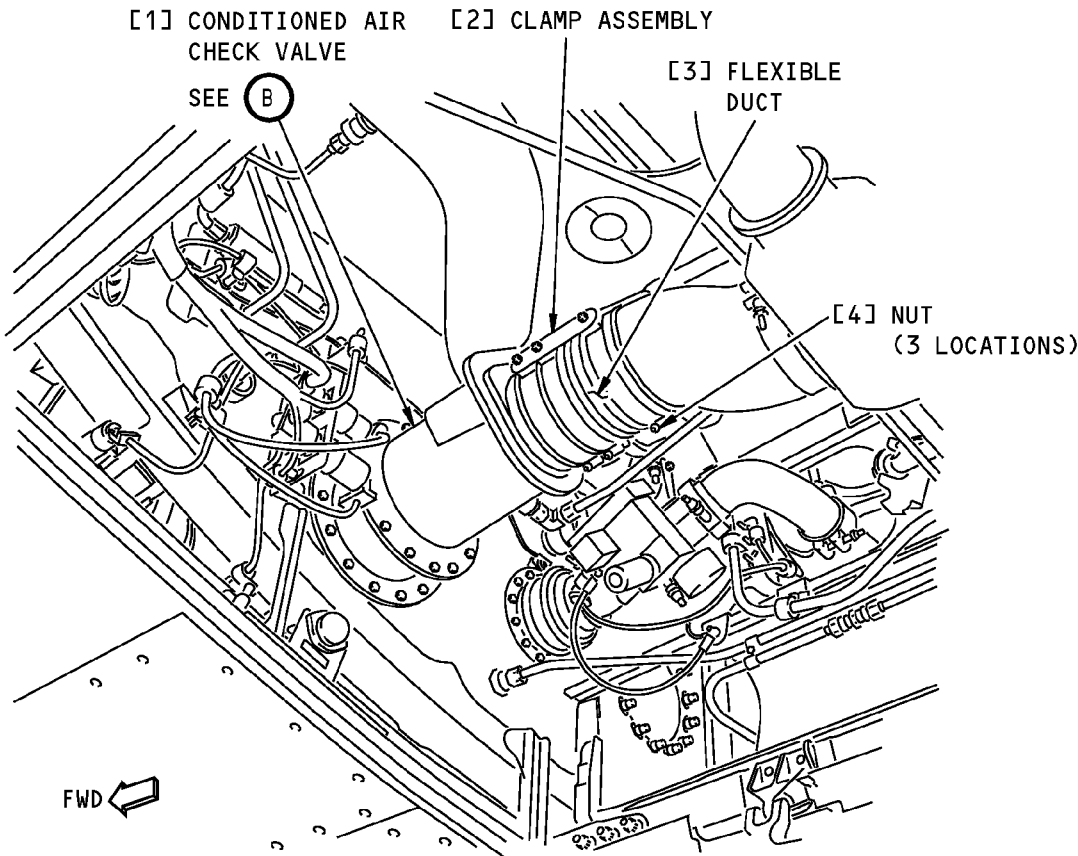
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ECS BAY  
SEE (A)

LEFT (RIGHT)  
ECS ACCESS DOOR,  
192CL (192CR)



[1] CONDITIONED AIR  
CHECK VALVE  
SEE (B)

[2] CLAMP ASSEMBLY

[3] FLEXIBLE  
DUCT

[4] NUT  
(3 LOCATIONS)

FWD

LEFT ECS BAY  
(RIGHT ECS BAY IS EQUIVALENT)

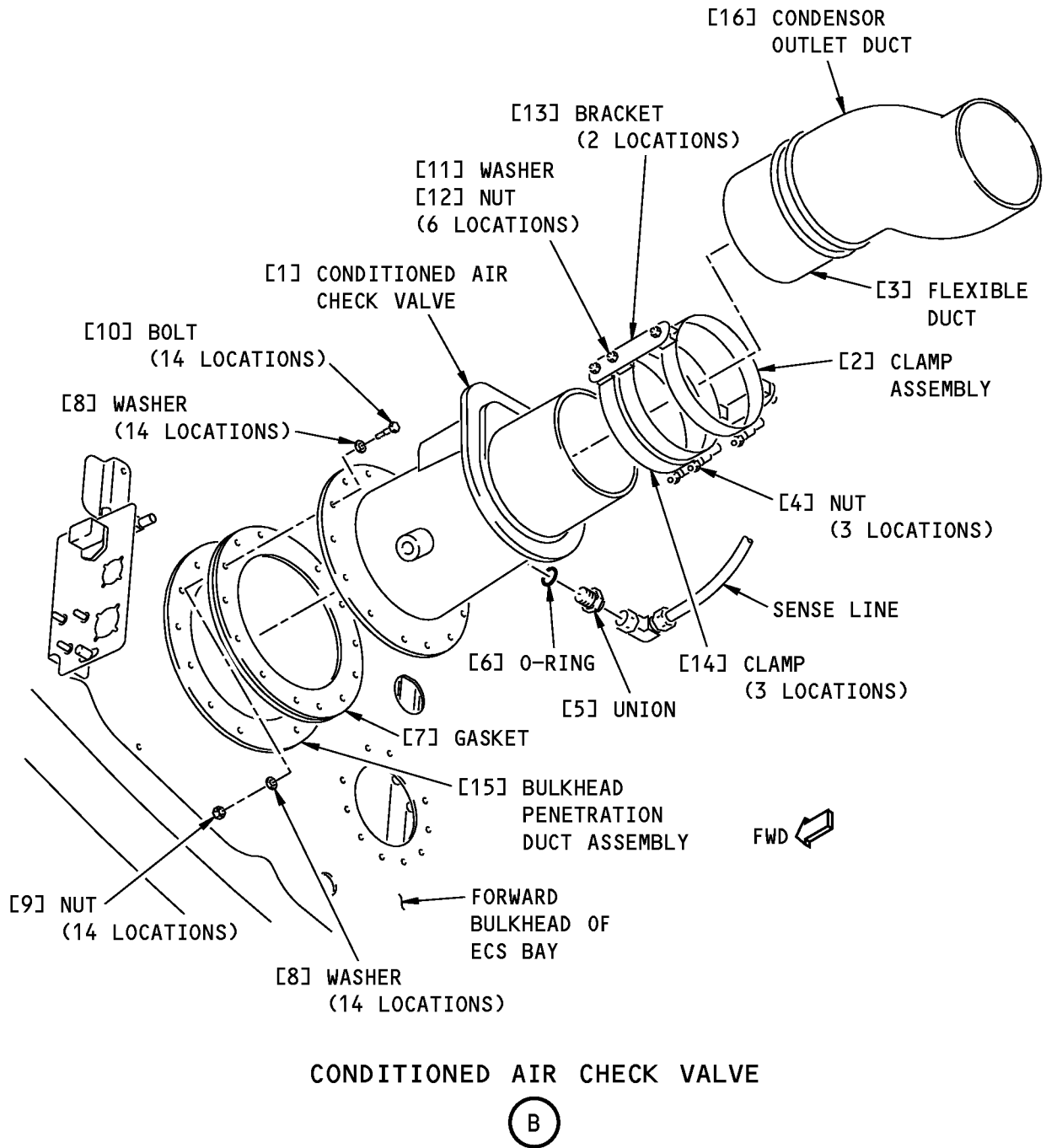
(A)

**Conditioned Air Check Valve Installation  
Figure 401 (Sheet 1 of 2)/21-51-07-990-802-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**Conditioned Air Check Valve Installation  
Figure 401 (Sheet 2 of 2)/21-51-07-990-802-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

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-8N	MIL-PRF-907F

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-51-07-01-110	HAP 001-013, 015-026, 028-030
		21-51-07-02-060	HAP 001-013, 015-026, 028-030
		21-51-07-03-085	HAP 031-054
		21-51-07-04-085	HAP 031-054
6	O-ring	21-51-53-04-213	HAP 031-046, 054
		21-51-53-05-197	HAP 031-046, 054
		21-51-53-18-260	HAP 001-013, 015-026, 028-030
		21-51-53-19-300	HAP 001-013, 015-026, 028-030
7	Gasket	21-51-07-01-030	HAP 001-013, 015-026, 028-030
		21-51-07-02-090	HAP 001-013, 015-026, 028-030
		21-51-07-03-027	HAP 031-054
		21-51-07-04-026	HAP 031-054

##### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

EFFECTIVITY HAP 001-013, 015-026, 028-054
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## AIRCRAFT MAINTENANCE MANUAL

### 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:

**NOTE:** Make sure the clamps are not installed on the duct bead. Keep a 0.125 inch minimum distance between the clamp and the edge of the flexible duct.

- 1) Make sure that the two forward clamps are located forward of the bead on the aft end of the check valve.
- 2) Make sure the aft clamp is located aft of the bead on the forward end of the condensor outlet duct [16].
- 3) Make sure that the forward clamp is located inside (aft) of the bead on the flexible duct [3].
- 4) Make sure that the aft clamp is located inside (forward) of the bead on the flexible duct [3].
- 5) 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) Tighten the nuts [4] to a torque of 8 - 12 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-8N 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.

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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## AIRCRAFT MAINTENANCE MANUAL

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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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.

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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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** —————

**EFFECTIVITY**  
**HAP 001-013, 015-026, 028-054**

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# AIRCRAFT MAINTENANCE MANUAL

## 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	21-51-12-01-065	HAP 001-013, 015-026, 028-046, 054
17	O-ring	21-51-17-01-170	HAP 047-053
		21-51-13-01-220	HAP 001-013, 015-026, 028-030
		21-51-13-02-045	HAP 031-046, 054
		21-51-13-03-045	HAP 031-046, 054
		21-51-17-01-065	HAP 047-053

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	Air Conditioning Access Door
192CR	Air Conditioning 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.

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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SUBTASK 21-51-08-010-001

- (3) To get access to the HPWS for the left cooling pack, open this access panel

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-08-010-002

- (4) To get access to the HPWS for the right cooling pack, open these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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:

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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- (a) Disconnect the electrical connector D3876 from the pack temperature sensor.
- (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** —————

EFFECTIVITY

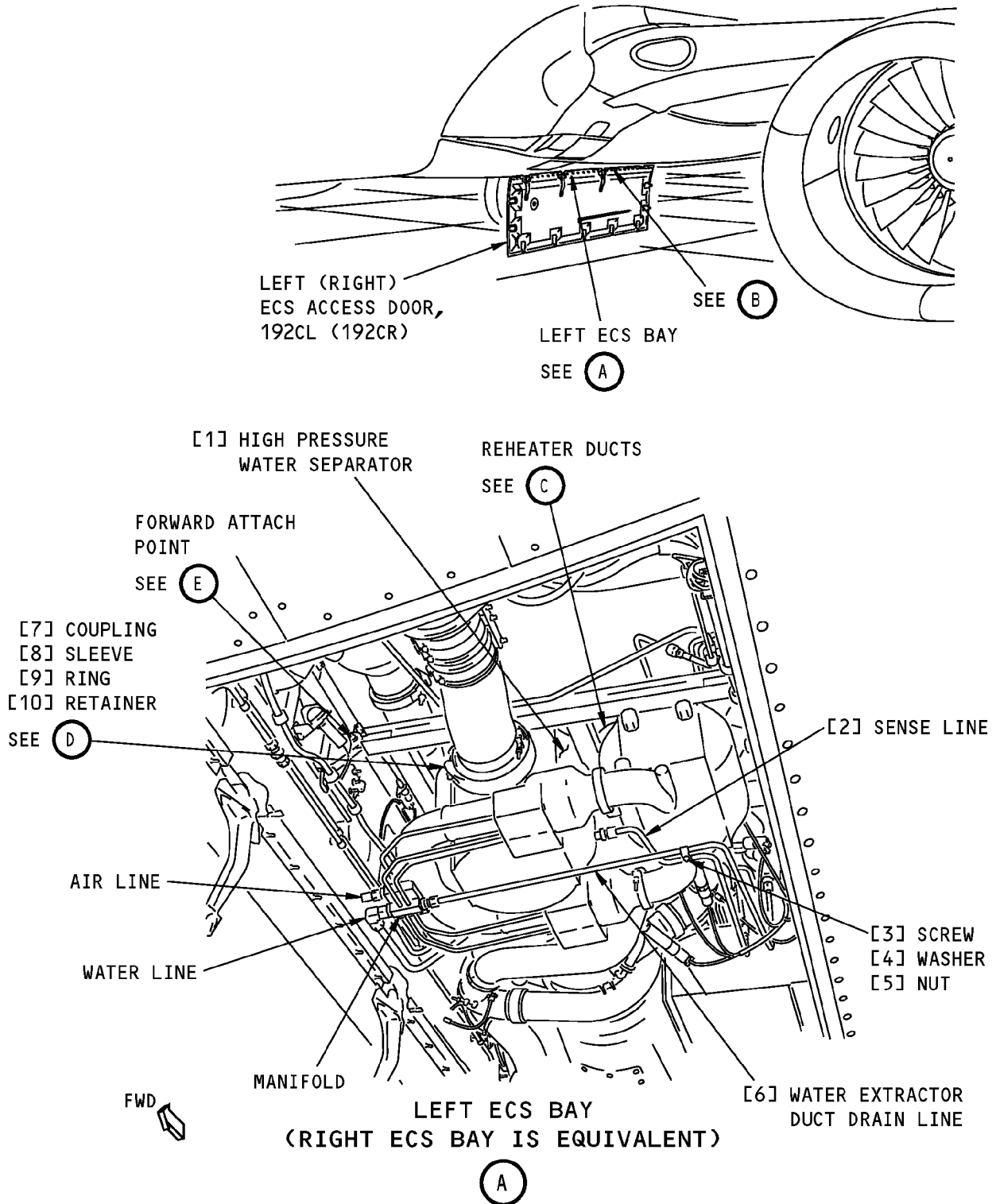
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**High Pressure Water Separator Installation  
Figure 401 (Sheet 1 of 3)/21-51-08-990-801**

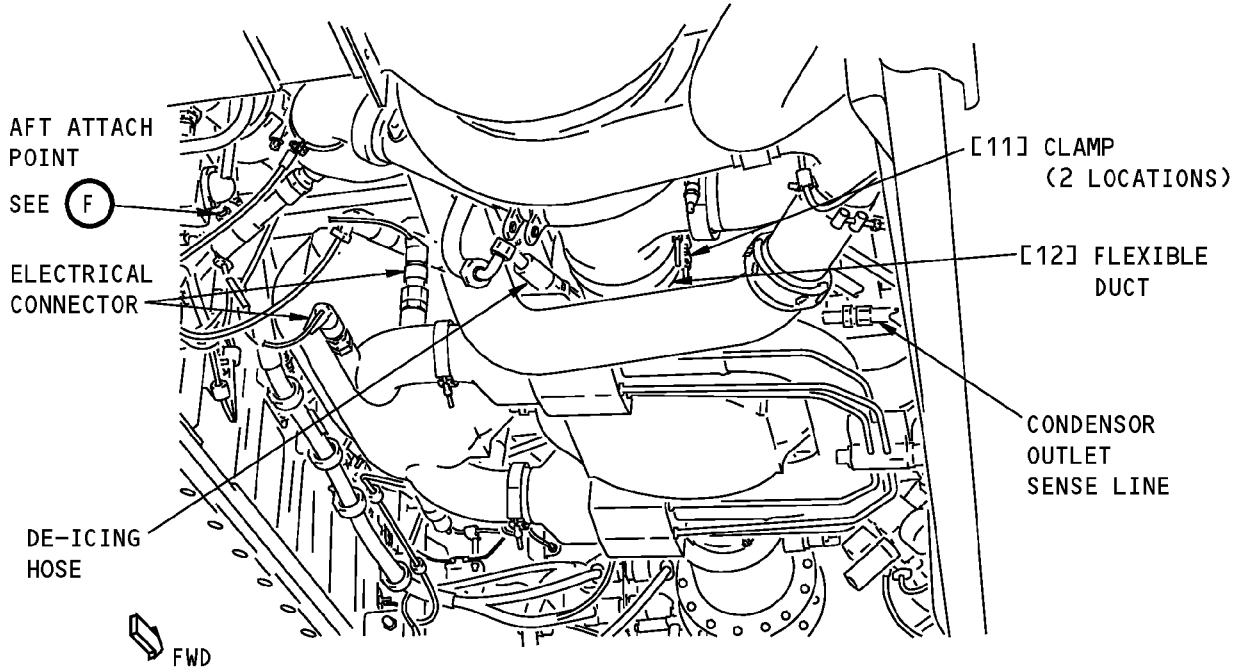
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HAP 001-013, 015-026, 028-054

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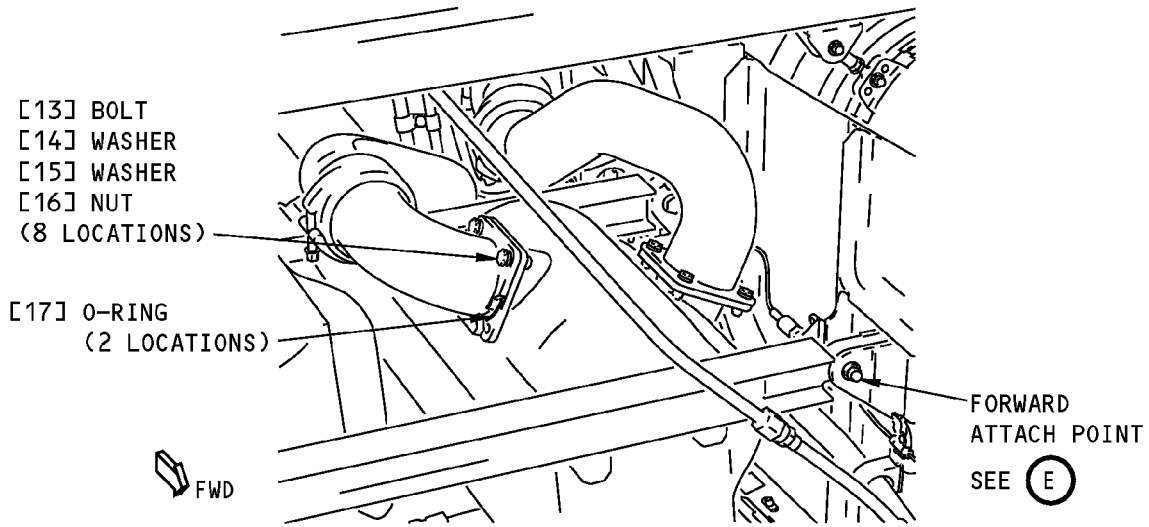
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**LEFT ECS BAY  
(RIGHT ECS BAY IS EQUIVALENT)**

(B)



**REHEATER DUCTS**

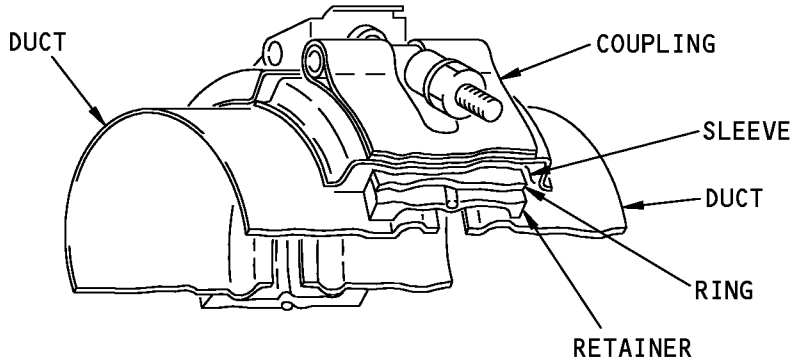
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**High Pressure Water Separator Installation  
Figure 401 (Sheet 2 of 3)/21-51-08-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

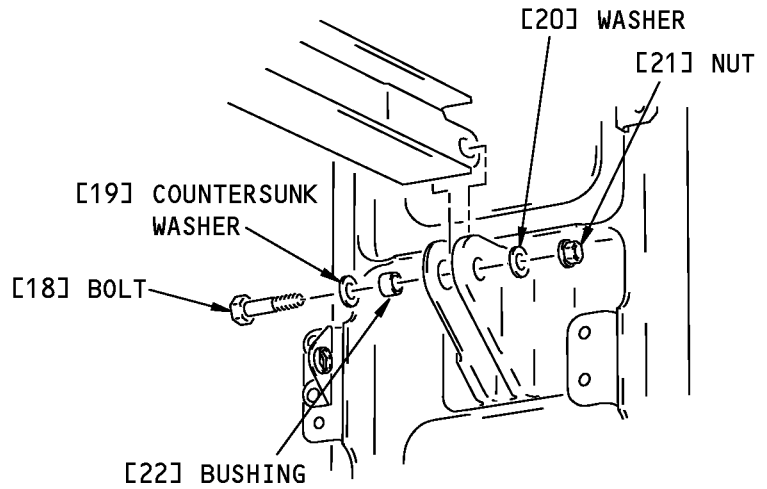
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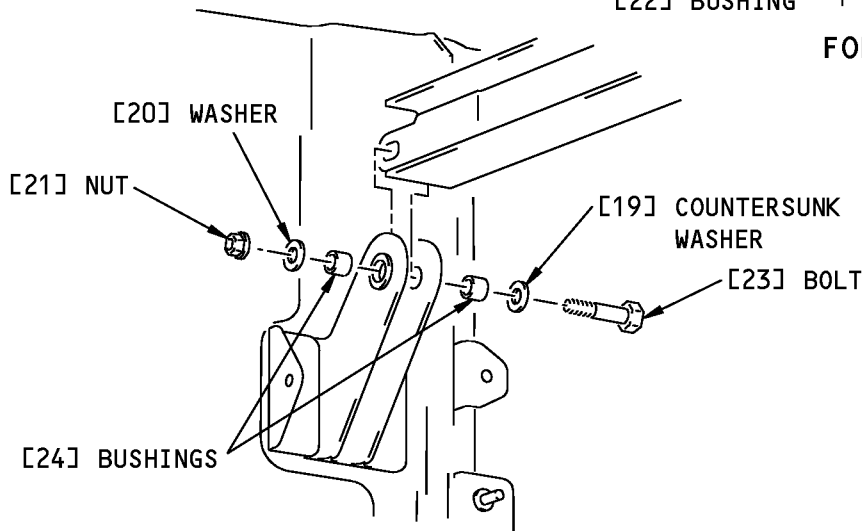
**COUPLING ASSEMBLY  
(EXAMPLE)**

(D)



**FORWARD ATTACH POINT**

(E)



**AFT ATTACH POINT**

(F)

**High Pressure Water Separator Installation  
Figure 401 (Sheet 3 of 3)/21-51-08-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

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	21-51-12-01-065	HAP 001-013, 015-026, 028-046, 054
		21-51-17-01-170	HAP 047-053
17	O-ring	21-51-13-01-220	HAP 001-013, 015-026, 028-030
		21-51-13-02-045	HAP 031-046, 054
		21-51-13-03-045	HAP 031-046, 054
		21-51-17-01-065	HAP 047-053

##### 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	Air Conditioning Access Door
192CR	Air Conditioning 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].

**NOTE:** 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.

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- 2) Install the nut [21], the washer [20], the countersunk washer [19], and the bolt [23].

NOTE: 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:
    - a) Reposition the supply duct to the trim air PRSOV.
    - b) Remove material from the water collection manifold as directed by Service Letter 737-SL-21-047.

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].

NOTE: 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.

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.

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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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.

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.

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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.

SUBTASK 21-51-08-410-001

- (4) If the HPWS for the right cooling pack was removed, close these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

————— **END OF TASK** —————

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# AIRCRAFT MAINTENANCE MANUAL

## LOW PRESSURE WATER SYSTEM MIX MUFF - REMOVAL/INSTALLATION

### 1. General

- A. This procedure has these tasks:
  - (1) A removal of the low pressure water system mix muff
  - (2) An installation of the low pressure water system mix muff.
- B. The low pressure water system mix muff will be referred to as the mix muff throughout this procedure.
- C. There is a mix muff for each air cooling pack in the forward area of the air conditioning bays.
- D. 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.
- E. The compressor outlet duct must be removed to get access to the mix muff.

### **TASK 21-51-09-000-801**

### 2. Low Pressure Water System 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. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	O-ring	21-51-41-05-020	HAP 101-106
		21-51-41-06-020	HAP 101-106
7	O-ring	21-51-03-05-085	HAP 101-999
11	O-ring	21-51-03-05-095	HAP 101-999

#### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

#### E. Prepare for the Removal

SUBTASK 21-51-09-860-001

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

SUBTASK 21-51-09-860-002

**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.

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SUBTASK 21-51-09-860-003

- (3) Do these steps on the P5-10 air conditioning panel (installed on the P5 forward overhead panel):
- Set the L and R PACK switches to the OFF position and attach DO-NOT-OPERATE tags.
  - Set the BLEED 1 and 2 switches to the OFF position and attach DO-NOT-OPERATE tags.
  - Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE tag.

SUBTASK 21-51-09-010-001

- (4) To get access to the left cooling pack, open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-09-010-002

- (5) To get access to the right cooling pack, open these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-09-020-001

- (6) Remove the compressor outlet duct 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.

- Disconnect the electrical connector [8] from the compressor outlet overheat switch.
- Disconnect the electrical connector [5] from the ram air control temperature sensor.
- Remove the clamp [1].

**NOTE:** Lift the three latch pawls at the same time to release the clamp.

- Slide the sleeve [2] onto the adjacent duct.
- Remove the clamp [9].

**NOTE:** Lift the three latch pawls at the same time to release the clamp.

- Slide the sleeve [10] onto 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.

- Remove the clamp [6] that holds the duct [4] to the heat exchanger.
- Remove the compressor outlet duct [4].
- Remove and discard the O-ring [7].
- Remove and discard the O-ring [11].
- Remove and discard the O-ring [3].

### F. Mix Muff Removal

SUBTASK 21-51-09-020-002

- (1) To remove the mix muff, do these steps:
- Disconnect the flexhose [17] from the mix muff [20].
  - Remove the clamp [12] that attaches the mix muff [20] to the water separator.
  - Slide the sleeve [13] away from the mix muff [20].

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- (d) Slide the ring [14] away from the mix muff [20].
- (e) Remove the retainer [15].
- (f) Remove the clamp [16].

**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.

- (g) Loosen the clamp [18] that attaches the mix muff [20] to the air cycle machine.
- (h) Remove the mix muff [20].
- (i) Remove and discard the O-ring [19].

SUBTASK 21-51-09-620-001

- (2) Put covers on the duct openings to prevent the entry of unwanted materials.

————— **END OF TASK** —————

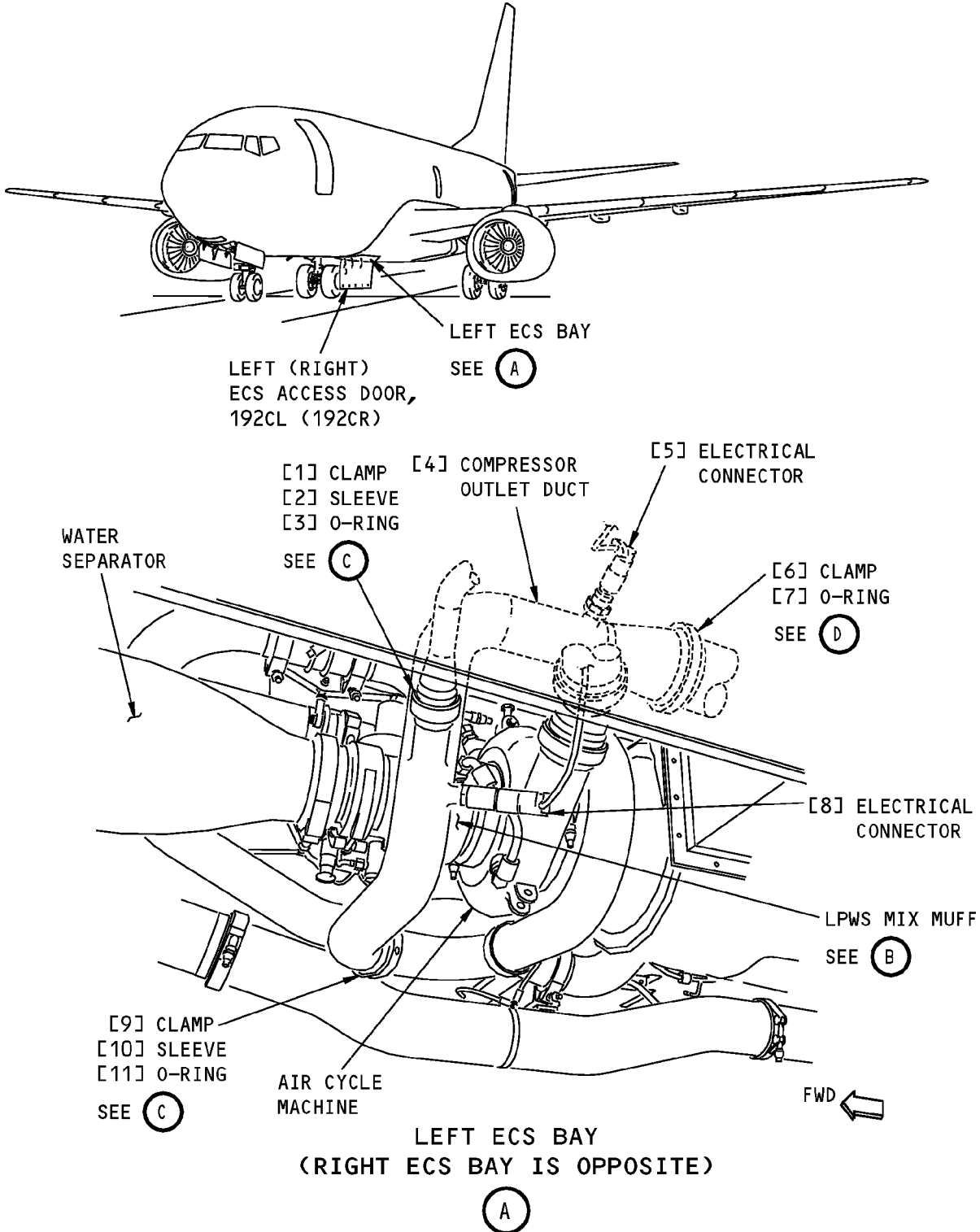
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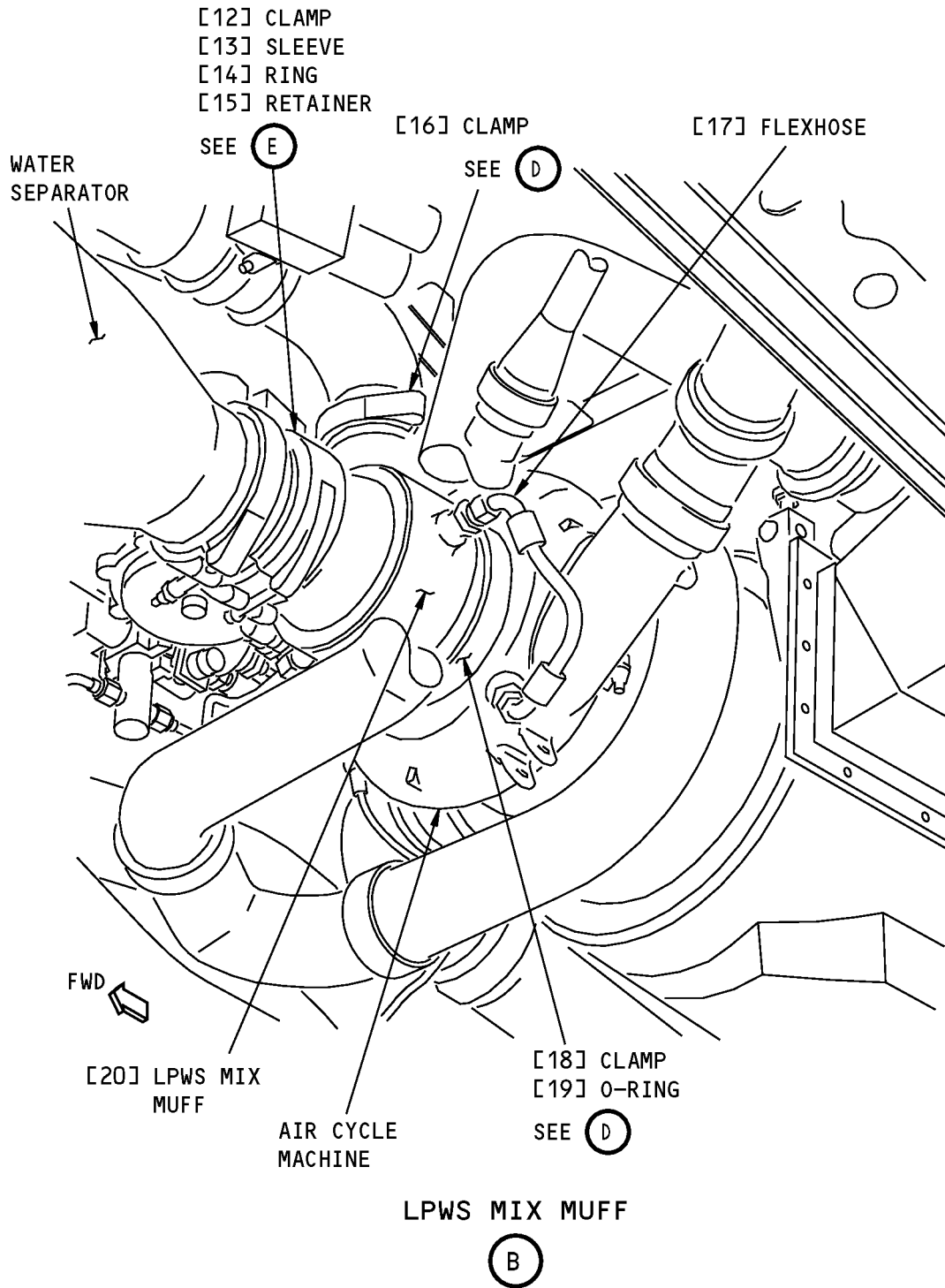
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**Low Pressure Water System (LPWS) Mix Muff Installation  
Figure 401 (Sheet 1 of 3)/21-51-09-990-801**

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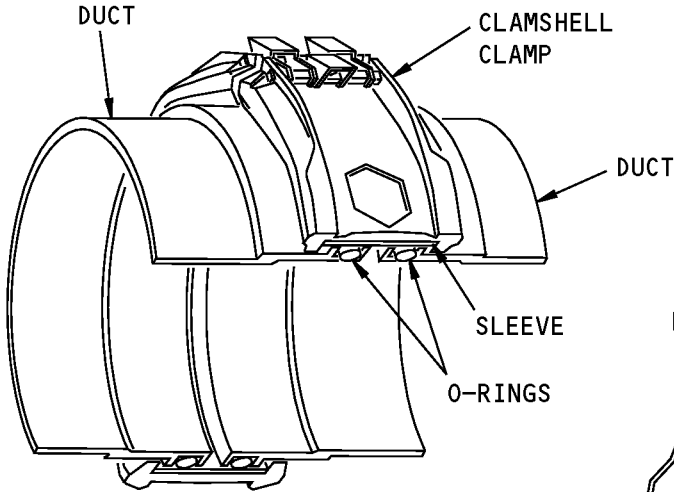


**Low Pressure Water System (LPWS) Mix Muff Installation  
Figure 401 (Sheet 2 of 3)/21-51-09-990-801**

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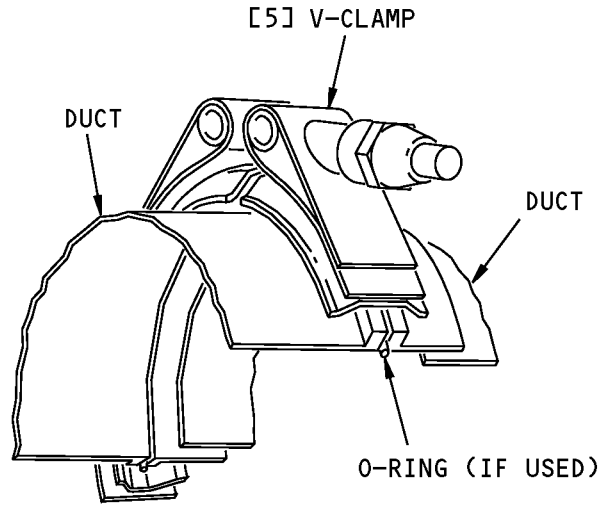
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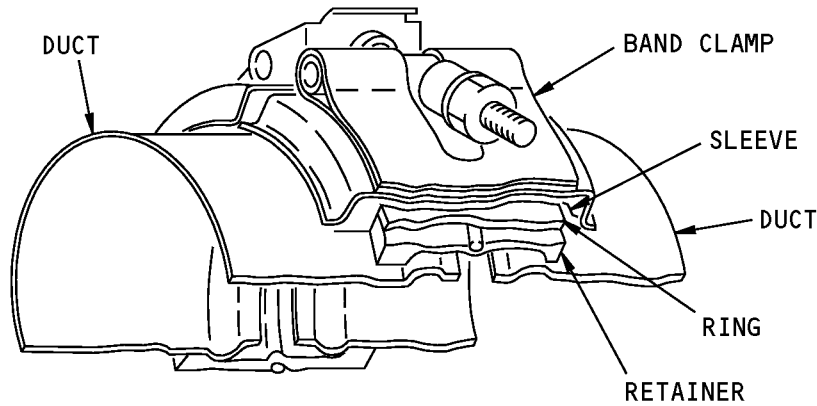
**CLAMSHELL CLAMP INSTALLATION (EXAMPLE)**

**C**



**V-CLAMP INSTALLATION (EXAMPLE)**

**D**



**BAND CLAMP INSTALLATION (EXAMPLE)**

**E**

**Low Pressure Water System (LPWS) Mix Muff Installation  
Figure 401 (Sheet 3 of 3)/21-51-09-990-801**

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#### TASK 21-51-09-400-801

#### 3. Low Pressure Water System 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-8N	MIL-PRF-907F

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	O-ring	21-51-41-05-020	HAP 101-106
		21-51-41-06-020	HAP 101-106
7	O-ring	21-51-03-05-085	HAP 101-999
11	O-ring	21-51-03-05-095	HAP 101-999
19	O-ring	21-51-09-03-010	HAP 101-999
		21-51-09-04-010	HAP 101-999
20	Mix muff	21-51-09-03-030	HAP 101-999
		21-51-09-04-030	HAP 101-999

##### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

##### F. Mix Muff Installation

SUBTASK 21-51-09-630-001

(1) Remove the duct covers.

SUBTASK 21-51-09-020-003

(2) To install the mix muff [20], do these steps:

(a) Install a new O-ring [19].

(b) Put the mix muff [20] into its position between the ducts.

**NOTE:** Hold the mix muff [20] in position when you install the clamps. The duct connections are not self aligning.

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- (c) Install the clamp [18] that holds the mix muff [20] to the air cycle machine.  
NOTE: Do not fully tighten the clamp [18].
- (d) Install the clamp [16] that holds the mix muff [20] to the temperature control duct.  
NOTE: Do not fully tighten the clamp [16].
- (e) Install the retainer [15] that holds the mix muff [20] to the water separator.
- (f) Move the ring [14] over the retainer [15].
- (g) Move the sleeve [13] over the ring [14].
- (h) Install the clamp [12] over the sleeve [13].
- (i) Tighten the clamp [12] 100 to 105 pound-inches (11.3 to 11.8 newton-meters).
- (j) Tighten the clamp [18] 60 to 65 pound-inches (6.8 to 7.3 newton-meters).
- (k) Tighten the clamp [16] 55 to 60 pound-inches (6.2 to 6.8 newton-meters).
- (l) Apply a light coating of Never-Seez NSBT-8N compound, D00006 to the threads of the flex hose [17].
- (m) Connect the flex hose [17] to the mix muff [20].

### G. Compressor Outlet Duct Installation

SUBTASK 21-51-09-020-004

- (1) To install the compressor outlet duct, do these steps:
  - (a) Install new O-rings [3].
  - (b) Install new O-ring [11].
  - (c) Install a new O-ring [7].
  - (d) Put the compressor outlet duct [4] into its position.  
NOTE: Hold the duct [4] in position when you install the clamps. The duct connections are not self aligning.
  - (e) Install the clamp [6] that holds the duct [4] to the heat exchanger.  
NOTE: Do not fully tighten the clamp [6].
  - (f) Install the clamp [1].  
NOTE: Push the two halves of the clamp [1] together until the three latch pawls are latched.
  - (g) Install the clamp [9].  
NOTE: Push the two halves of the clamp [9] together until the three latch pawls are latched.
  - (h) Tighten the clamp [6] 45 to 50 pound-inches (5.1 to 5.6 newton-meters).
  - (i) Reconnect the electrical connector [5] to the ram air control temperature sensor.
  - (j) Reconnect the electrical connector [8] to the compressor outlet overheat switch.

### H. Mix Muff Installation Test

SUBTASK 21-51-09-860-004

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

SUBTASK 21-51-09-860-005

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

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SUBTASK 21-51-09-790-001

- (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:

- 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 21-51-09-860-006

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

SUBTASK 21-51-09-860-007

- (2) Put these switches on the P5-10 air conditioning panel to the OFF position:

- (a) L PACK
- (b) R PACK

SUBTASK 21-51-09-010-003

- (3) If you replaced the mix muff for the left cooling pack, close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-09-010-004

- (4) If you replaced the mix muff for the right cooling pack, close these panels in this sequence:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

SUBTASK 21-51-09-860-008

- (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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# AIRCRAFT MAINTENANCE MANUAL

## 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	Air Conditioning Access Door
192CR	Air Conditioning 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	AIR CONDITIONING 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	Air Conditioning Access Door

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SUBTASK 21-51-10-010-001

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

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01160	AIR CONDITIONING 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 this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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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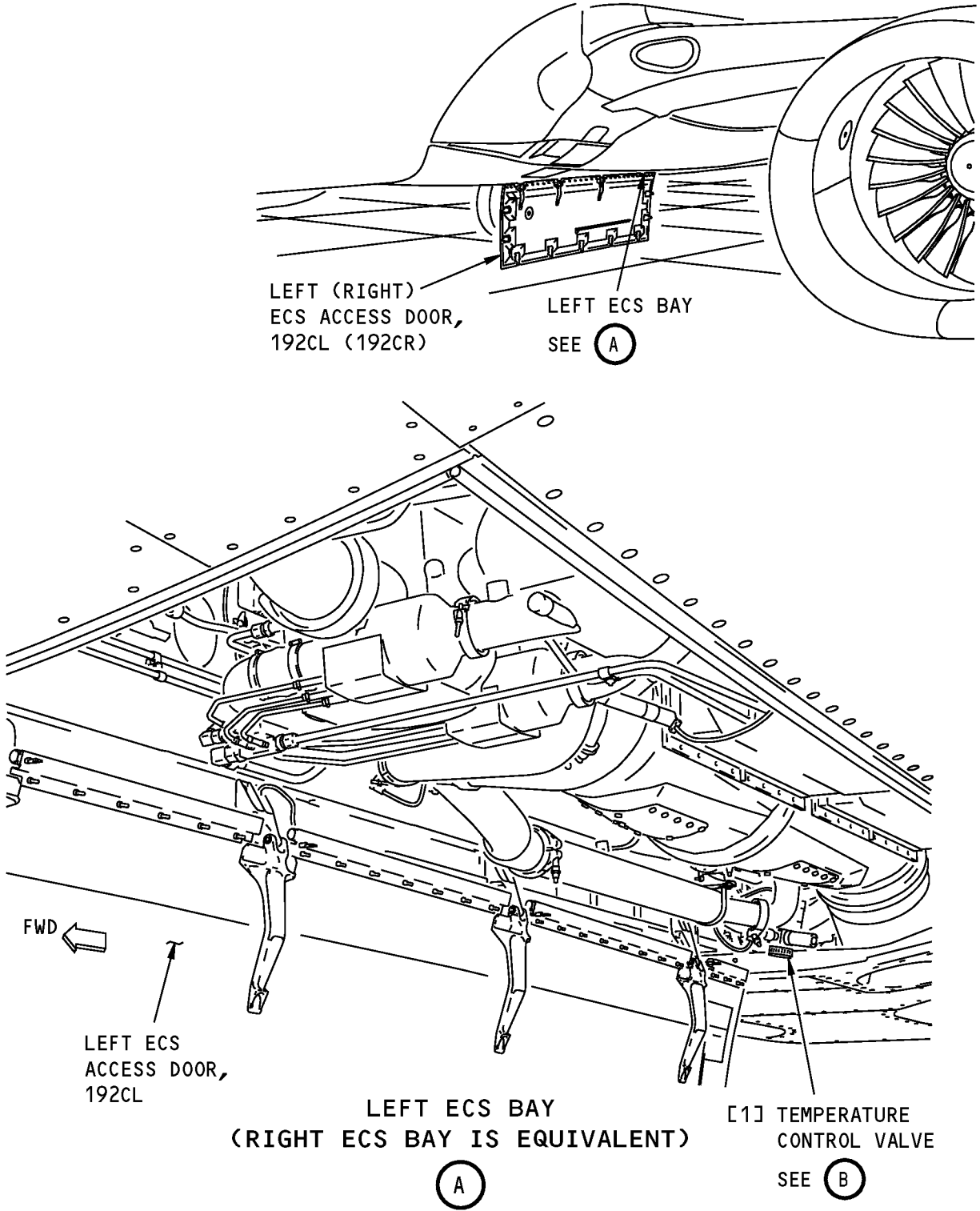
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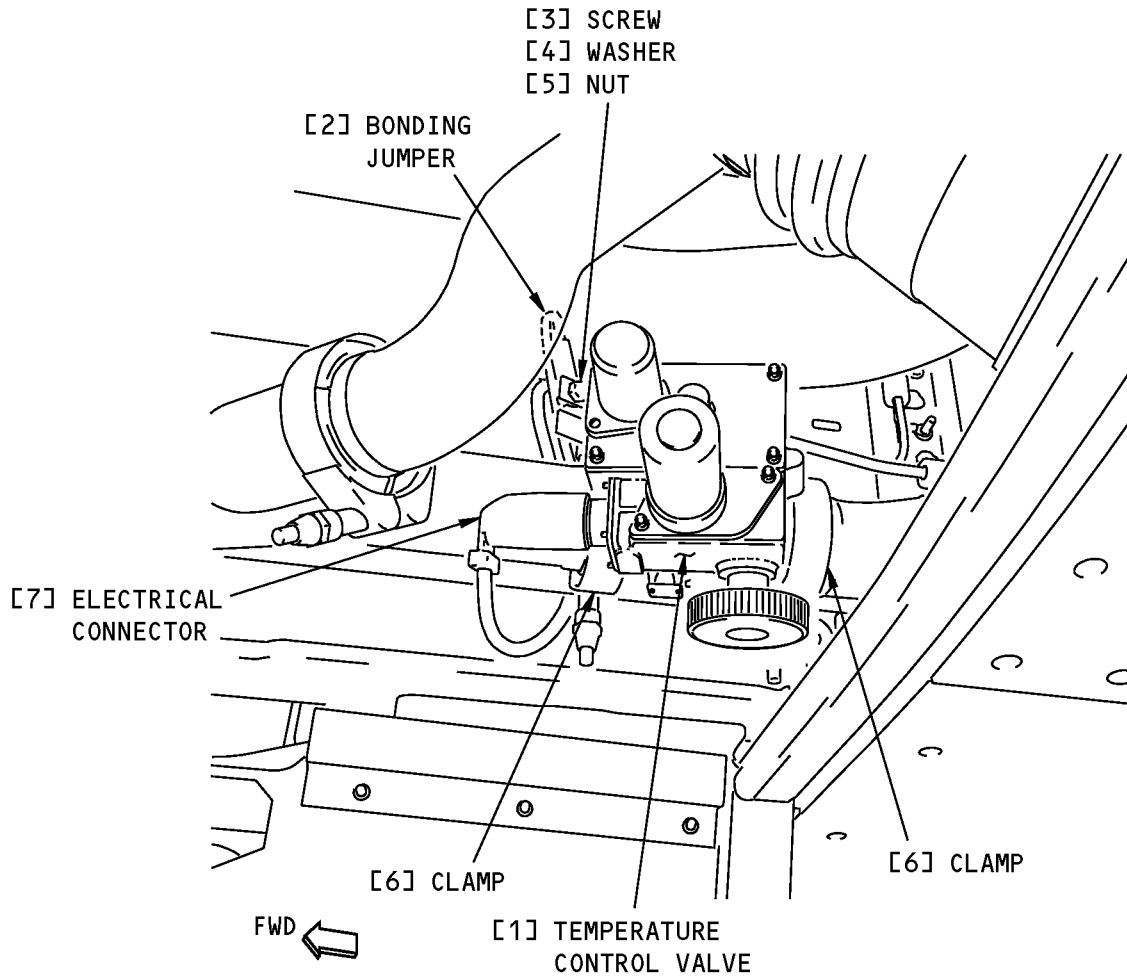
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**Temperature Control Valve Installation  
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**TEMPERATURE CONTROL VALVE**

**B**

**Temperature Control Valve Installation  
Figure 401 (Sheet 2 of 2)/21-51-10-990-801**

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### TASK 21-51-10-400-801

#### 3. Temperature Control 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)
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	Air Conditioning Access Door
192CR	Air Conditioning 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

Table with 4 columns: Row, Col, Number, Name. Rows include AIR CONDITIONING TEMP CONT VALVE CLOSE LEFT, AIR CONDITIONING PACK CONTROL LEFT DC, and 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

Table with 4 columns: Row, Col, Number, Name. Rows include AIR CONDITIONING TEMP CONT VALVE CLOSE RIGHT, AIR CONDITIONING PACK CONT RIGHT DC, and 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 the BITE test of the pack/zone temperature controllers.

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 21-51-10-860-007

- (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... (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) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-10-010-002

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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** —————

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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# AIRCRAFT MAINTENANCE MANUAL

## 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	Air Conditioning Access Door
192CR	Air Conditioning 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	Air Conditioning Access Door
192JL	Air Conditioning Panel - Aft

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SUBTASK 21-51-11-010-001

(5) For the right standby temperature control valve, open these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door
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 [1].
- (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 union [17], at four locations.

SUBTASK 21-51-11-020-006

(7) Remove and discard the packings [18], at four locations.

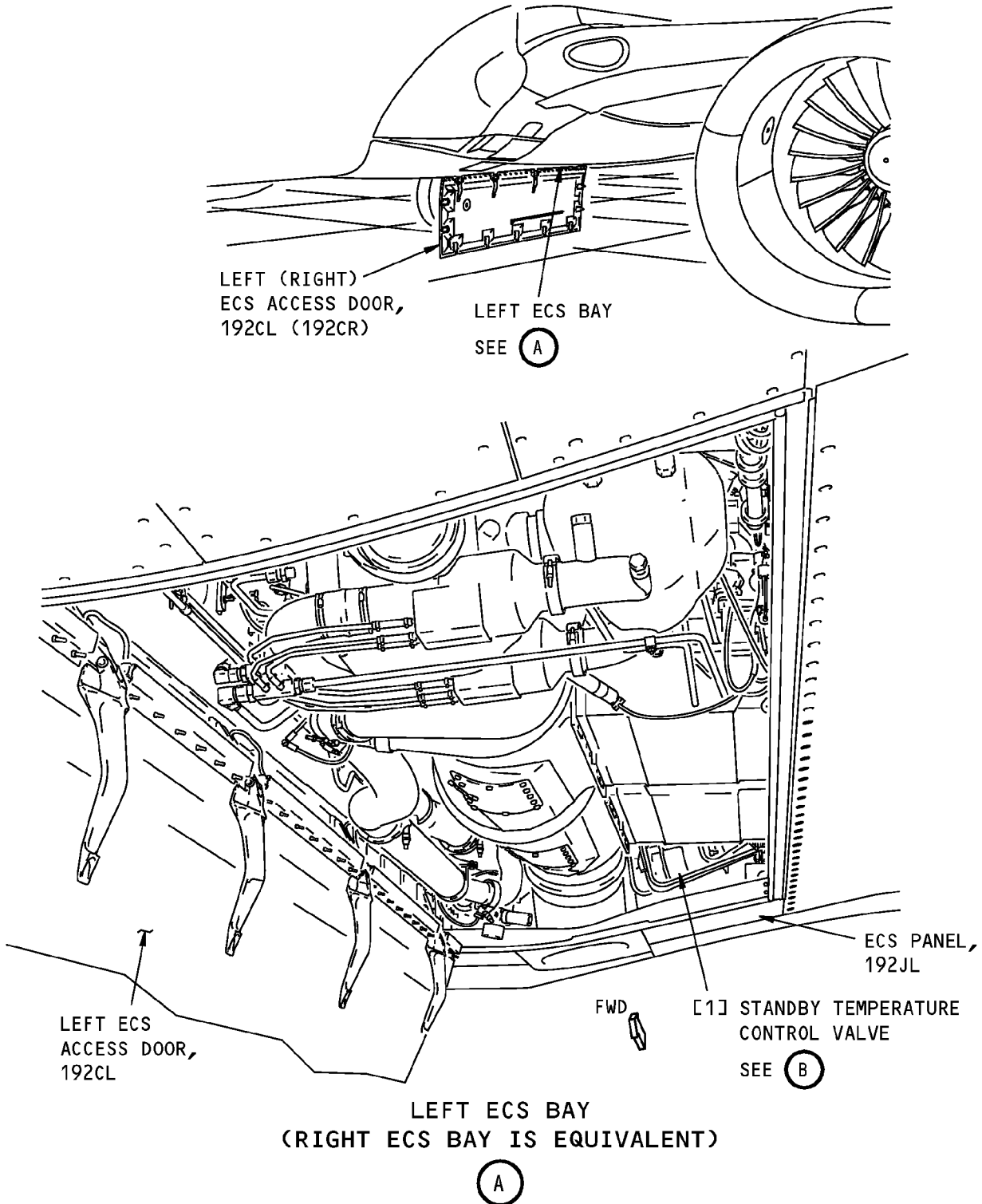
————— **END OF TASK** —————

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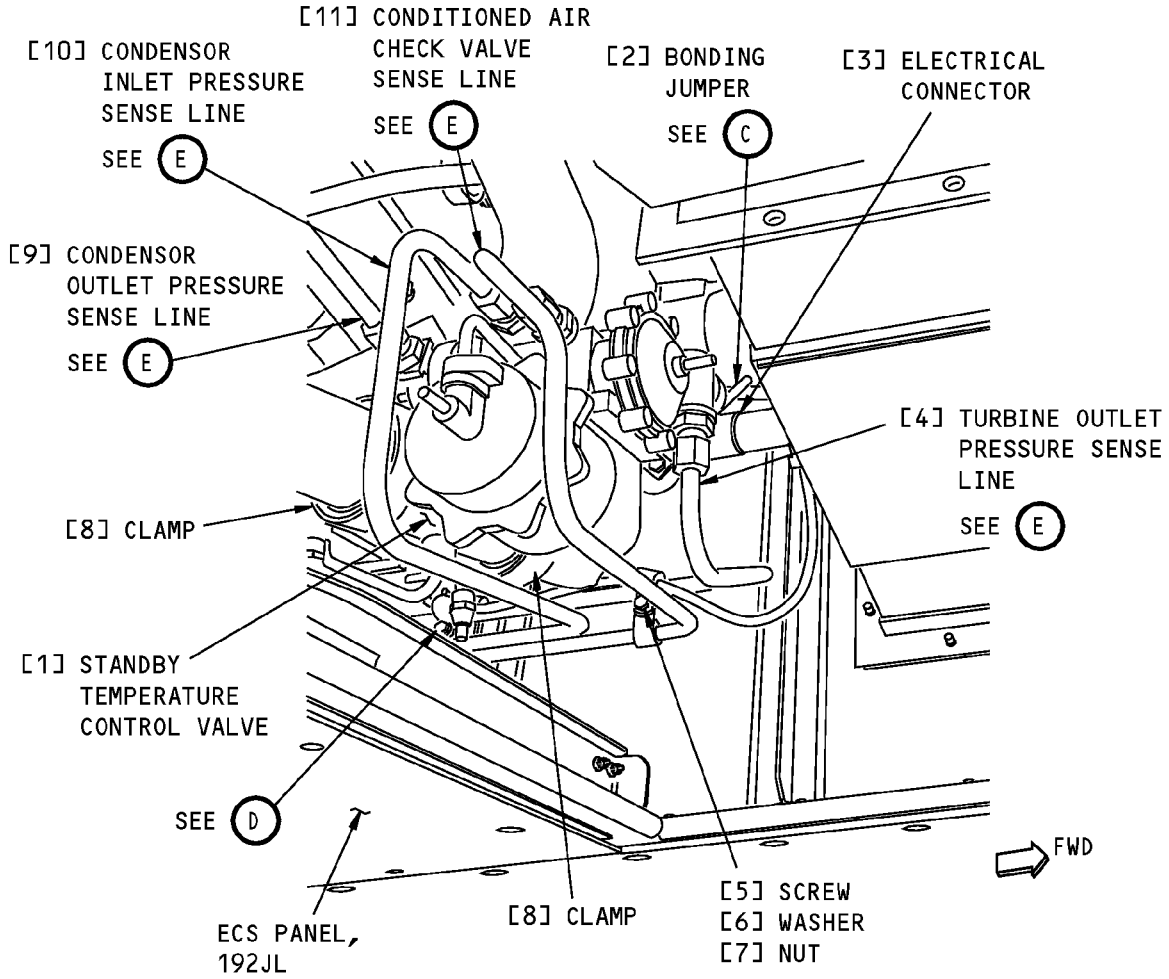


**Standby Temperature Control Valve Installation  
Figure 401 (Sheet 1 of 3)/21-51-11-990-801**

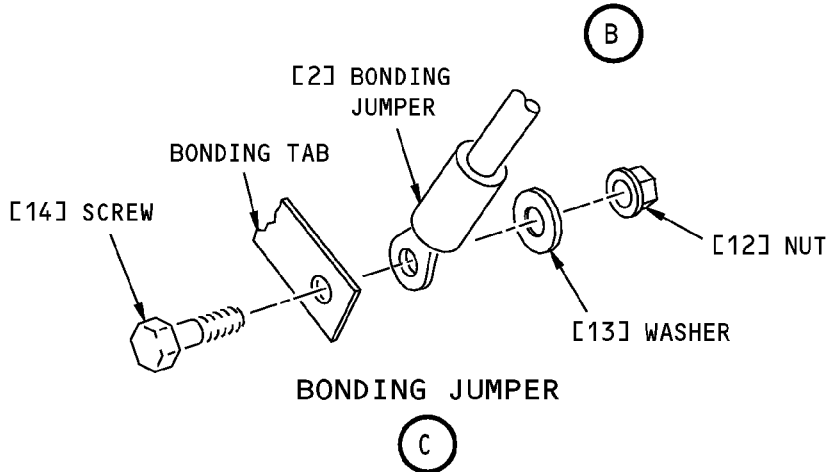
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**STANDBY TEMPERATURE CONTROL VALVE**

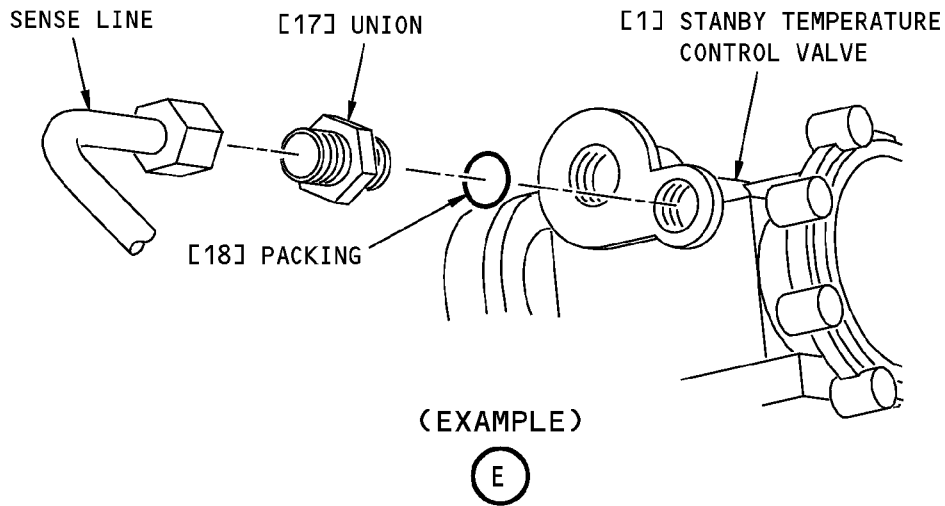
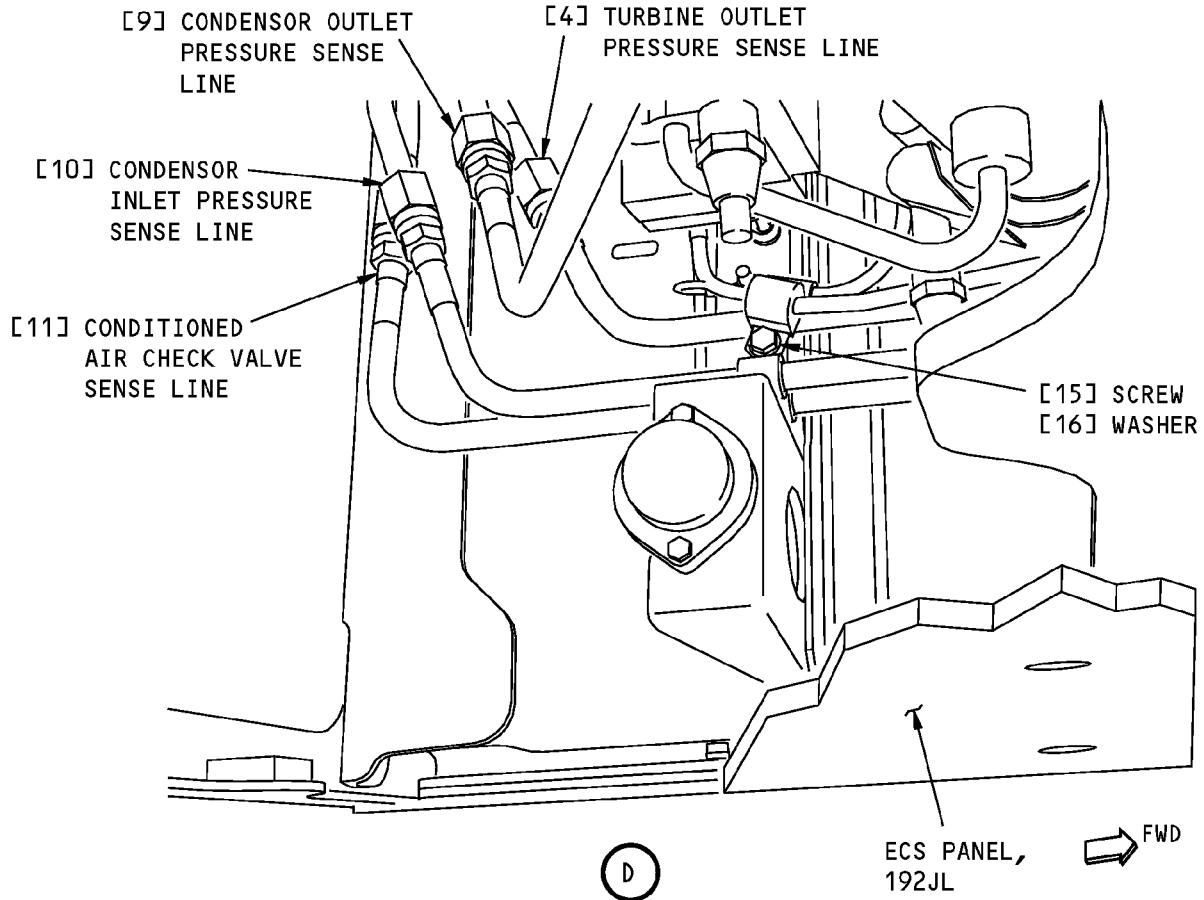


**Standby Temperature Control Valve Installation**  
Figure 401 (Sheet 2 of 3)/21-51-11-990-801

EFFECTIVITY  
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**Standby Temperature Control Valve Installation**  
**Figure 401 (Sheet 3 of 3)/21-51-11-990-801**

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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)
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-8N	MIL-PRF-907F

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-51-11-02-030	HAP 001-013, 015-026, 028-030
		21-51-11-03-045	HAP 001-013, 015-026, 028-030
		21-51-11-04-125	HAP 031-054
		21-51-11-05-125	HAP 031-054
18	Packing	21-51-53-04-213	HAP 031-046, 054
		21-51-53-05-197	HAP 031-046, 054
		21-51-53-18-260	HAP 001-013, 015-026, 028-030
		21-51-53-19-300	HAP 001-013, 015-026, 028-030

##### 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	Air Conditioning Access Door
192CR	Air Conditioning 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 union on the new valve. Do these steps for each of the four unions:
  - (a) Install a new packing [18] on the union [17].

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- (b) Apply a thin layer of Never-Seez NSBT-8N compound, D00006 to the threads of the union [17].
- (c) Install the union [17] on the valve [1].

SUBTASK 21-51-11-160-002

- (2) Carefully put the standby temperature control valve [1] into its position between the air ducts.

SUBTASK 21-51-11-020-007

- (3) Install the clamps [8] that hold the valve to the ducts.

**NOTE:** Do not fully tighten the clamps.

SUBTASK 21-51-11-420-002

- (4) 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.

**NOTE:** Make sure the bonding jumper [2], the screw [14], the washer [13], and the nut [12] are clean.

SUBTASK 21-51-11-420-003

- (5) Install the electrical connector [3] on the standby temperature control valve [1].

SUBTASK 21-51-11-020-008

- (6) 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

- (7) 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.

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:

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- (a) Set the PACK switch to the AUTO position and remove the DO-NOT-OPERATE tag.

NOTE: 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.

**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.

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- 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 the BITE test of the pack/zone temperature controllers.

**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.

### 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door
192JR	Air Conditioning Panel - Aft

SUBTASK 21-51-11-010-003

- (6) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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.

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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(d) Remove the condenser [55] from the frame assembly [54].

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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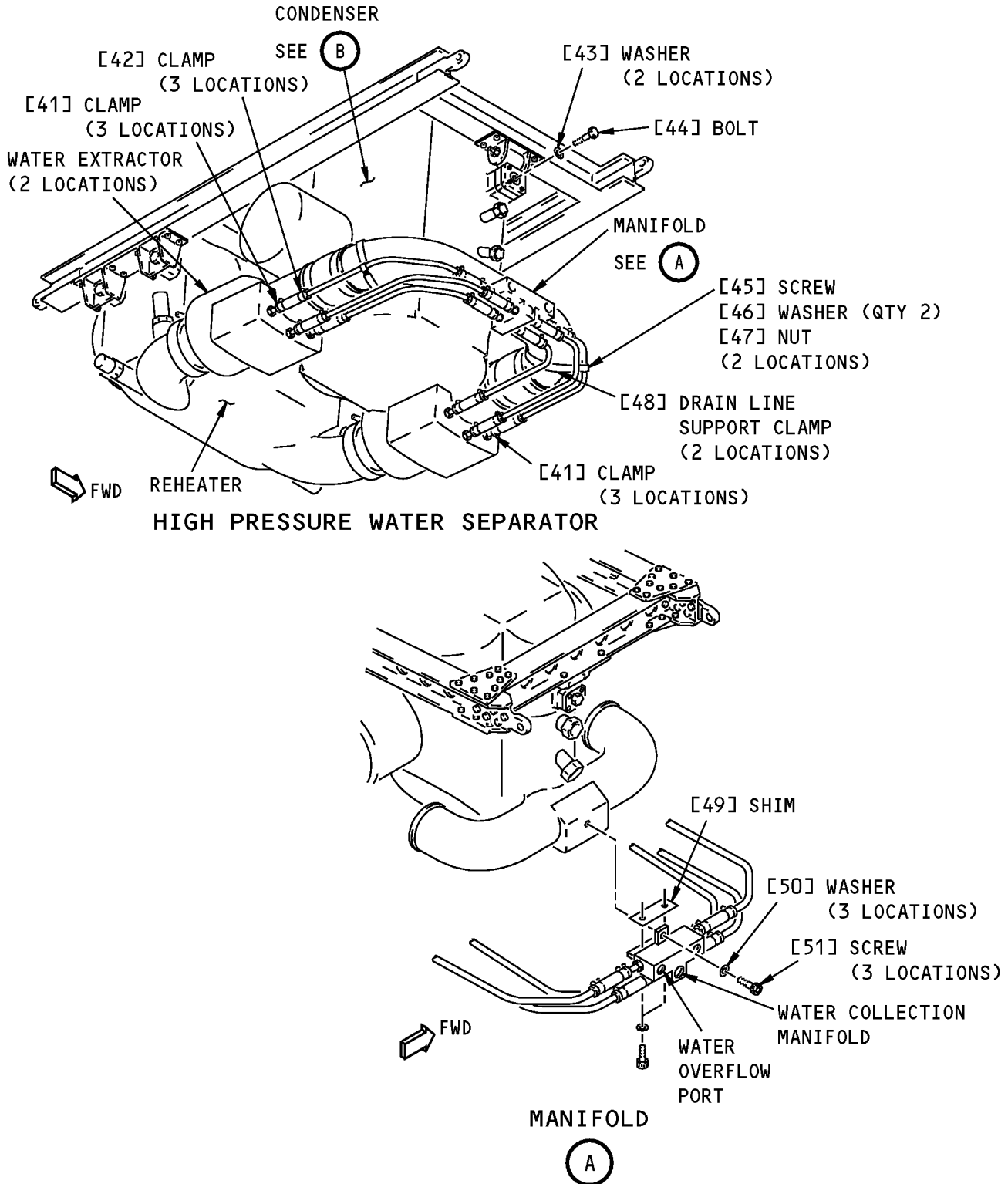
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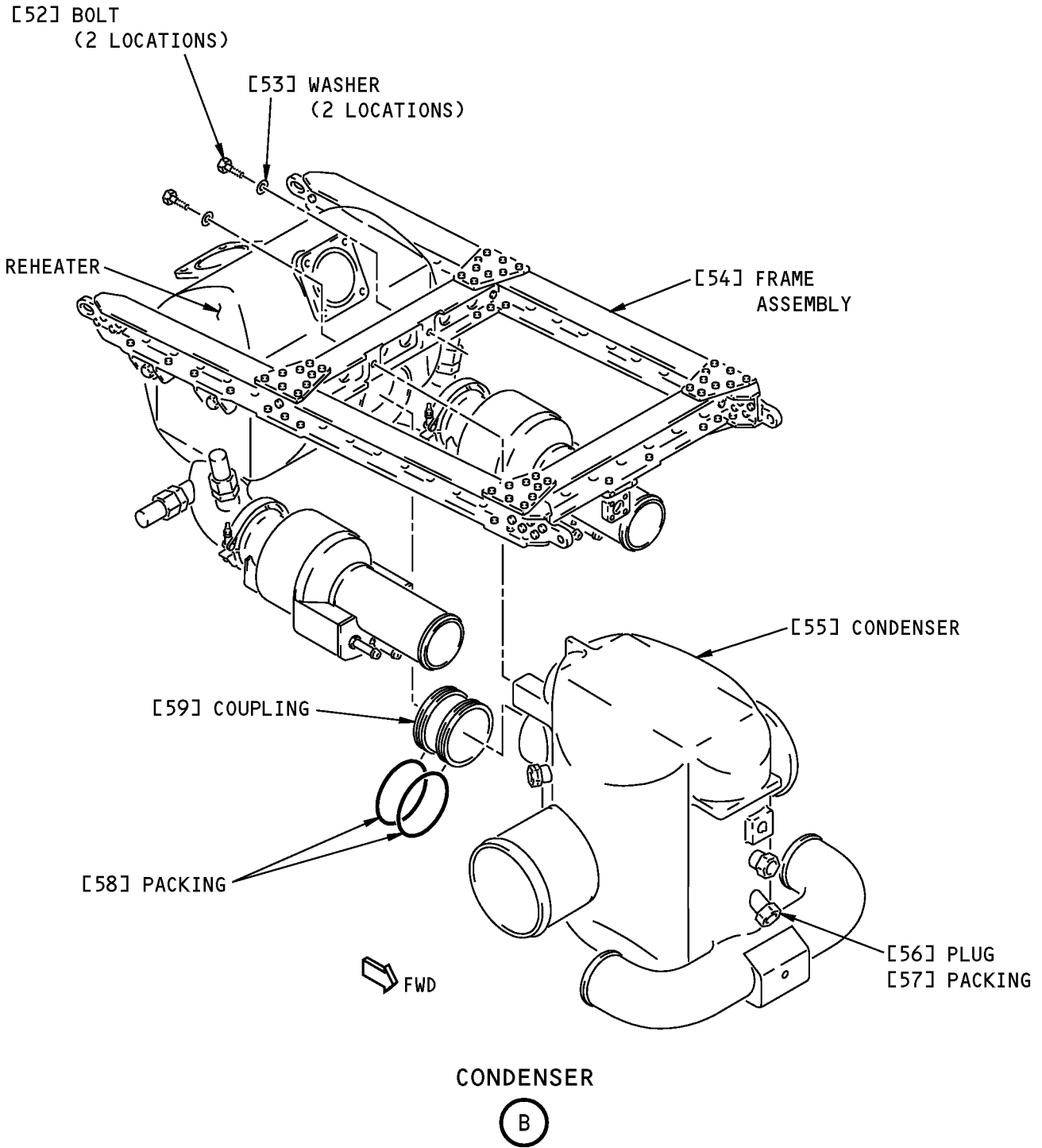
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**Condenser Installation**  
**Figure 401 (Sheet 1 of 2)/21-51-12-990-802**

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**Condenser Installation**  
**Figure 401 (Sheet 2 of 2)/21-51-12-990-802**

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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. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
55	Condenser	21-51-12-01-140	HAP 001-013, 015-026, 028-046, 054
57	Packing	21-51-12-02-075	HAP 047-053
		21-51-12-01-060	HAP 001-013, 015-026, 028-046, 054
58	Packing	21-51-17-01-150	HAP 047-053
		21-51-13-01-040	HAP 001-013, 015-026, 028-046, 054
		21-51-13-04-030	HAP 047-053

#### C. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

#### D. 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 grease to the new packing [57].

**NOTE:** Use Dow Corning DC44 medium vacuum grease or an equivalent.

- (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 grease to the new packings [58].

**NOTE:** Use Dow Corning DC44 medium vacuum grease or an equivalent.

- (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].

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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- 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].
- (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** —————

EFFECTIVITY  
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# AIRCRAFT MAINTENANCE MANUAL

## 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.

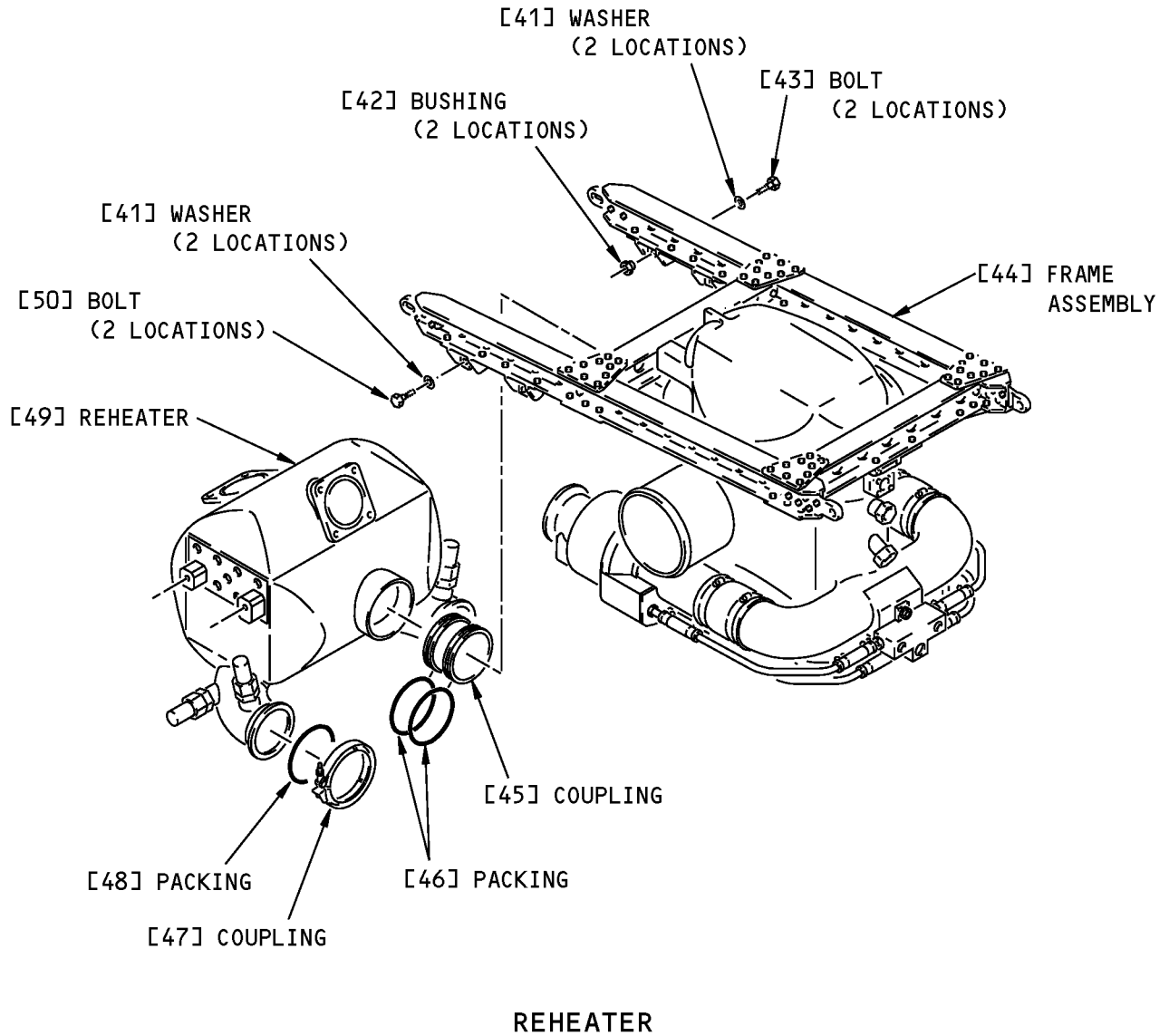
————— **END OF TASK** —————

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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**Reheater Installation  
Figure 401/21-51-13-990-802**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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# AIRCRAFT MAINTENANCE MANUAL

## 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)
36-00-00-860-804	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	21-51-13-01-040	HAP 001-013, 015-026, 028-046, 054
		21-51-13-04-030	HAP 047-053
48	Packing	21-51-14-01-100	HAP 047-053
		21-51-14-02-110	HAP 001-013, 015-026, 028-046, 054
49	Reheater	21-51-13-01-045	HAP 001-013, 015-026, 028-046, 054
		21-51-13-04-035	HAP 047-053

#### 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].

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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SUBTASK 21-51-13-020-012

(4) To install the coupling for the water extractors, do these steps:

(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 21-51-13-860-004

(2) Do this task: Supply Pressure to the Pneumatic System with One or Both Engines, TASK 36-00-00-860-804.

SUBTASK 21-51-13-860-005

(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 21-51-13-790-001

(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.

### 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.

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**AIRCRAFT MAINTENANCE MANUAL**

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** —————

EFFECTIVITY

HAP 001-013, 015-026, 028-054

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## AIRCRAFT MAINTENANCE MANUAL

### 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	Air Conditioning Access Door
192CR	Air Conditioning 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	Air Conditioning Access Door

SUBTASK 21-51-14-010-002

- (4) To get access to the water extractor [1]

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## AIRCRAFT MAINTENANCE MANUAL

for the right cooling pack, open these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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** —————

EFFECTIVITY

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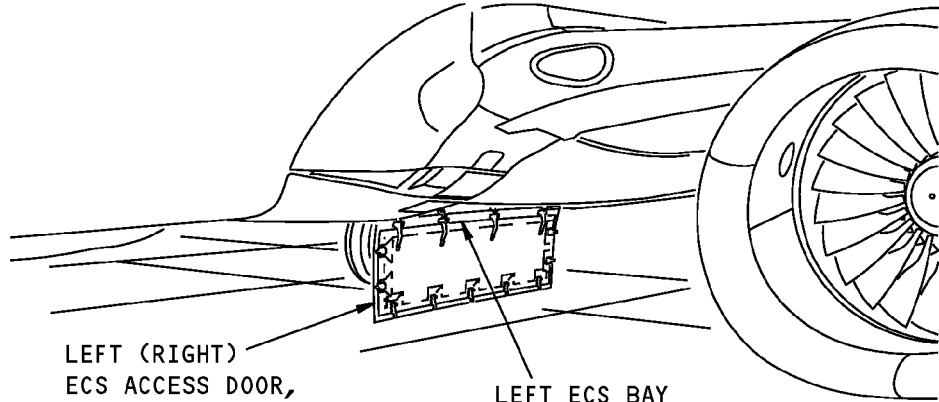
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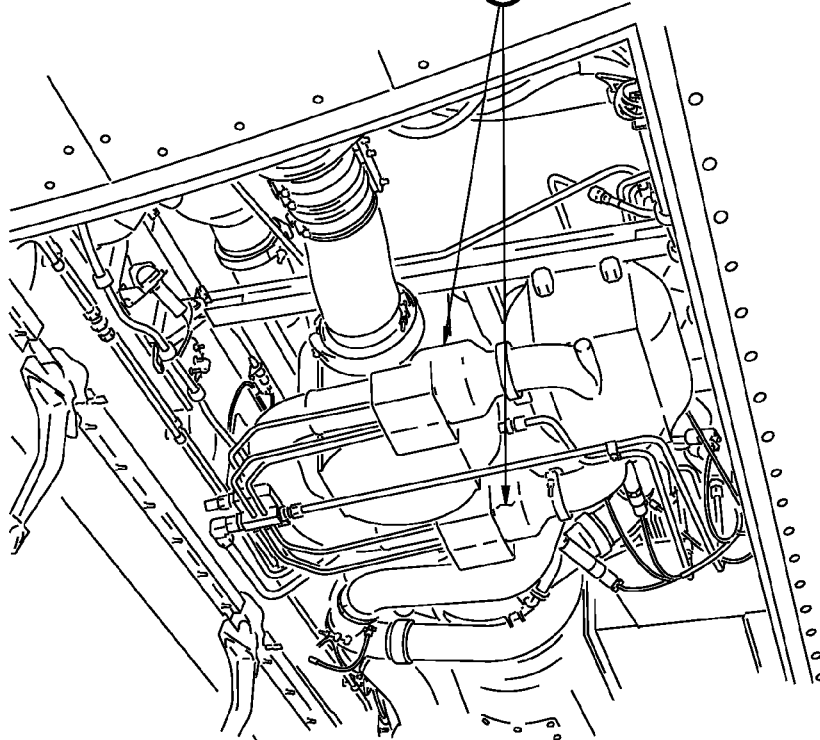
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AIRCRAFT MAINTENANCE MANUAL**



LEFT (RIGHT)  
ECS ACCESS DOOR,  
192CL (192CR)

LEFT ECS BAY  
SEE (A)

WATER EXTRACTOR  
SEE (B)



FWD

LEFT ECS BAY  
( RIGHT ECS BAY IS OPPOSITE )

(A)

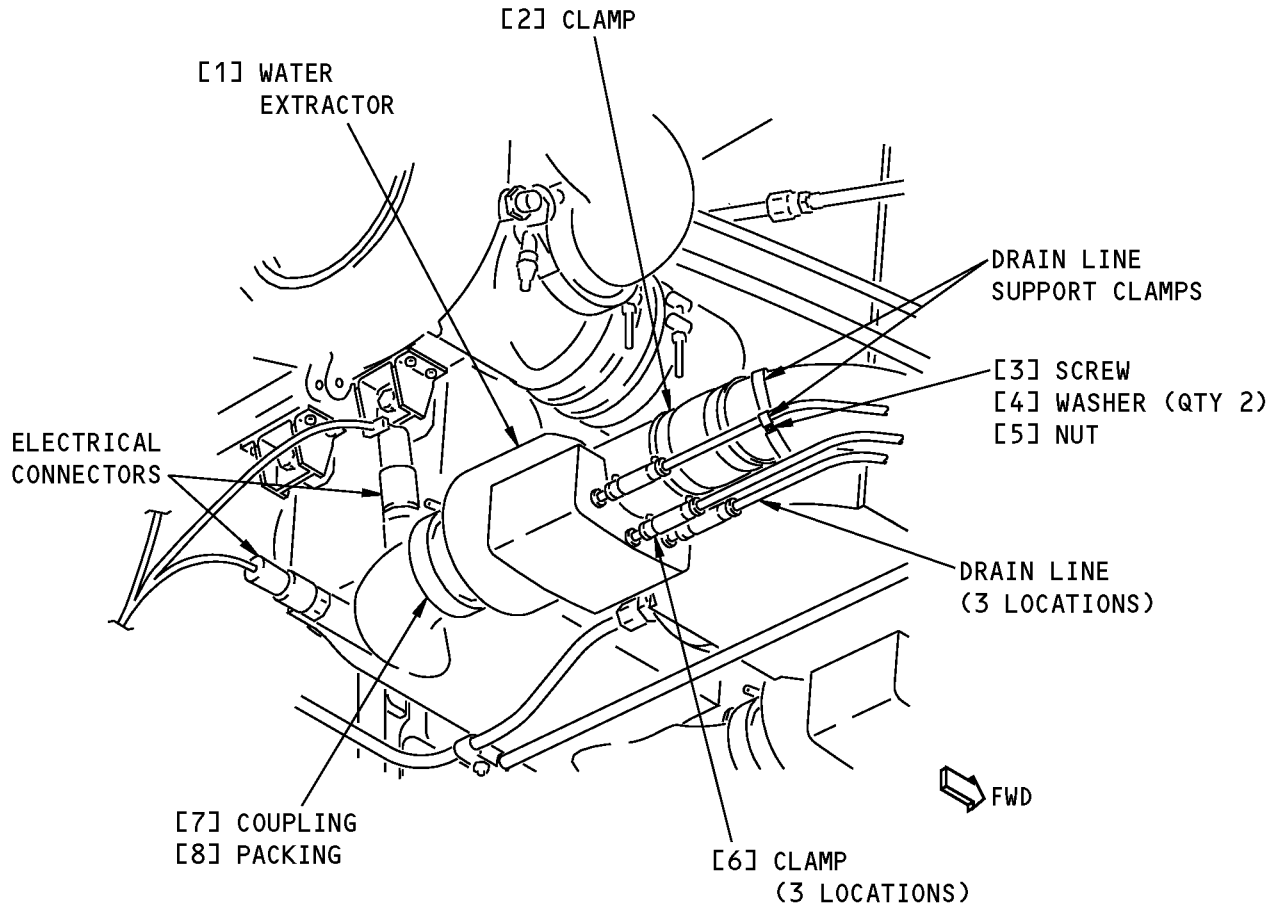
**Water Extractor Installation  
Figure 401 (Sheet 1 of 2)/21-51-14-990-801**

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**WATER EXTRACTOR  
(EXAMPLE)**

**B**

**Water Extractor Installation  
Figure 401 (Sheet 2 of 2)/21-51-14-990-801**

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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)
36-00-00-860-804	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	Air Conditioning Access Door
192CR	Air Conditioning 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 21-51-14-860-004

- (2) Do this task: Supply Pressure to the Pneumatic System with One or Both Engines, TASK 36-00-00-860-804.

SUBTASK 21-51-14-860-005

- (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 21-51-14-790-001

- (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.

### 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.

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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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

————— **END OF TASK** —————

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# AIRCRAFT MAINTENANCE MANUAL

## 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	Air Conditioning Access Door
192CR	Air Conditioning 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	Air Conditioning Access Door

SUBTASK 21-51-15-010-002

- (4) To get access to the water duct [1]

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for the right cooling pack, open these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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 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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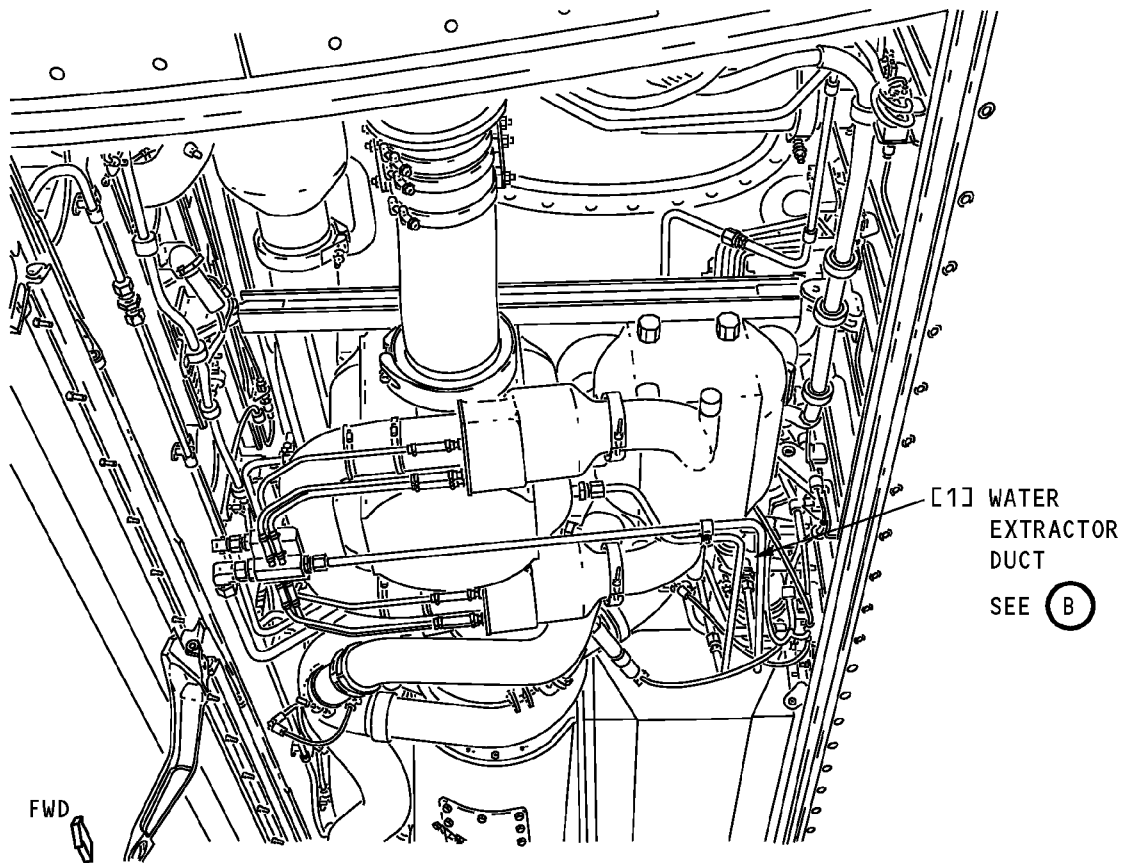
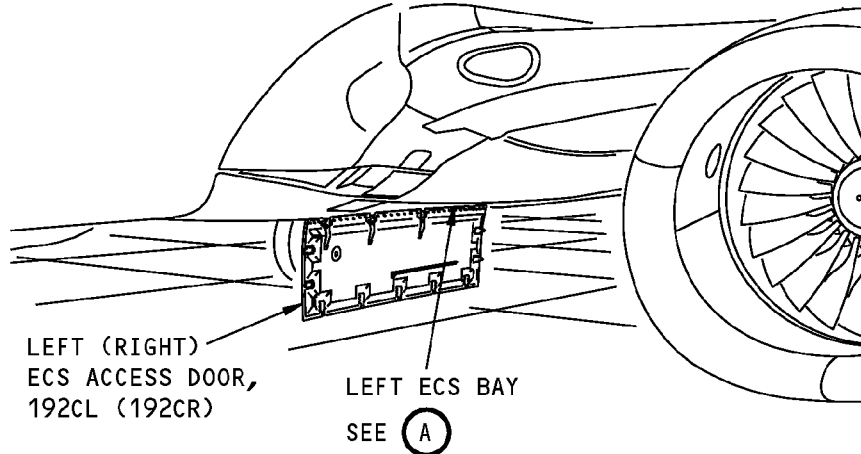
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LEFT ECS BAY  
(RIGHT ECS BAY IS EQUIVALENT)

(A)

**Water Extractor Duct Installation  
Figure 401 (Sheet 1 of 2)/21-51-15-990-801**

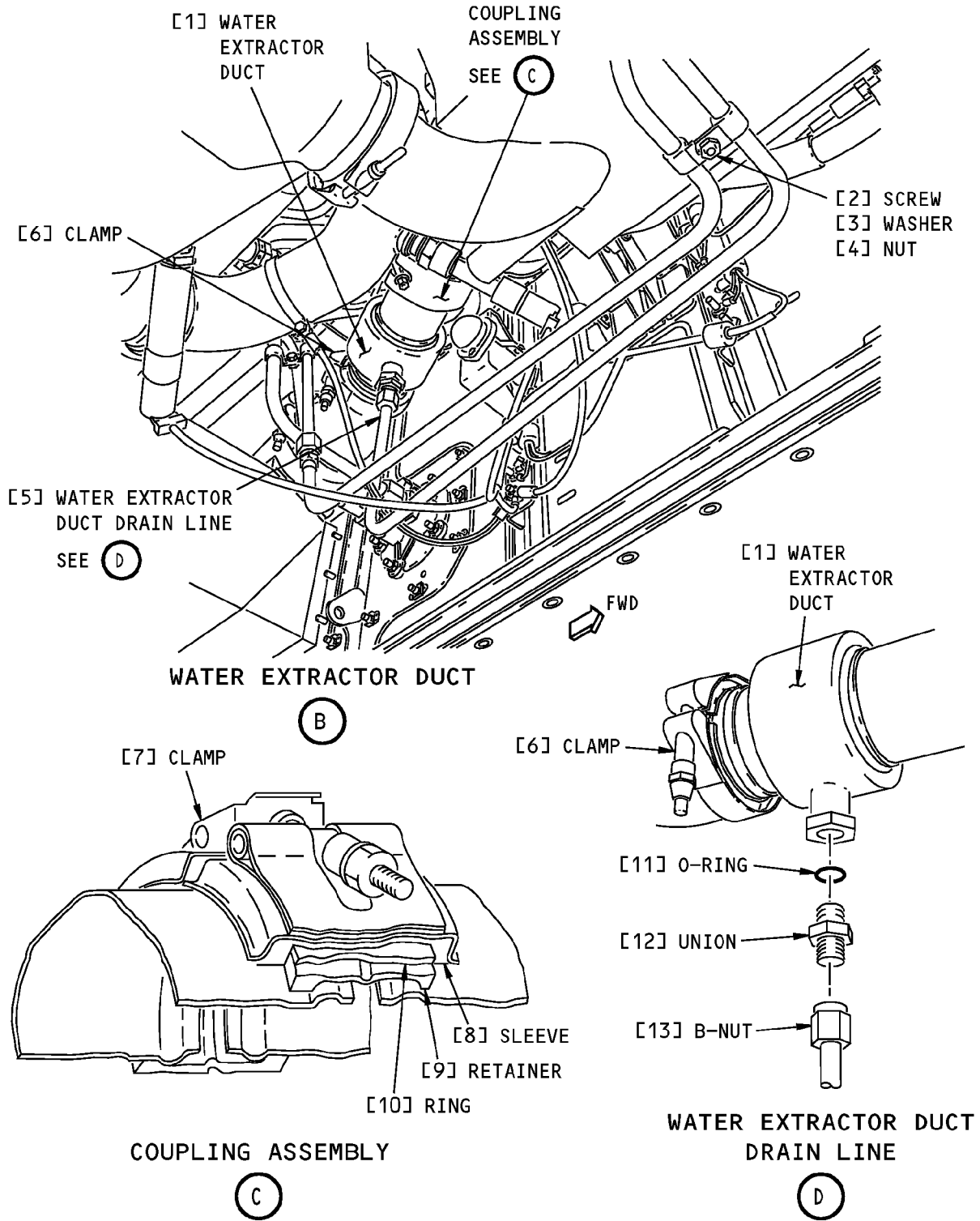
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**Water Extractor Duct Installation**  
**Figure 401 (Sheet 2 of 2)/21-51-15-990-801**

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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-8N	MIL-PRF-907F

### 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	Air Conditioning Access Door
192CR	Air Conditioning 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).

EFFECTIVITY HAP 001-013, 015-026, 028-054
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## AIRCRAFT MAINTENANCE MANUAL

SUBTASK 21-51-15-020-006

- (3) To connect the drain line [5] to the water extractor duct, do these steps:
- Install a new o-ring [11] on the union [12].
  - Apply a thin coating of Never-Seez NSBT-8N compound, D00006 to the threads of the union.
  - Install the union [12] on the water extractor duct.
  - Tighten the b-nut [13] to connect the drain line to the duct.
  - 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):
- Set the applicable L or R PACK switch to the AUTO position.
  - Set the BLEED 1 and 2 switches to the ON position.
  - 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:
- 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.

- Loosen the clamps.
- Make sure the ducts are aligned at the joints.
- Tighten the clamps.
- Put the L PACK and R PACK switches in the AUTO position.
- 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):
- Set the L and R PACK switches to the OFF position.

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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## AIRCRAFT MAINTENANCE MANUAL

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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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** —————

EFFECTIVITY

HAP 001-013, 015-026, 028-054

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## AIRCRAFT MAINTENANCE MANUAL

### 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	Air Conditioning Access Door
192CR	Air Conditioning 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	Air Conditioning 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

EFFECTIVITY HAP 001-013, 015-026, 028-054
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Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
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** —————

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

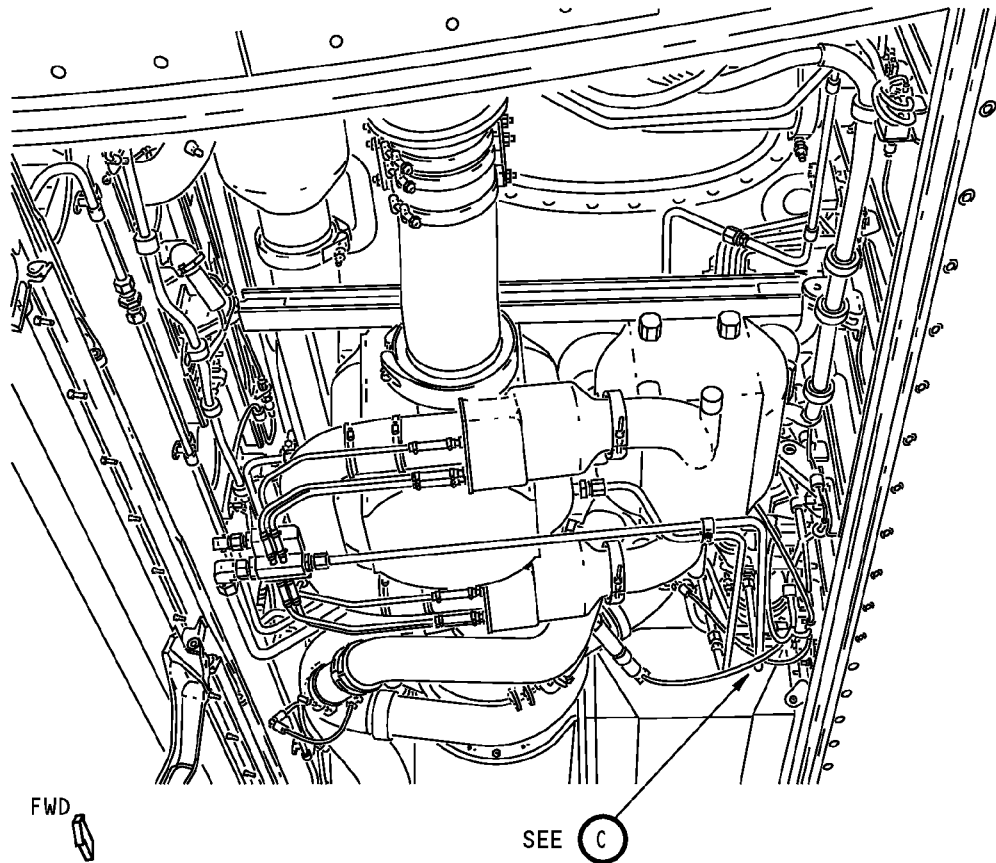
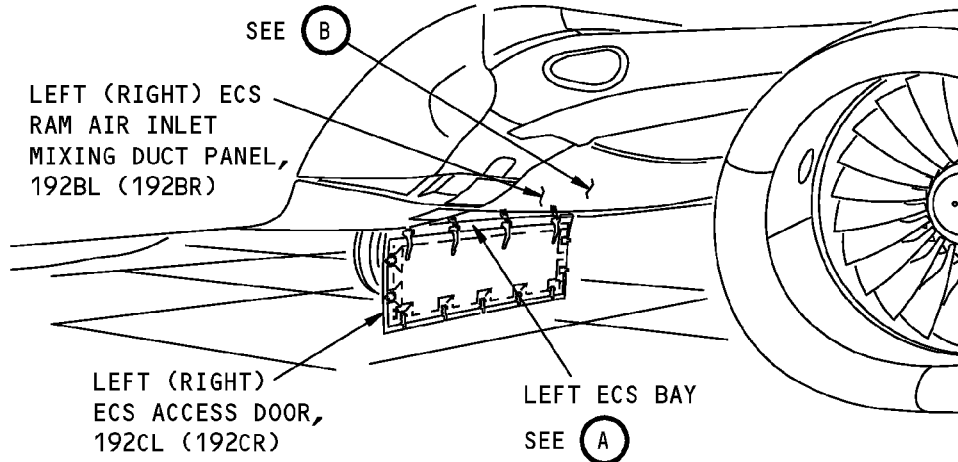
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LEFT ECS BAY  
(RIGHT ECS BAY IS EQUIVALENT)

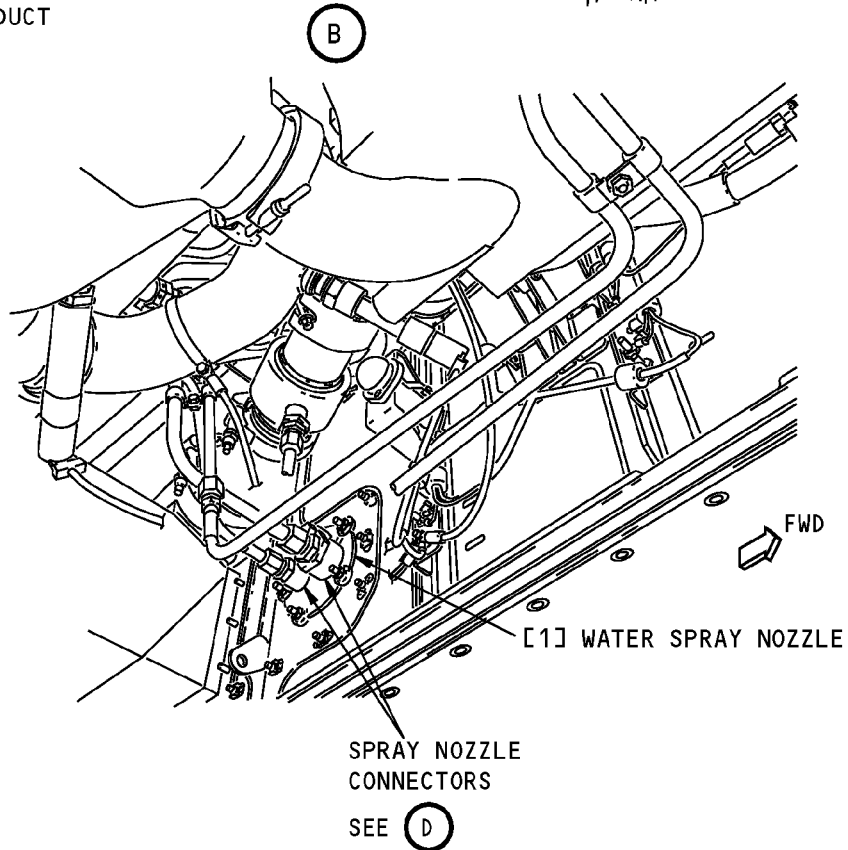
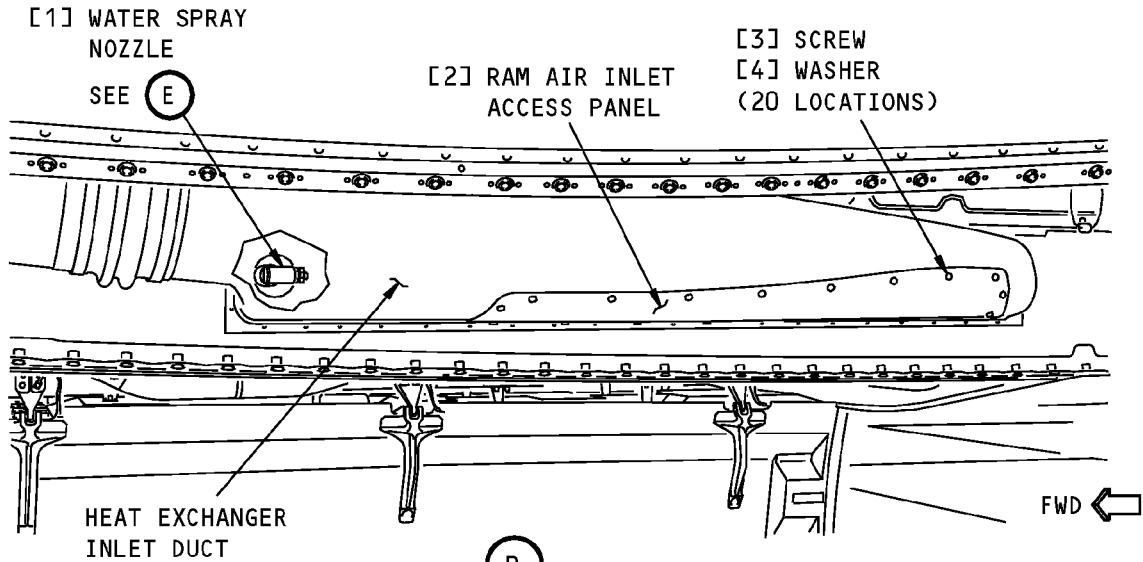
(A)

**Water Spray Nozzle Installation**  
**Figure 401 (Sheet 1 of 3)/21-51-16-990-801**

EFFECTIVITY  
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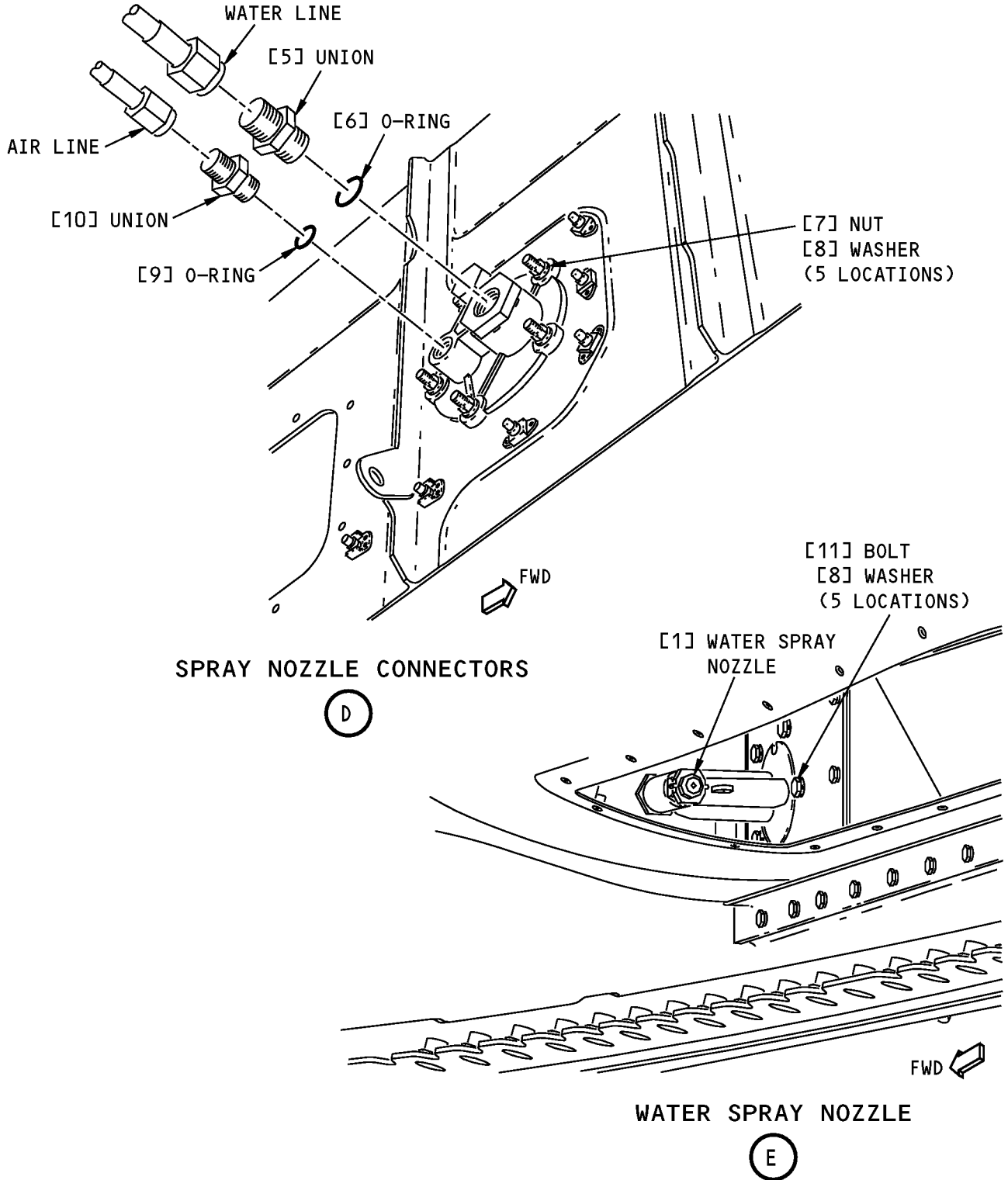
**Water Spray Nozzle Installation  
Figure 401 (Sheet 2 of 3)/21-51-16-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**SPRAY NOZZLE CONNECTORS**

(D)

**WATER SPRAY NOZZLE**

(E)

**Water Spray Nozzle Installation**  
**Figure 401 (Sheet 3 of 3)/21-51-16-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

#### 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-8N	MIL-PRF-907F

#### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Nozzle	21-51-53-04-225	HAP 031-046, 054
		21-51-53-04A-220	HAP 047-053
		21-51-53-05-210	HAP 031-054
		21-51-53-18-310	HAP 001-013, 015-026, 028-030
		21-51-53-19-350	HAP 001-013, 015-026, 028-030
6	O-ring	21-51-53-04-215	HAP 031-046, 054
		21-51-53-04A-210	HAP 047-053
		21-51-53-05-200	HAP 031-054
		21-51-53-18-270	HAP 001-013, 015-026, 028-030
		21-51-53-19-305	HAP 001-013, 015-026, 028-030
9	O-ring	21-51-53-04-213	HAP 031-046, 054
		21-51-53-05-197	HAP 031-046, 054
		21-51-53-18-260	HAP 001-013, 015-026, 028-030
		21-51-53-19-300	HAP 001-013, 015-026, 028-030

#### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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## AIRCRAFT MAINTENANCE MANUAL

### 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-8N 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.

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-8N 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).

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### 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

————— END OF TASK —————

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# AIRCRAFT MAINTENANCE MANUAL

## 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	Air Conditioning Access Door
192CR	Air Conditioning 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.
  - (c) Set the BLEED APU switch to the OFF position and attach a DO-NOT-OPERATE identifier.

EFFECTIVITY HAP 001-013, 015-026, 028-054
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SUBTASK 21-51-17-010-001

- (4) To get access to the left cooling pack open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-17-010-002

- (5) To get access to the right cooling pack open these access panels in the specified sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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].

**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].

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SUBTASK 21-51-17-620-001

(2) Put covers on the duct openings to prevent the entry of unwanted materials.

————— **END OF TASK** —————

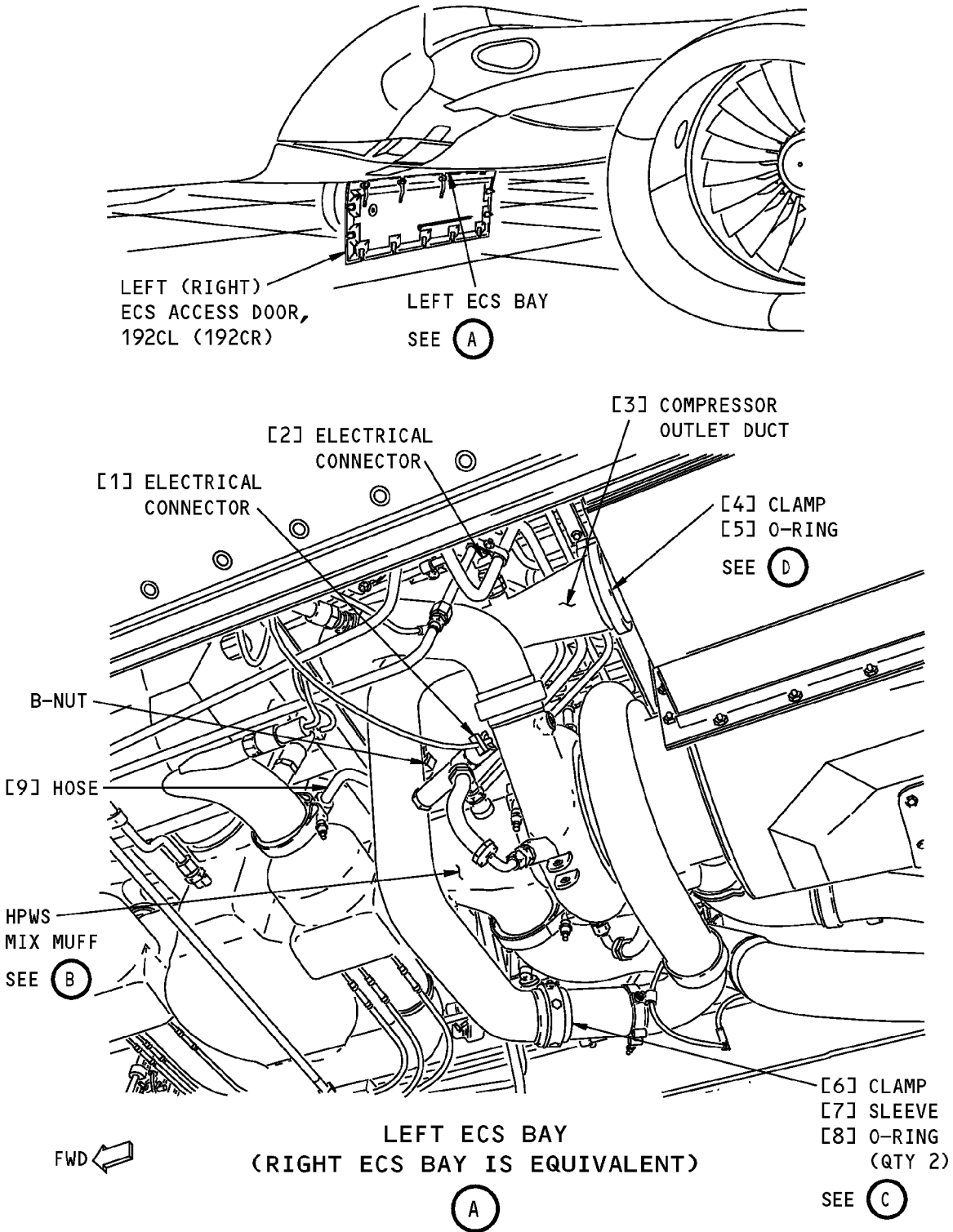
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**High Pressure Water Separator (HPWS) Mix Muff Installation  
Figure 401 (Sheet 1 of 3)/21-51-17-990-801**

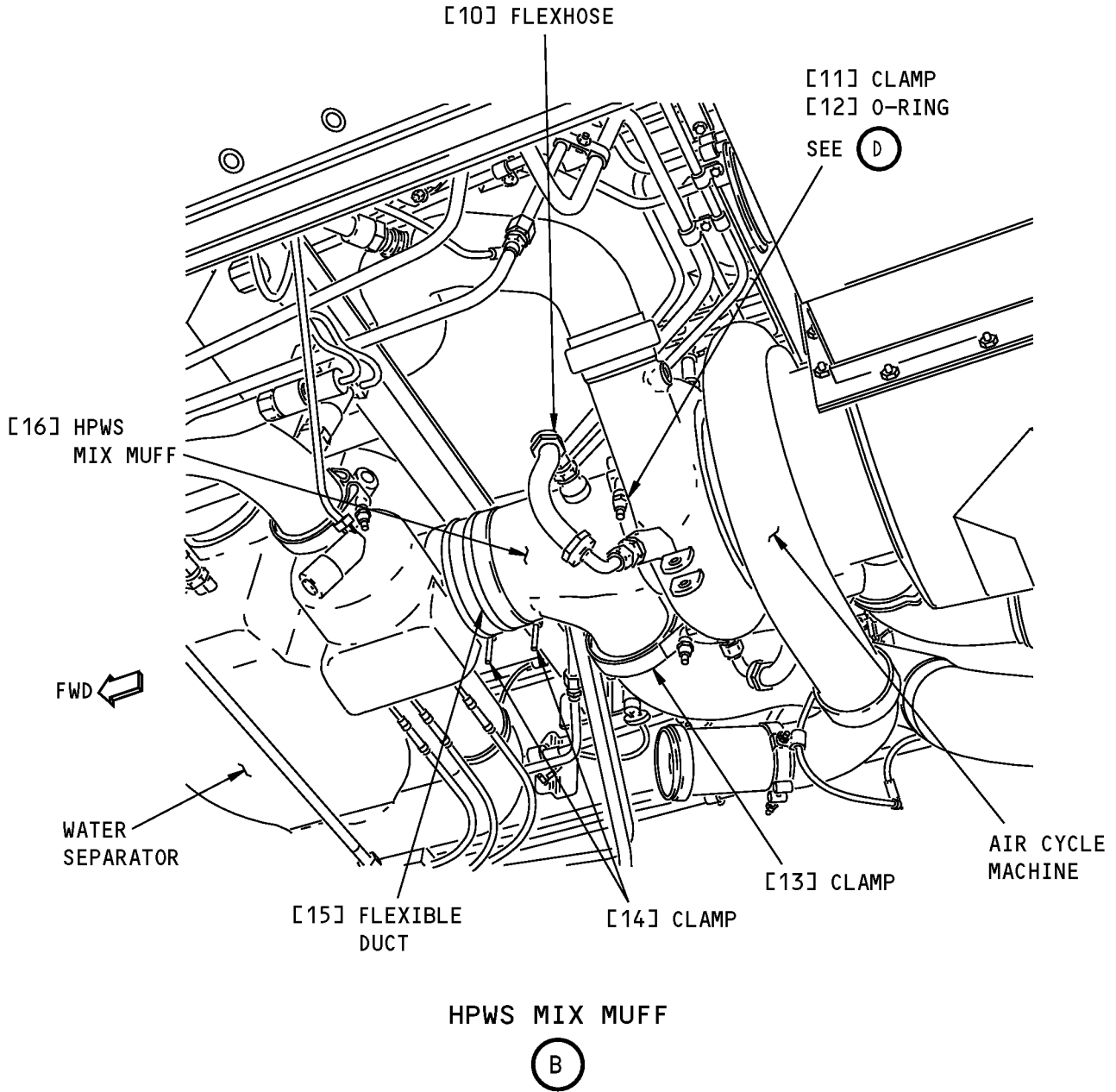
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**High Pressure Water Separator (HPWS) Mix Muff Installation  
Figure 401 (Sheet 2 of 3)/21-51-17-990-801**

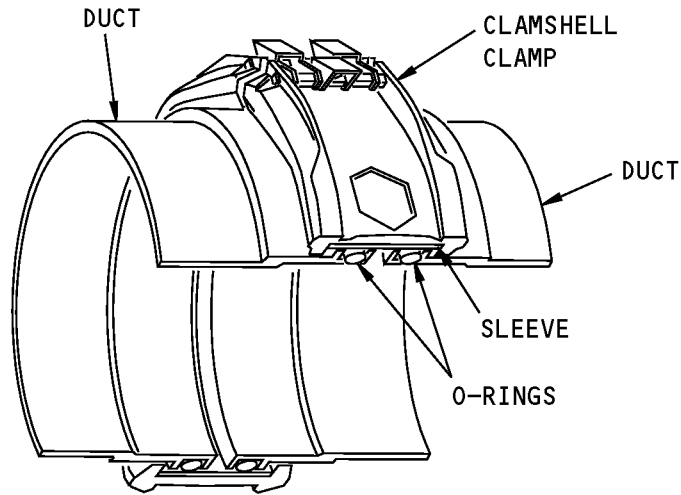
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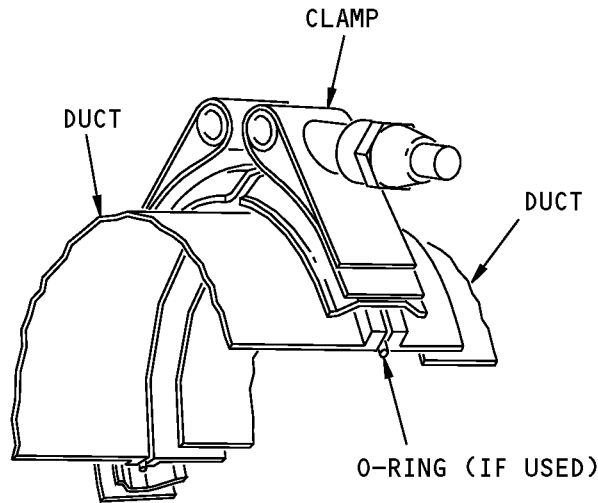
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**CLAMSHELL CLAMP  
INSTALLATION**

**C**



**V-CLAMP INSTALLATION**

**D**

**High Pressure Water Separator (HPWS) Mix Muff Installation  
Figure 401 (Sheet 3 of 3)/21-51-17-990-801**

EFFECTIVITY  
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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-8N	MIL-PRF-907F

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	O-ring	21-51-03-05A-040	HAP 001-013, 015-026, 028-046, 054
		21-51-03-05A-200	HAP 001-013, 015-026, 028-046, 054
8	O-ring	21-51-03-05A-055	HAP 001-013, 015-026, 028-046, 054
		21-51-03-05A-210	HAP 001-013, 015-026, 028-046, 054

##### 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	Air Conditioning Access Door
192CR	Air Conditioning 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) Install a new o-ring [12].
- (b) 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.

- (c) Install the clamp [11] that holds the mix muff to the air cycle machine.

**NOTE:** Do not fully tighten the clamp.

EFFECTIVITY HAP 001-013, 015-026, 028-054
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- (d) Install the clamp [13] that holds the mix muff to the temperature control duct.  
NOTE: Do not fully tighten the clamp.
- (e) Move the flexible duct [15] on the mix muff.
- (f) Install the clamps [14] on the flexible duct. Tighten the clamp 13 to 17 pound-inches (1.5 to 1.9 newton-meters).
- (g) Tighten the clamp [11] 60 to 65 pound-inches (6.8 to 7.3 newton-meters).
- (h) Tighten the clamp [13] 60 to 65 pound-inches (6.8 to 7.3 newton-meters).
- (i) Apply a light coating of Never-Seez NSBT-8N compound, D00006 to the threads of the flex hose [10].
- (j) 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-8N 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:
  - 1) Put the L PACK and R PACK switches on the P5-10 air conditioning panel in the OFF position.

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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# 21-51-17

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**AIRCRAFT MAINTENANCE MANUAL**

- 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

**END OF TASK**

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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## AIRCRAFT MAINTENANCE MANUAL

### RAM AIR INLET CONTROLLER - REMOVAL/INSTALLATION

#### 1. General

A. This procedure has these tasks:

- (1) A removal of the ram air inlet controller
- (2) An installation of the ram air inlet controller

#### **TASK 21-51-20-000-801**

#### 2. Ram Air Inlet Controller Removal

(Figure 401)

A. Location Zones

<u>Zone</u>	<u>Area</u>
192	Lower Wing-To-Body Fairing - Under Wing Box
212	Flight Compartment - Right

B. Access Panels

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

C. Prepare for the Removal

SUBTASK 21-51-20-840-001

(1) Do these steps to remove the ram air inlet controller [1] for the left cooling pack:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT

(b) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-20-840-002

(2) Do these steps to remove the ram air inlet controller [1] for the right cooling pack:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

(b) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

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(c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

### D. Ram Air Inlet Controller Removal

SUBTASK 21-51-20-020-001

(1) Disconnect the electrical connector [4] from the ram air inlet controller [1].

SUBTASK 21-51-20-020-002

(2) Remove the screws [2] and the washers [3].

SUBTASK 21-51-20-020-003

(3) Remove the ram air inlet controller [1].

————— **END OF TASK** —————

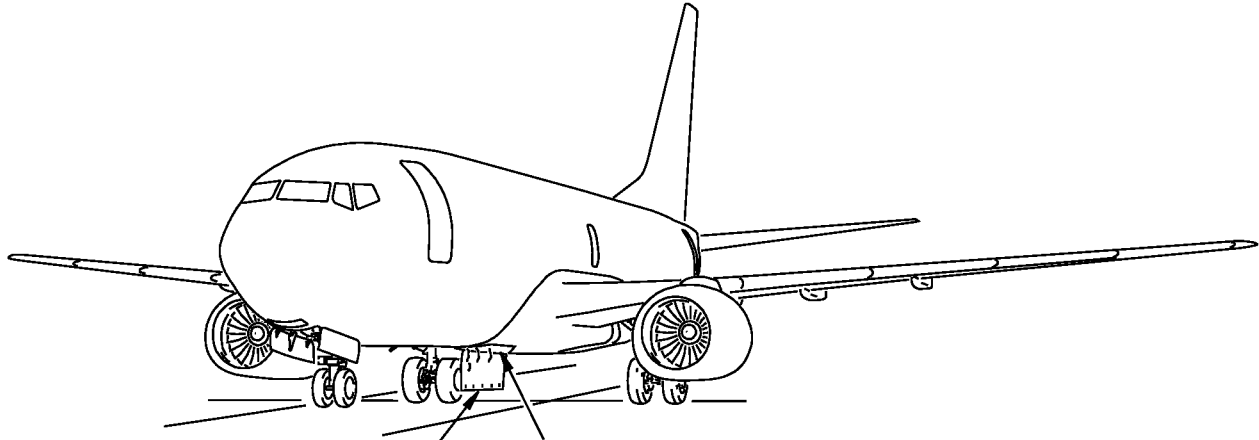
EFFECTIVITY  
HAP 101-999

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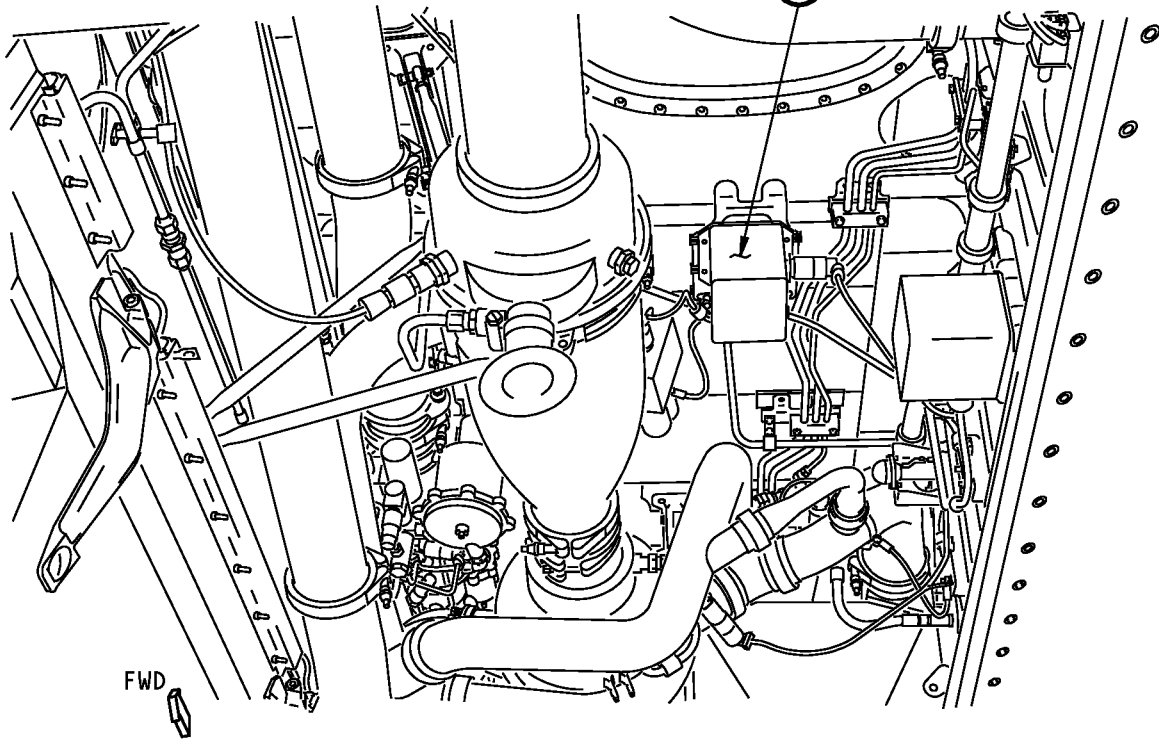
LEFT ECS BAY

LEFT (RIGHT)  
ECS ACCESS DOOR,  
192CL (192CR)

SEE (A)

RAM AIR INLET  
CONTROLLER

SEE (B)



LEFT ECS BAY  
(RIGHT ECS BAY IS OPPOSITE)

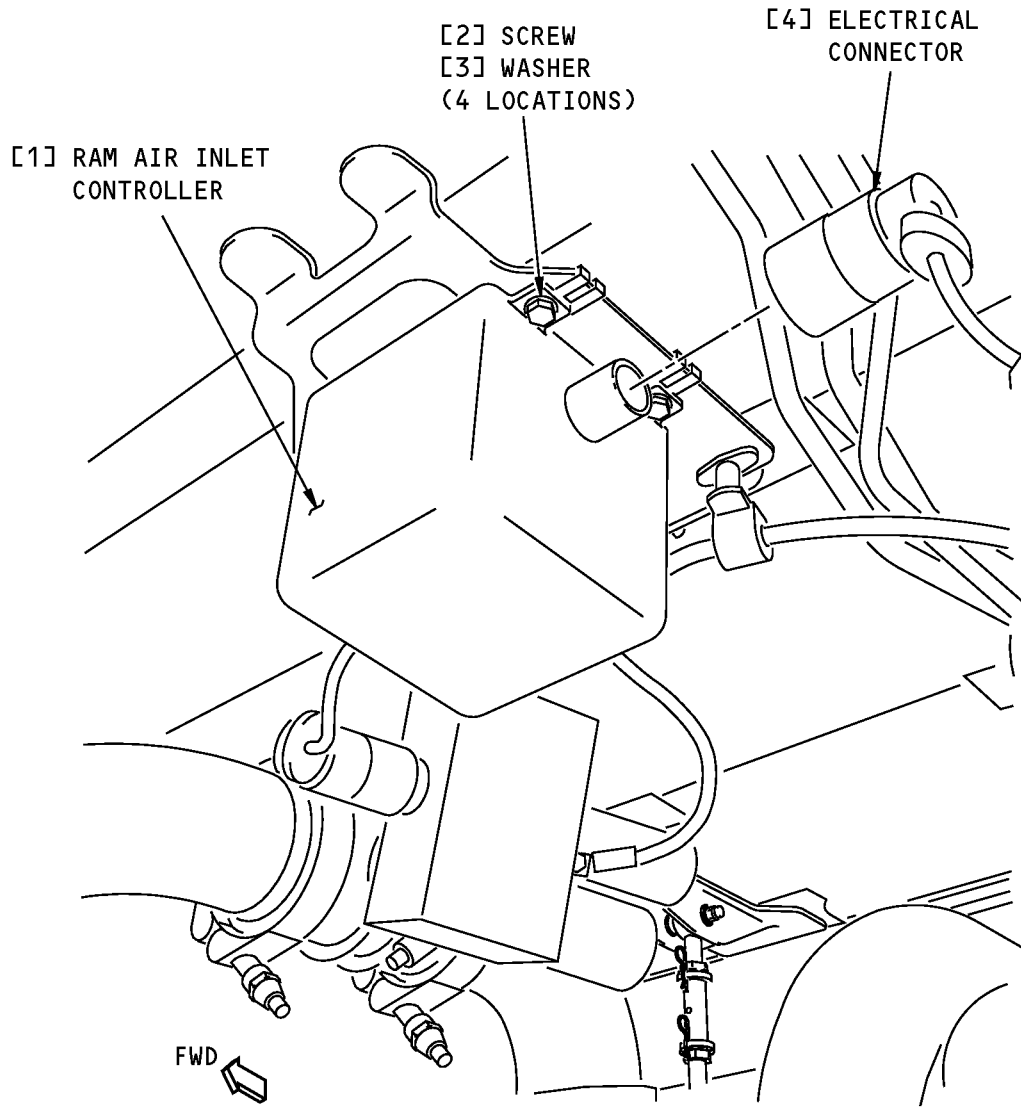
(A)

**Ram Air Inlet Controller Installation  
Figure 401 (Sheet 1 of 2)/21-51-20-990-801**

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**RAM AIR INLET CONTROLLER**

**B**

**Ram Air Inlet Controller Installation  
Figure 401 (Sheet 2 of 2)/21-51-20-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

#### TASK 21-51-20-400-801

#### 3. Ram Air Inlet Controller 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)
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. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Controller	21-51-20-03-015	HAP 101-999
		21-51-20-04-015	HAP 101-999

##### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

##### E. Ram Air Inlet Controller Installation

SUBTASK 21-51-20-420-001

(1) Put the ram air inlet controller [1] in its position.

SUBTASK 21-51-20-420-002

(2) Install the washers [3] and the screws [2].

SUBTASK 21-51-20-420-003

(3) Install the electrical connector [4] on the ram air inlet controller [1].

SUBTASK 21-51-20-860-001

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

SUBTASK 21-51-20-860-002

(5) For the left ram air controller,

Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT

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SUBTASK 21-51-20-860-003

(6) For the right ram air controller,

Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

#### F. Post-Installation Test of the Ram Air Inlet Controller

SUBTASK 21-51-20-860-004

(1) Put the L PACK and R PACK switches to the OFF position.

SUBTASK 21-51-20-710-001

(2) Make sure the applicable air conditioning pack is OFF for more than 30 minutes.

SUBTASK 21-51-20-710-002

(3) Make sure that the ram air inlet doors moves towards the closed position:

**WARNING:** MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Extend the trailing edge flaps to the 1-unit position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.
- (b) Disconnect the D486 (D490) connector from the left (right) flow control and shutoff valve.

**WARNING:** OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.
- (d) Retract the trailing edge flaps to the UP position. To do this, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804
- (e) Make sure that the left (right) ram air inlet doors move towards the closed position.
- (f) Make sure that the left (right) RAM DOOR FULL OPEN light goes off.

SUBTASK 21-51-20-710-003

(4) Make sure that the ram air inlet doors moves towards the open position:

- (a) Disconnect the D1288 (D1290) connector from the left (right) ram air temp sensor.
- (b) Install a jumper wire between pins 1 and 2 on the electrical connector.
- (c) Make sure that the left (right) ram air inlet doors move to a more open position.
- (d) Make sure that the left (right) RAM DOOR FULL OPEN light comes on.
- (e) Remove the jumper wire between pins 1 and 2 on the electrical connector.
- (f) Reconnect the D1288 (D1290) connector from the left (right) ram air temperature sensor.
- (g) Reconnect the D486 (D490) connector to the left (right) flow control valve.

#### G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-20-860-005

(1) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-51-20-410-001

(2) Do this step if you installed the ram air inlet controller [1] for the left cooling pack:

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## AIRCRAFT MAINTENANCE MANUAL

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-20-410-002

- (3) If you installed the ram air inlet controller [1] for the right cooling pack, close these panels in this sequence:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

SUBTASK 21-51-20-860-006

- (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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## AIRCRAFT MAINTENANCE MANUAL

### 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
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT
<b>HAP ALL</b>			

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:

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

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Contains two rows of circuit breaker information.

HAP ALL

SUBTASK 21-51-21-010-002

- (4) Open these access panels to remove the ram air inlet actuator for the right pack:

Table with 2 columns: Number, Name/Location. Lists panel numbers 191FR and 191GR with their locations.

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 21-51-21-020-001

- (1) Remove the electrical connector [7] from the actuator [15].

SUBTASK 21-51-21-020-002

- (2) Remove the bonding jumper [5] from the actuator [15] as follows: (a) Remove the screw [1], the lockwasher [2], the washer [3], the washers [4], and the nut [6] from the ground tab [19] on the actuator [15].

SUBTASK 21-51-21-020-003

- (3) Disconnect the actuator [15] from the arm [10] as follows: (a) Remove the nut [12], washers [9], and bolt [8].

SUBTASK 21-51-21-020-004

- (4) Disconnect the actuator [15] from the support [18] as follows: (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

- (5) Remove the actuator [15].

————— END OF TASK —————

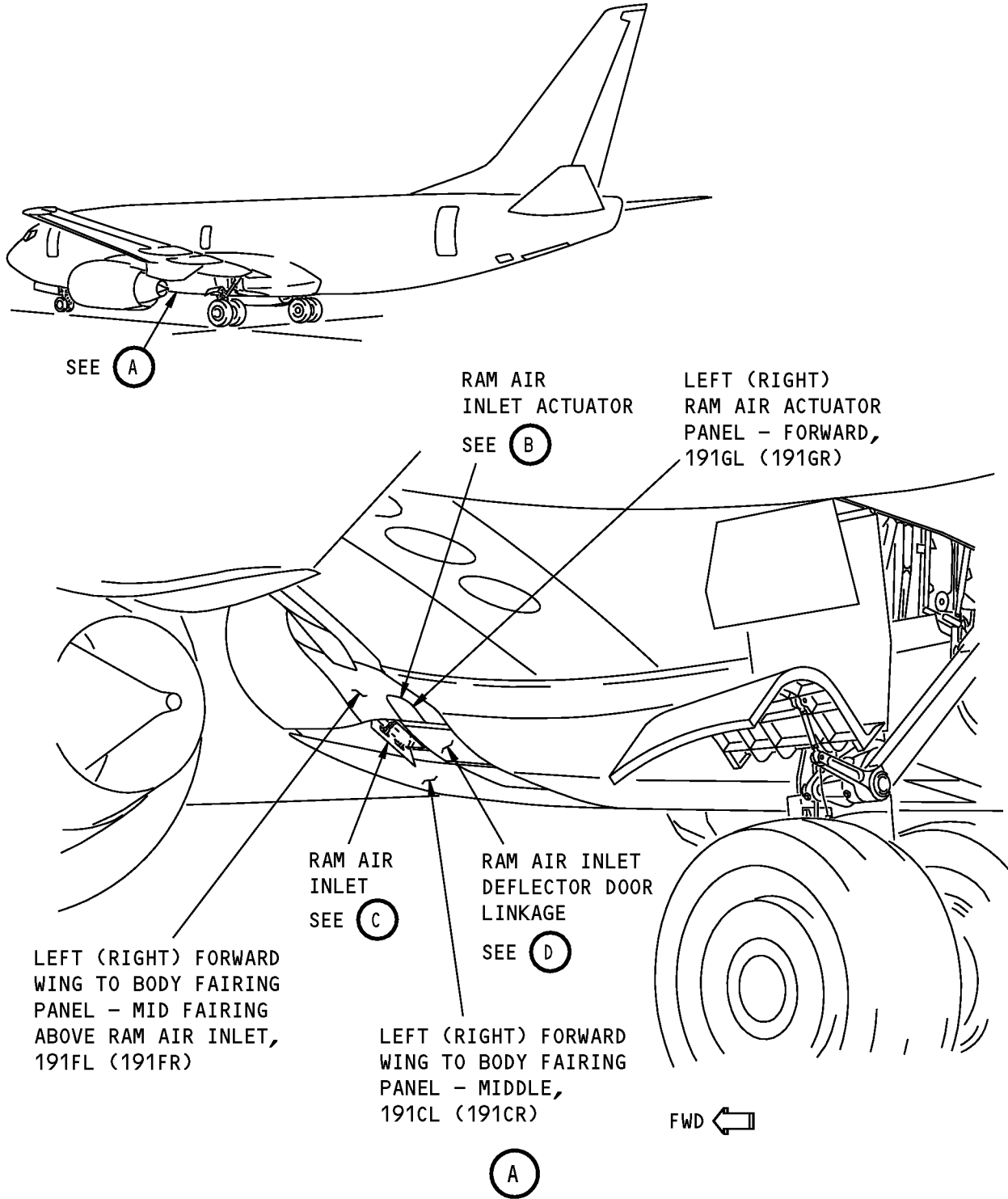
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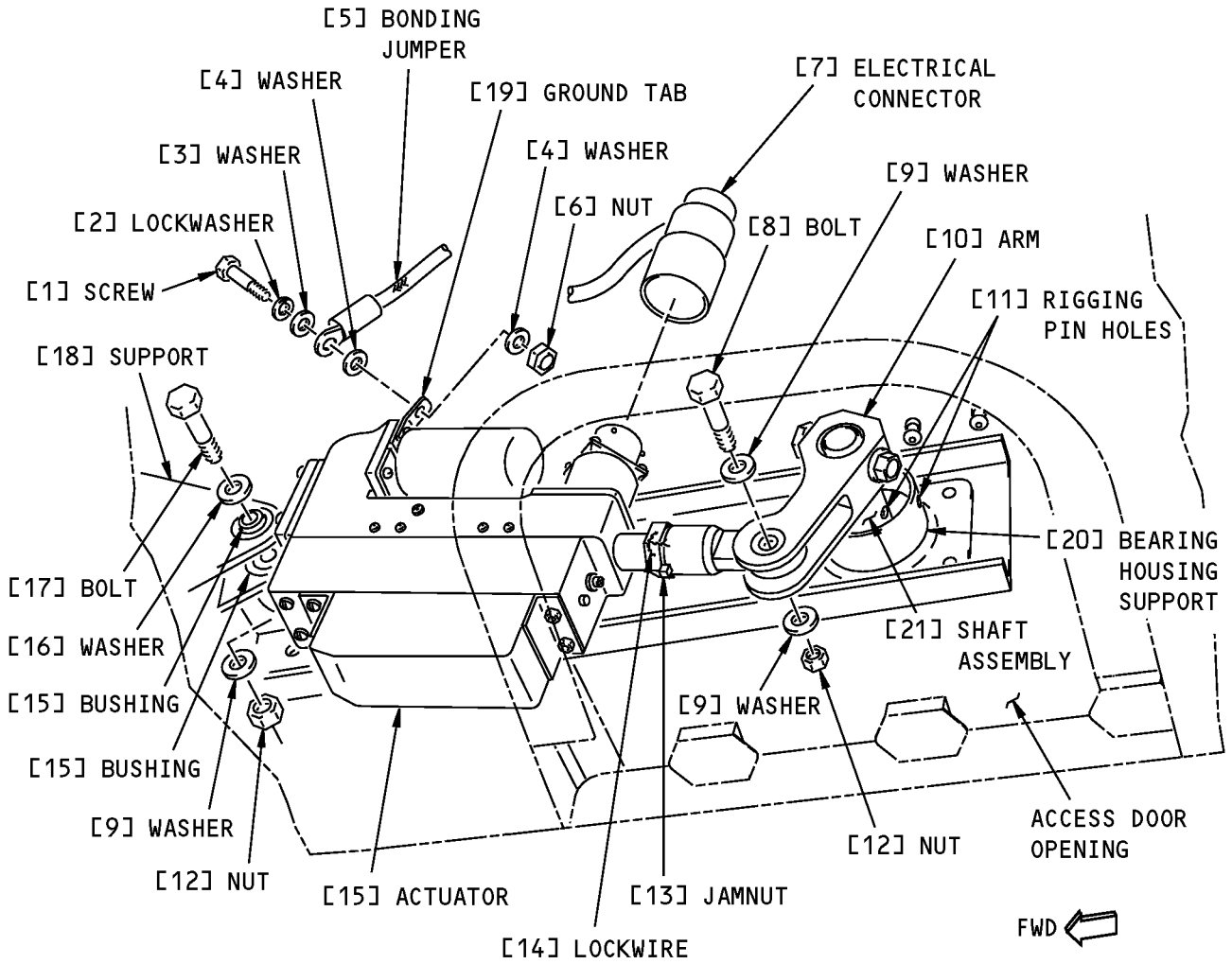
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AIRCRAFT MAINTENANCE MANUAL**



**Ram Air Inlet Actuator Installation  
Figure 401 (Sheet 1 of 5)/21-51-21-990-801**

EFFECTIVITY  
HAP ALL

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

**B**

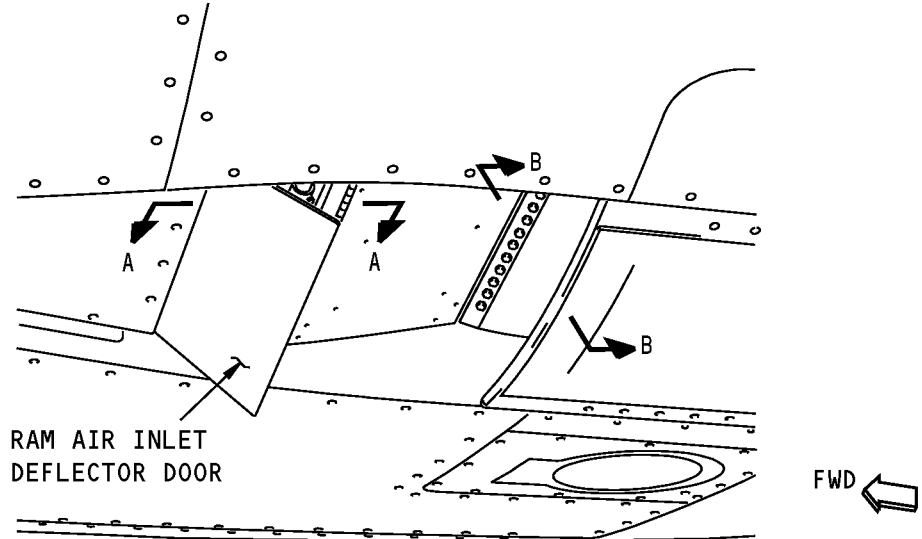
**Ram Air Inlet Actuator Installation  
Figure 401 (Sheet 2 of 5)/21-51-21-990-801**

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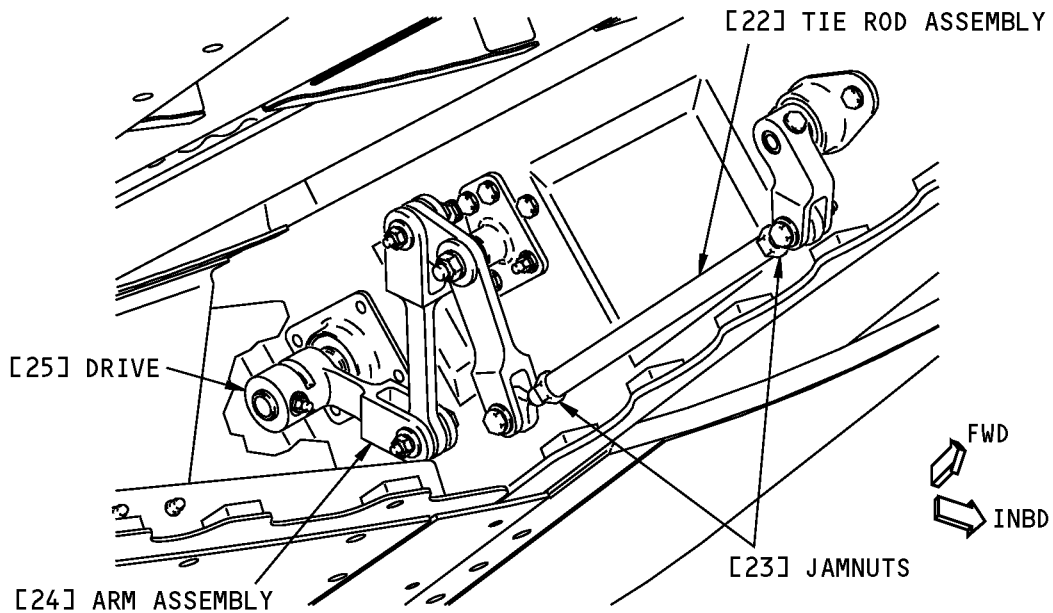


**AIRCRAFT MAINTENANCE MANUAL**



RAM AIR INLET

(C)



RAM AIR INLET DEFLECTOR DOOR LINKAGE

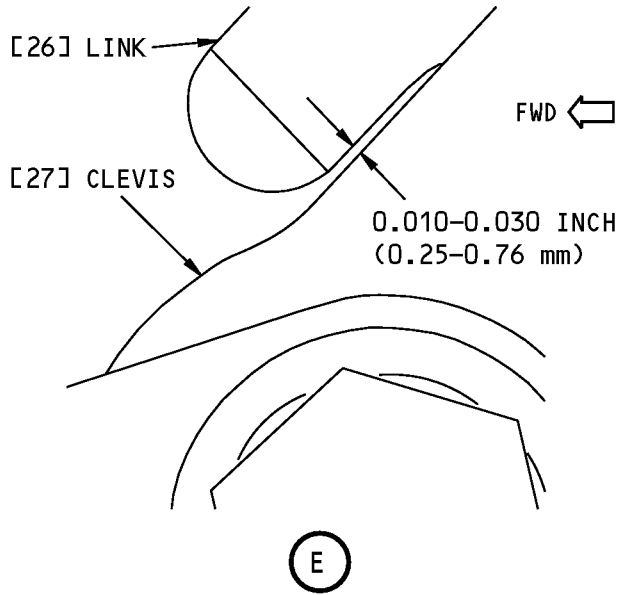
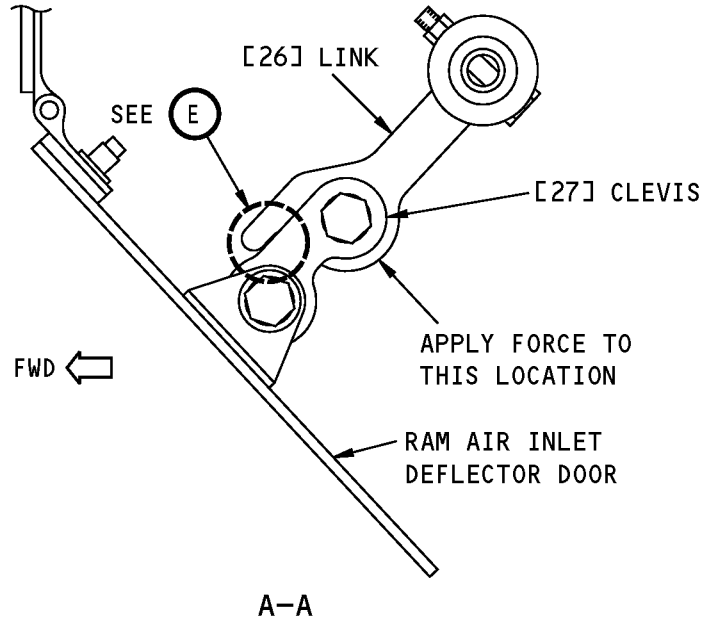
(D)

**Ram Air Inlet Actuator Installation**  
**Figure 401 (Sheet 3 of 5)/21-51-21-990-801**

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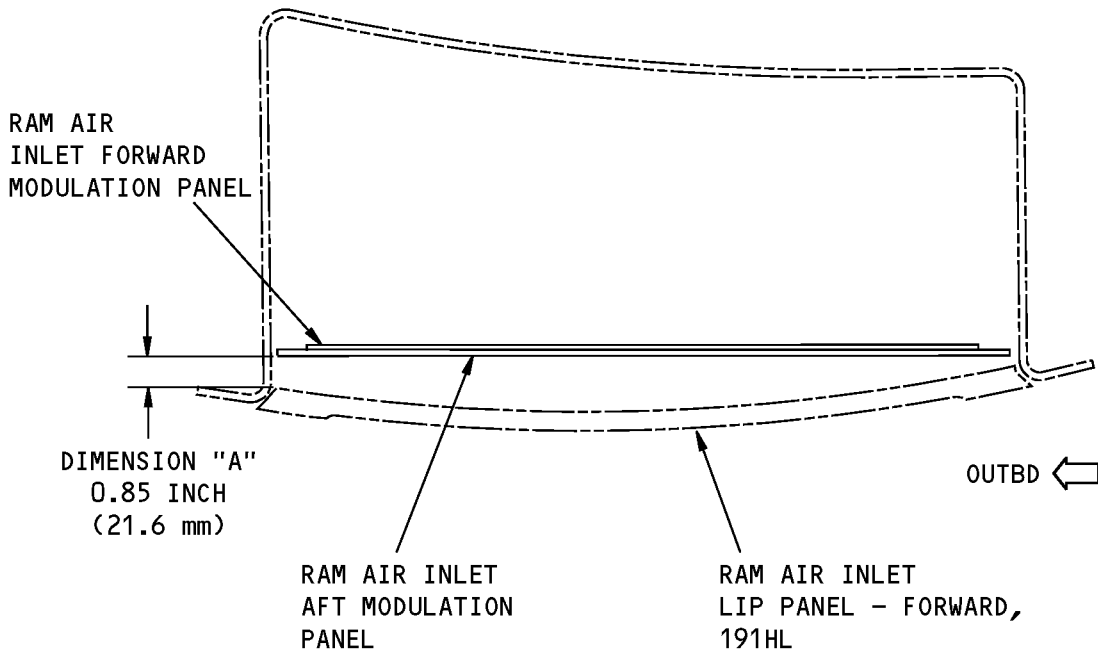


**Ram Air Inlet Actuator Installation  
Figure 401 (Sheet 4 of 5)/21-51-21-990-801**

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(FORWARD AND AFT MODULATION PANELS  
SHOWN IN FLIGHT FULL CLOSED POSITION)  
B-B

**Ram Air Inlet Actuator Installation  
Figure 401 (Sheet 5 of 5)/21-51-21-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

#### TASK 21-51-21-400-801

#### 3. Ram Air Inlet Actuator Installation

(Figure 401)

##### A. References

Reference	Title
20-10-44-400-801	Lockwires Installation (P/B 401)
21-51-22-400-803	Ram Air Inlet Deflector Door and Modulation Panels Adjustment (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
SPL-1585	Kit - Rigging Pins, All Systems (Part #: F70207-109, Supplier: 81205, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

##### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door

##### E. 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

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SUBTASK 21-51-21-010-007

(2) Open these access panels to install the right ram air inlet actuator:

<u>Number</u>	<u>Name/Location</u>
191FR	Forward Wing To Body Fairing Panel - Mid Fairing, Above Ram Air Inlet
191GR	Ram Air Actuator Panel - Forward

## F. 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 [15] are installed in the support [18].

- 1) Install the bolt [17], the washer [16], the washer [9], and the nut [12].

**NOTE:** Put the countersunk side of the washer [16] under the head of the bolt [17].

- (c) Attach the bonding jumper [5] to the ground tab [19] on the actuator [15] as follows:
  - 1) Install the screw [1], the lockwasher [2], the washer [3], the washers [4] and the nut [6].
  - 2) Make sure that the bonding resistance is not more than 0.0025 ohm.

SUBTASK 21-51-21-860-003

(2) Do these steps to put the actuator [15] in the flight position:

- (a) Attach the electrical connector [7] to the actuator [15].
- (b) For the installation of the actuator for the left ram air system, do this task:
  - 1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT

**HAP ALL**

- (c) For the installation of the actuator for the right ram air system, do this task:
  - 1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
<b>HAP 101-999</b>			
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

**HAP ALL**

- (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) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

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- (f) 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.
- (g) Wait for the ram air actuator to fully extend.

### HAP 101-999

- (h) Remove the electrical connector D1288 (D1290) from the ram air sensor.

### HAP 001-013, 015-026, 028-054

- (i) Remove the electrical connector D3916 (D3918) from the ram air sensor.
- (j) Make sure that the actuator retracts when the connector is removed.

### HAP 101-999

- (k) Install a jumper wire between pins 1 and 2 of connector D1288 (D1290).
- (l) Make sure that the actuator retracts when the jumper is installed.

### HAP ALL

SUBTASK 21-51-21-420-002

- (3) Do these steps to attach the actuator rod end to the arm [10]:
  - (a) Turn the shaft assembly [21] to align the rigging pin holes [11] in the shaft assembly and the bearing housing support [20].
  - (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 [11].
  - (c) Adjust the rod end of the actuator [15] plus or minus 0.25 inch (6.35 mm) so that it can be attached to the arm [10].
  - (d) Move the rod end of the actuator [15] to its position in the arm [10].
  - (e) Install the bolt [8], the washers [9], and the nut [12].
  - (f) Tighten the jamnut on the actuator rod end.  
NOTE: To prevent contact, align the flats of the jamnut with the inner surfaces the arm [10].
  - (g) Install lockwire between the jamnut on the actuator rod end and the bolt [8]. To install the lockwire, do this task: Lockwires Installation, TASK 20-10-44-400-801.
  - (h) Remove the rigging pin.

SUBTASK 21-51-21-860-004

- (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 21-51-21-860-012

- (5) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.
  - (a) Make sure the actuator moves to the fully retracted position.

SUBTASK 21-51-21-220-001

- (6) Do the steps that follow to check the linkage for the deflector door:
  - (a) Apply 8 to 12 pounds of force (35.6 to 53.4 newtons) to the link [26] (View A-A).
  - (b) With the force applied, make sure there is a gap of 0.010 to 0.030 inch (0.25 to 0.76 mm) between the over-travel arm of the link [26] and the clevis [27] (View A-A).

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- (c) If the gap measurement is unsatisfactory, then do this task: Ram Air Inlet Deflector Door and Modulation Panels Adjustment, TASK 21-51-22-400-803.

SUBTASK 21-51-21-860-013

- (7) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

- (a) Make sure that the deflector door closes and is faired with the ram air inlet ramp.

SUBTASK 21-51-21-860-005

- (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.

### HAP 101-999

SUBTASK 21-51-21-080-001

- (9) Remove the jumper from pins 1 and 2 of the electrical connector D1288 (D1290) to the ram air sensor.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-51-21-430-001

- (10) Install the electrical connector D3916 (D3918) on the ram air sensor.

### HAP ALL

SUBTASK 21-51-21-100-001

- (11) Do a check of the dimensions shown in (Figure 401), View B-B.

- (a) Make sure that the dimension "A" is approximately 0.85 inch (21.6 mm).

- (b) If the dimension "A" measurement is not satisfactory, then do this task: Ram Air Inlet Deflector Door and Modulation Panels Adjustment, TASK 21-51-22-400-803.

### HAP 101-999

SUBTASK 21-51-21-410-003

- (12) Install the electrical connector D1288 (D1290) on the ram air sensor.

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SUBTASK 21-51-21-860-011

- (13) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-51-21-700-002

- (14) Do the steps that follow to check the linkage for the deflector door:

- (a) Apply 8 to 12 pounds of force (35.6 to 53.4 newtons) to the link [26] (View A-A).

- (b) With the force applied, make sure there is a gap of 0.010 to 0.030 inch (0.25 to 0.76 mm) between the over-travel arm of the link [26] and the clevis [27] (View A-A).

- (c) If the measurement of the gap is not satisfactory, then do this task: Ram Air Inlet Deflector Door and Modulation Panels Adjustment, TASK 21-51-22-400-803.

### G. 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:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-21-860-009

(4) For the ram air inlet actuator for the right pack, install these access panels:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT

**HAP ALL**

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
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
<b>HAP 101-999</b>			
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

**HAP ALL**

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** —————

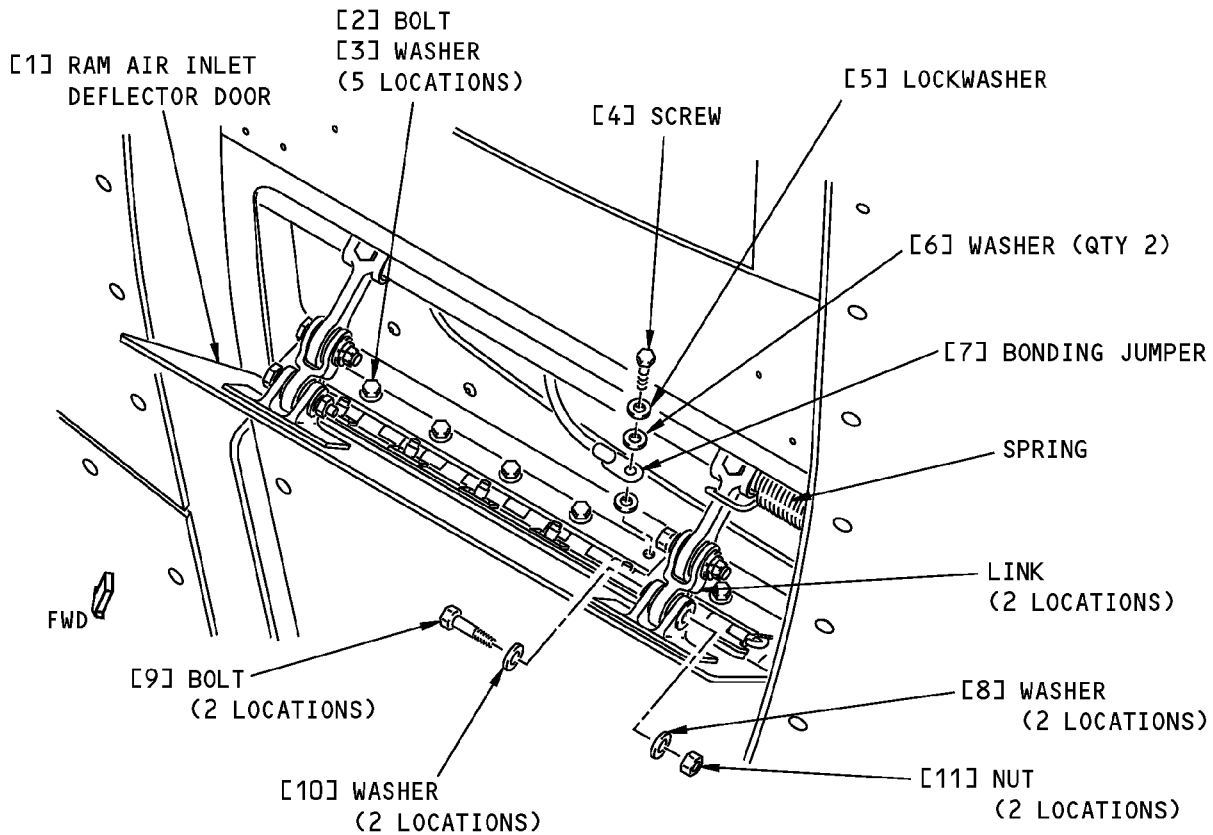
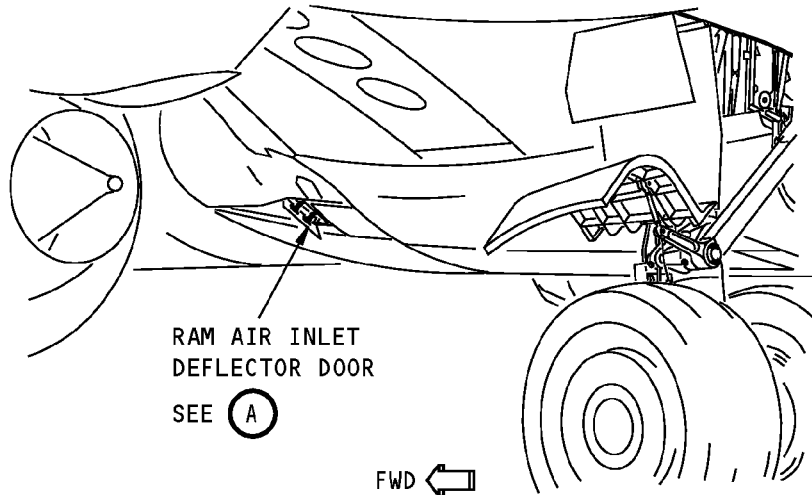
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**LEFT RAM AIR INLET DEFLECTOR DOOR  
(RIGHT RAM AIR INLET DEFLECTOR DOOR IS OPPOSITE)**

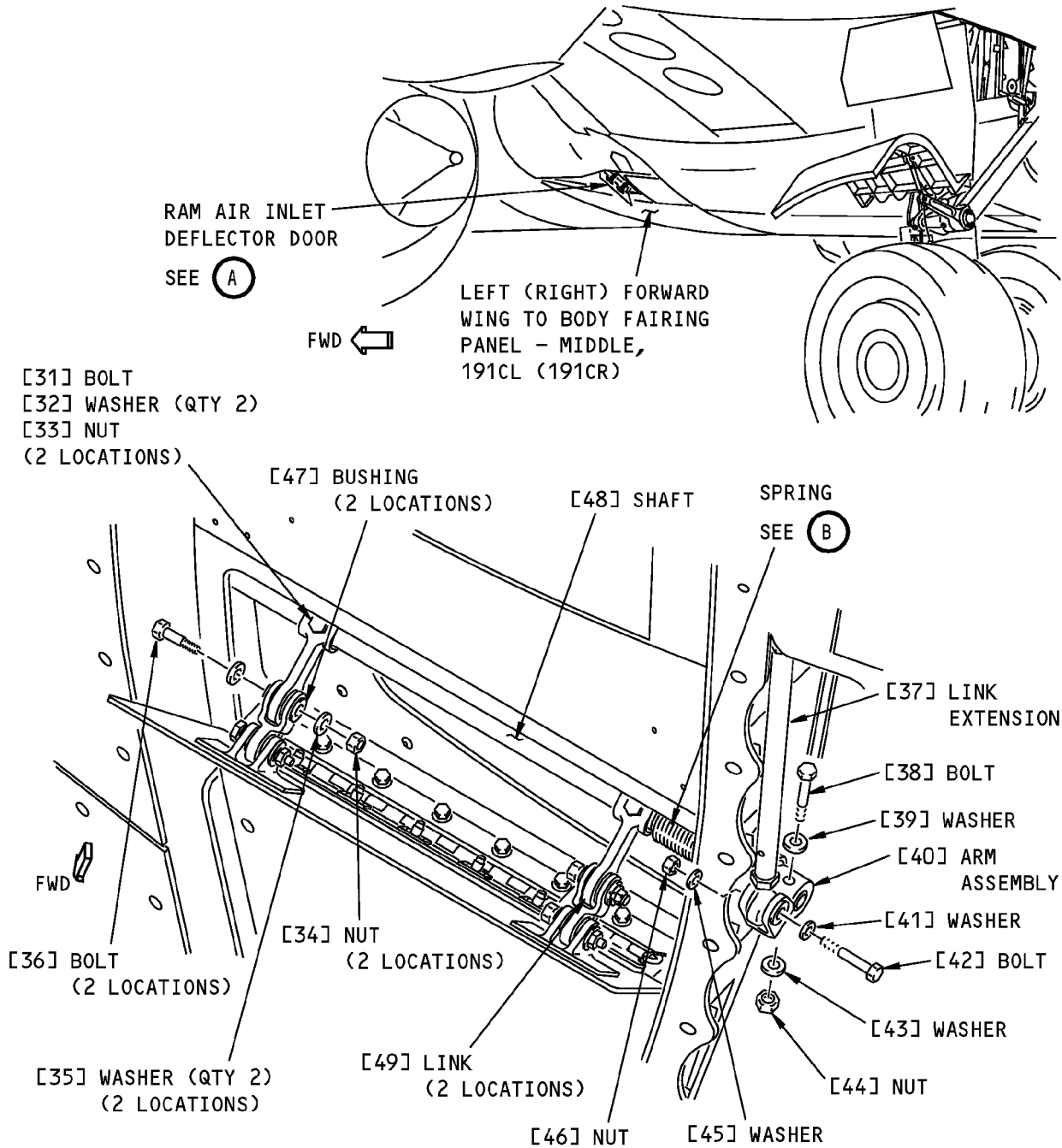
(A)

**Ram Air Inlet Deflector Door Installation  
Figure 401/21-51-22-990-801**

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**LEFT RAM AIR INLET DEFLECTOR DOOR SHAFT ASSEMBLY  
(RIGHT RAM AIR INLET DEFLECTOR DOOR SHAFT ASSEMBLY IS OPPOSITE)**

**(A)**

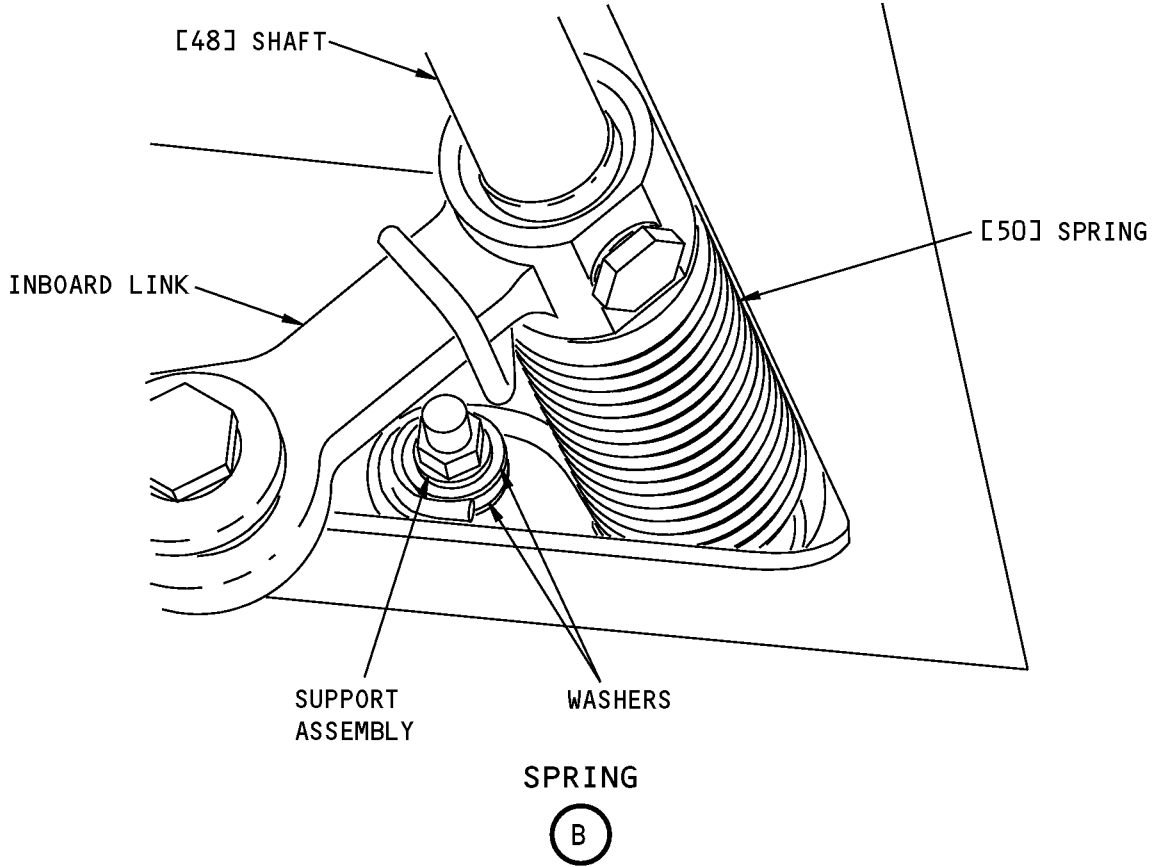
**Ram Air Inlet Deflector Door Shaft Assembly Installation  
Figure 402 (Sheet 1 of 2)/21-51-22-990-802**

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**Ram Air Inlet Deflector Door Shaft Assembly Installation  
Figure 402 (Sheet 2 of 2)/21-51-22-990-802**

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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	53-42-00-67-310 53-42-00-70-310	HAP 001, 006, 007 HAP 002-005, 008-013, 015-026, 028-030

#### 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
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT

**HAP ALL**

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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
<b>HAP 101-999</b>			
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT
<b>HAP ALL</b>			

END OF TASK

TASK 21-51-22-000-802

4. Ram Air Inlet Deflector Door Shaft Assembly Removal

(Figure 402)

A. Location Zones

<u>Zone</u>	<u>Area</u>
120	Subzone - Body Station 396 to Body Station 540
212	Flight Compartment - Right

B. Access Panels

<u>Number</u>	<u>Name/Location</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT
<b>HAP ALL</b>			

(b) Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
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:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT

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Row	Col	Number	Name
<b>HAP 101-999</b>			
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

HAP ALL

(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) While you hold the links [49], carefully pull the shaft [48] in the inboard direction to remove it.

**NOTE:** The inboard link has tension applied by the spring [50]. Make sure the spring does not come free of the support assembly.

- (c) Remove the nut [34], washer [35], bolt [36], and bushing [47] from the bottom end of the links [49].
- (d) 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	53-42-00-67-275	HAP 001, 006, 007
		53-42-00-67-825	HAP 001, 006, 007
		53-42-00-67-840	HAP 001, 006, 007
		53-42-00-70-275	HAP 002-005, 008-013, 015-026, 028-030
		53-42-00-70-825	HAP 002-005, 008-013, 015-026, 028-030
		53-42-00-70-840	HAP 002-005, 008-013, 015-026, 028-030

B. Location Zones

Zone	Area
120	Subzone - Body Station 396 to Body Station 540
212	Flight Compartment - Right

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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.
- (d) Make sure the spring [50] is in its position on the support assembly and around the inboard link.
- (e) Install the bushing [47], washer [35], bolt [36], and nut [34].
- (f) 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.

- (g) Install the bolt [31], washer [32], and nut [33] that attach the links [49] to the shaft [48].

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:

- (a) Close these circuit breakers:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT

HAP ALL

- (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:

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- (a) Close these circuit breakers:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

**HAP 101-999**

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- (b) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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.

#### **TASK 21-51-22-400-803**

#### 2. Ram Air Inlet Deflector Door and Modulation Panels Adjustment

(Figure 501 or Figure 502)

##### A. References

Reference	Title
20-10-44-400-801	Lockwires Installation (P/B 401)
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, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ)

##### 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	Air Conditioning Access Door
192CR	Air Conditioning 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
191GL	Ram Air Actuator Panel - Forward

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SUBTASK 21-51-22-010-002

(2) To get access to the left ram air temperature sensor, open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-22-010-003

(3) For the adjustment of the right ram air inlet system, remove these panels:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

**F. Ram Air Inlet System Adjustment/Rigging**

SUBTASK 21-51-22-020-008

(1) Do these steps to disconnect one end of the tie rod assembly [1]:

- (a) Remove the bolt [2], washers [3] and nut [4].
- (b) Move the end of the tie rod assembly [1] away from the adjacent arm.

SUBTASK 21-51-22-020-009

(2) Disconnect the actuator from the bellcrank as follows:

- (a) Remove the nut [13], washers [12][14], and bolt [11].

SUBTASK 21-51-22-860-009

(3) Do these steps to put the actuator in the flight position:

- (a) Attach the electrical connector [10] to the actuator.
- (b) For the adjustment of the actuator for the left ram air system, do this task:
  - 1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT
<b>HAP 001-013, 015-026, 028-054</b>			
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT
<b>HAP ALL</b>			
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

(c) For the adjustment of the actuator for the right ram air system, do this task:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
<b>HAP 101-999</b>			
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT
<b>HAP 001-013, 015-026, 028-054</b>			
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT
<b>HAP ALL</b>			
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT

- (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) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.
- (f) 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.
- (g) Wait for the ram air actuator to fully extend.

### HAP 101-999

- (h) Remove the electrical connector D1288 (D1290) from the ram air sensor.

### HAP 001-013, 015-026, 028-054

- (i) Remove the electrical connector D3916 (D3918) from the ram air sensor.
- (j) Make sure that the actuator retracts when the connector D3916 (D3918) is removed.

### HAP 101-999

- (k) Install a jumper wire between pins 1 and 2 of connector D1288 (D1290).
- (l) Make sure that the actuator retracts when the jumper is installed.

### HAP ALL

SUBTASK 21-51-22-420-007

- (4) Do these steps to attach the actuator rod end to the bellcrank:
  - (a) Turn the shaft assembly to align the rigging pin holes in the shaft assembly and the bearing housing support.
  - (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.
  - (c) Adjust the rod end of the actuator plus or minus 0.25 inch (6.35 mm) so that it can be attached to the bellcrank.
  - (d) Move the rod end of the actuator until it is aligned with the bellcrank.
  - (e) Install the bolt [11], the washers [12][14], and the nut [13].
  - (f) Tighten the jamnut on the actuator rod end.  
**NOTE:** To prevent contact, align the flats of the jamnut with the inner surfaces the arm [10].
  - (g) Install lockwire between the jamnut on the actuator rod end and the bolt [11]. To install the lockwire, do this task: Lockwires Installation, TASK 20-10-44-400-801.
  - (h) Remove the rigging pin.

EFFECTIVITY  
HAP ALL

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SUBTASK 21-51-22-860-010

- (5) 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

- (6) 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 closed position.

SUBTASK 21-51-22-820-001

- (7) Do the steps that follow to adjust the deflector door linkage:

(a) Remove the lockwire from the jamnuts [5] on the tie-rod assembly [1].

(b) Loosen the jamnuts [5].

(c) Install the bolt [2], washers [3] and nut [4] that attach the tie rod assembly to the arm on the deflector door pivot shaft.

(d) Adjust the length of the tie rod assembly [1] until the over-travel stop on the link [16] just touches the clevis [17].

(e) Adjust the tie rod assembly [1] so that it is one full turn shorter as follows:

1) Loosen both jam nuts [5] and rotate the shaft one full turn.

2) Tighten the jam nuts [5].

(f) Apply 8 to 12 pounds of force (35.6 to 53.4 newtons) to the link [16] (View A-A).

(g) Make sure there is a gap of 0.010 to 0.030 inch (0.25 to 0.76 mm) between the over-travel arm of the link [16] and the clevis [17] (View A-A).

(h) If the 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 the gap is within specifications.

(i) Tighten the jamnuts [5] on the tie rod assembly [1].

(j) Install the lockwire on the jamnuts [5]. To install the lockwire, do this task: Lockwires Installation, TASK 20-10-44-400-801.

SUBTASK 21-51-22-860-012

- (8) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

(a) Make sure that the inlet door smoothly moves to a more closed position without binding.

(b) Make sure that the deflector door closes and is faired with the ram air inlet ramp.

SUBTASK 21-51-22-860-013

- (9) 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.

### HAP 101-999

SUBTASK 21-51-22-080-001

- (10) Remove the jumper from pins 1 and 2 of the electrical connector D1288 (D1290) to the ram air sensor.

SUBTASK 21-51-22-410-001

- (11) Install the electrical connector D1288 (D1290) on the ram air sensor.

EFFECTIVITY  
HAP ALL

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AIRCRAFT MAINTENANCE MANUAL**

**HAP 101-999 (Continued)**

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-51-22-480-004

- (12) Install the electrical connector D3916 (D3918) on the ram air sensor.

**HAP ALL**

SUBTASK 21-51-22-700-002

- (13) Do a check of the dimension shown in Figure 501, View B-B.

(a) Make sure that the dimension "A" is approximately 0.854 inch (21.69 mm).

SUBTASK 21-51-22-820-002

- (14) 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 open position.

(c) Apply 8 to 12 pounds of force (35.6 to 53.4 newtons) to the link [16] (View A-A).

(d) With the force applied, make sure there is a gap of 0.010 to 0.030 inch (0.25 to 0.76 mm) between the over-travel arm of the link [16] and the clevis [17] (View A-A).

(e) If it is necessary, adjust the length of the tie-rod assembly to get a gap of 0.010 to 0.030 inch (0.25 to 0.76 mm) between the over-travel arm of the link [16] and the clevis [17] (View A-A).

(f) Tighten the jamnuts [5] on the tie rod assembly [1].

(g) Install the lockwire on the jamnuts [5]. To install the lockwire, do this task: Lockwires Installation, TASK 20-10-44-400-801.

**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:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-22-860-016

- (3) When the right ram air inlet system was adjusted, install these access panels:

<u>Number</u>	<u>Name/Location</u>
191CR	Forward Wing To Body Fairing Panel - Middle
191GR	Ram Air Actuator Panel - Forward

SUBTASK 21-51-22-410-004

- (4) For the right ram air inlet system, close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

EFFECTIVITY  
HAP ALL

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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** —————

EFFECTIVITY  
HAP ALL

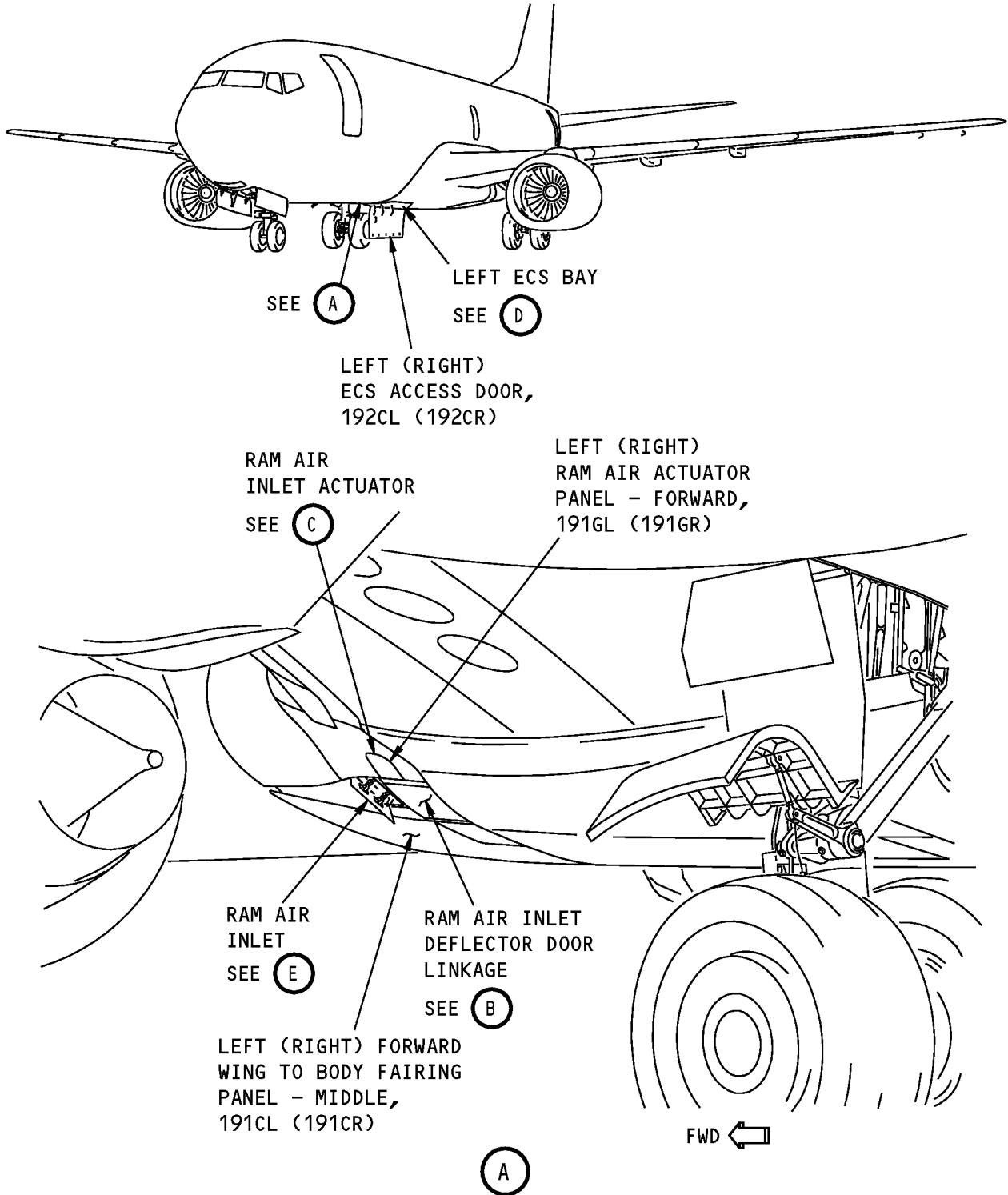
D633A101-HAP

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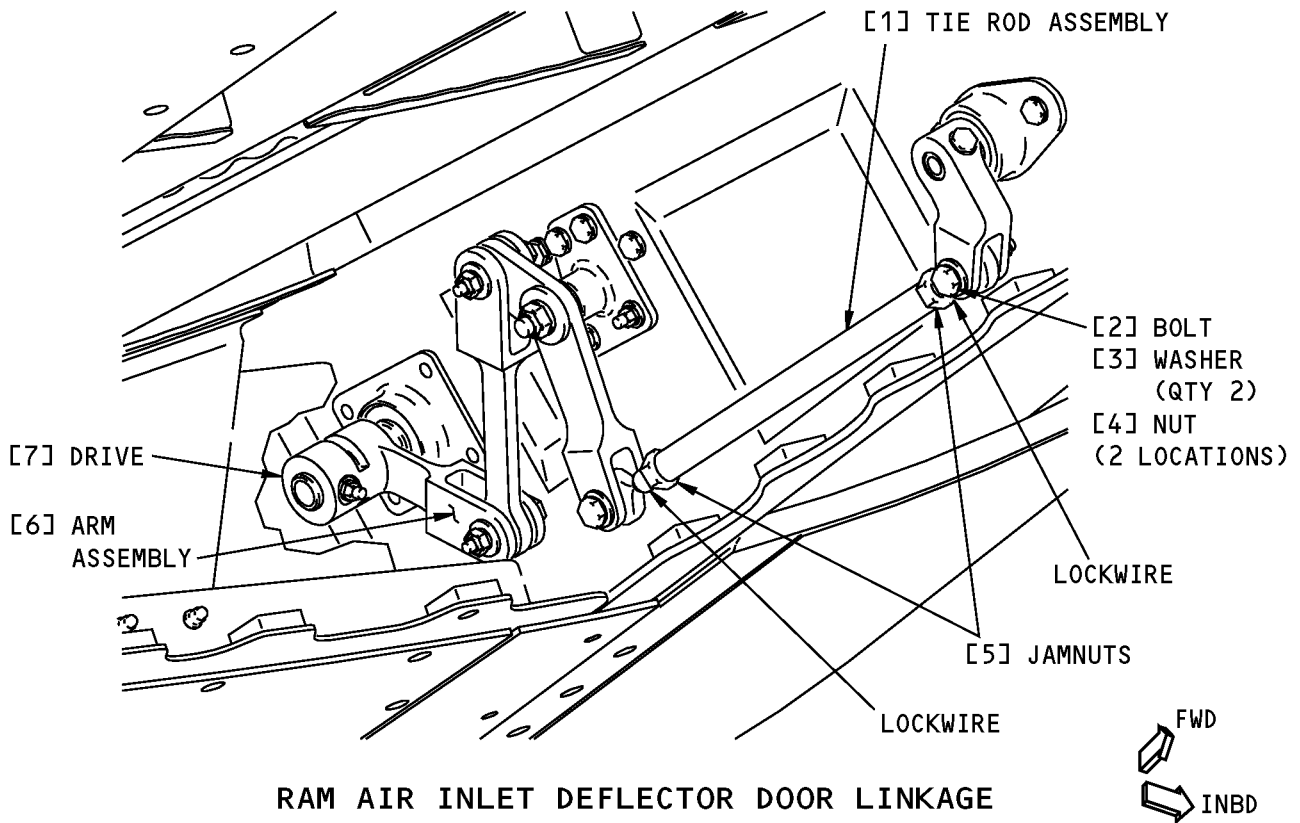
**Ram Air Inlet System  
Figure 501 (Sheet 1 of 5)/21-51-22-990-803**

EFFECTIVITY  
HAP 101-999

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**Ram Air Inlet System  
Figure 501 (Sheet 2 of 5)/21-51-22-990-803**

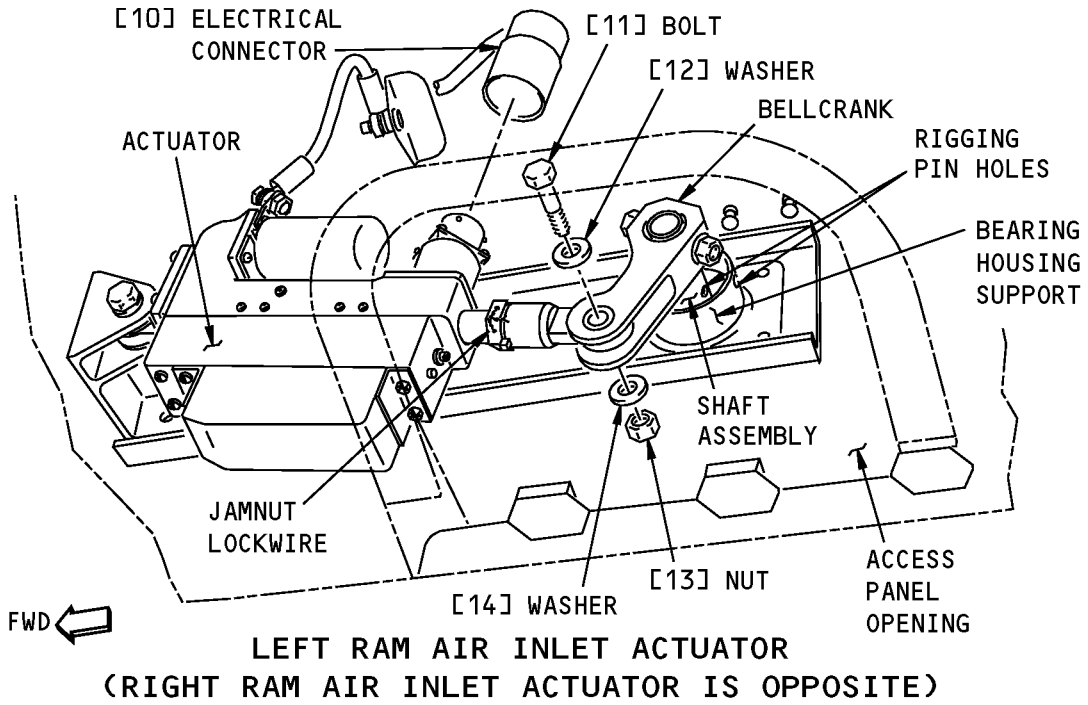
EFFECTIVITY  
HAP 101-999

**21-51-22**

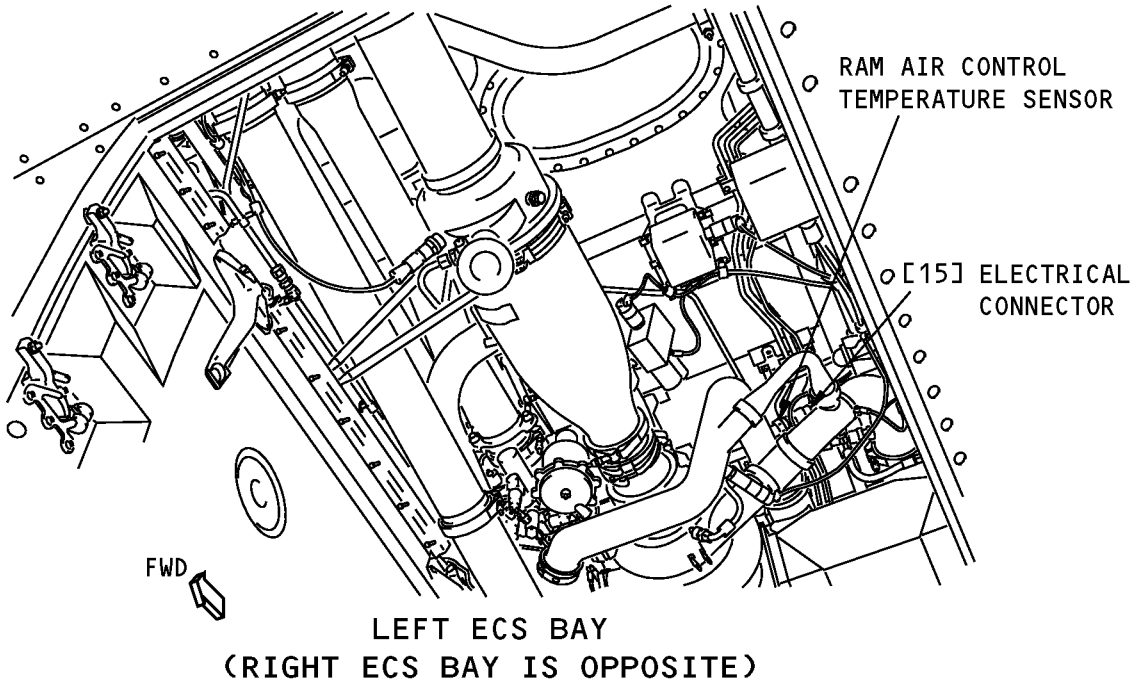
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**AIRCRAFT MAINTENANCE MANUAL**



(C)



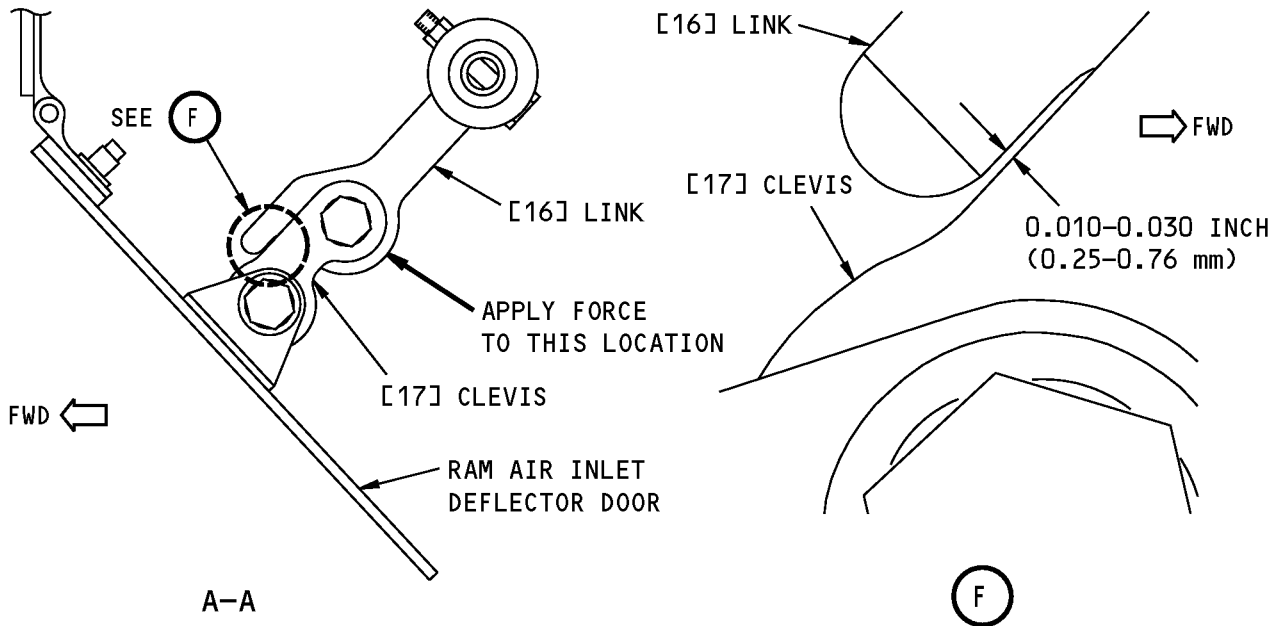
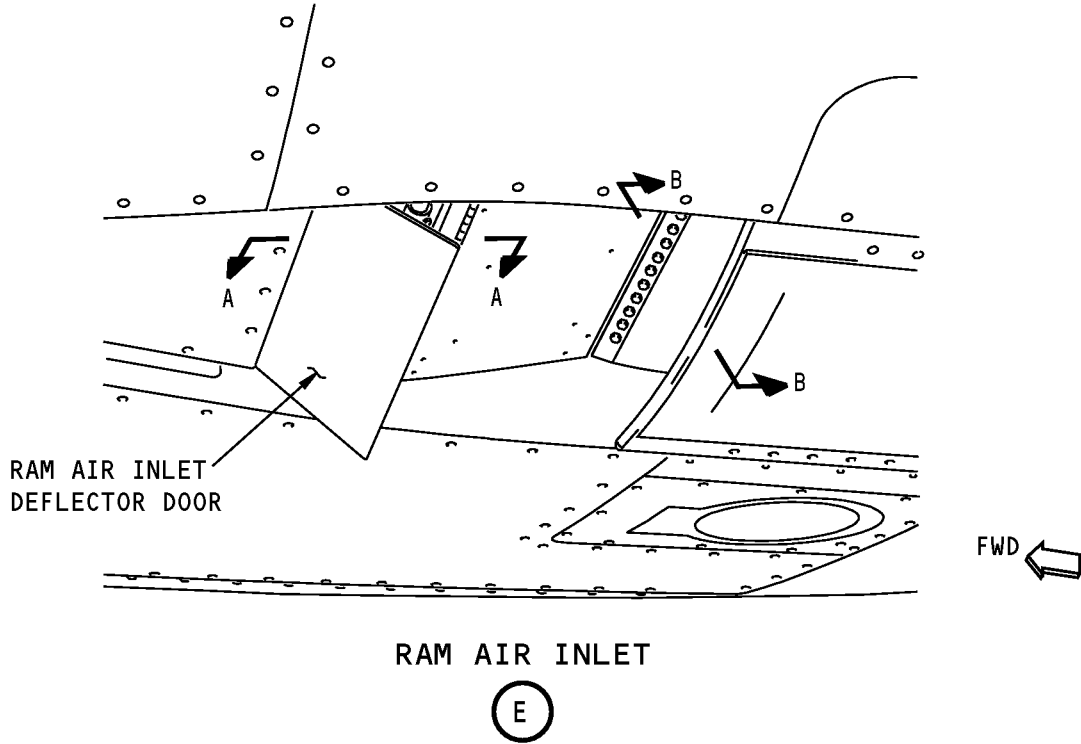
(D)

**Ram Air Inlet System  
Figure 501 (Sheet 3 of 5)/21-51-22-990-803**

EFFECTIVITY  
HAP 101-999

**21-51-22**

**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**



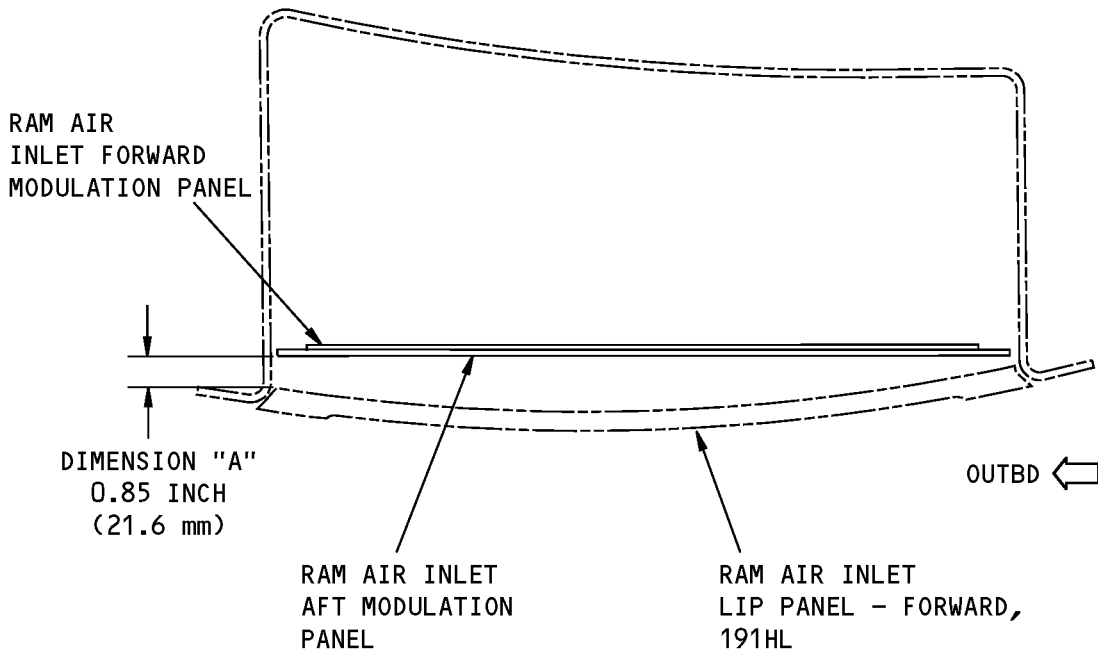
**Ram Air Inlet System**  
**Figure 501 (Sheet 4 of 5)/21-51-22-990-803**

EFFECTIVITY  
HAP 101-999

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(FORWARD AND AFT MODULATION PANELS  
SHOWN IN FLIGHT FULL CLOSED POSITION)  
B-B

**Ram Air Inlet System**  
**Figure 501 (Sheet 5 of 5)/21-51-22-990-803**

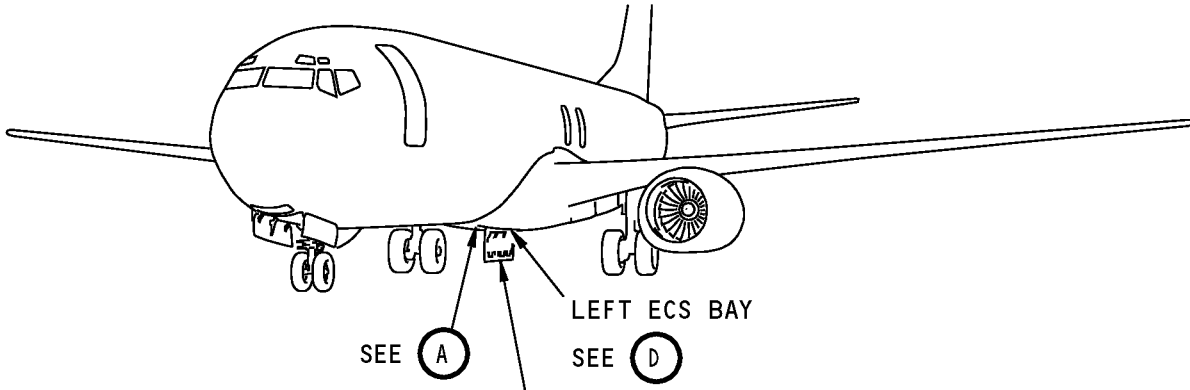
EFFECTIVITY  
HAP 101-999

D633A101-HAP

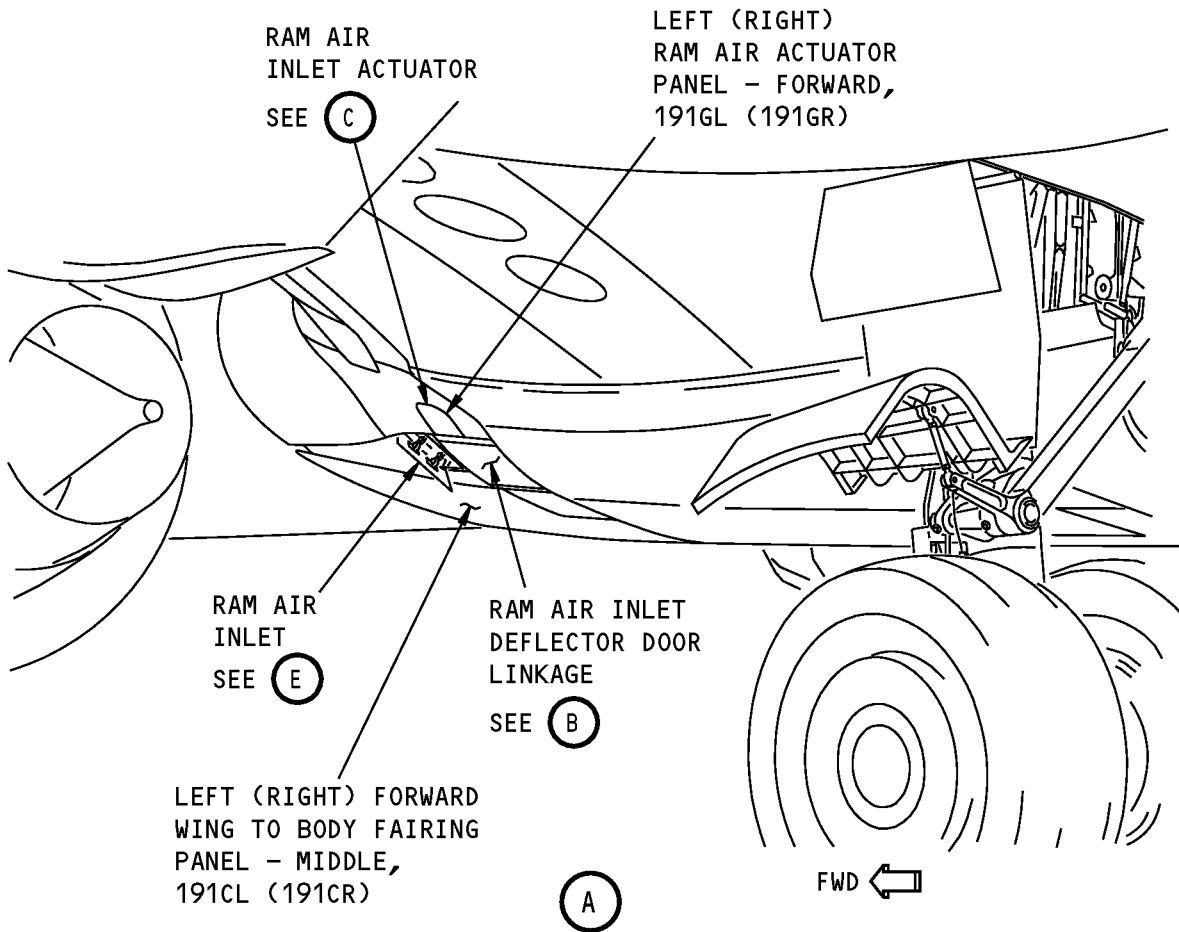
**21-51-22**

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AIRCRAFT MAINTENANCE MANUAL**



LEFT (RIGHT)  
ECS ACCESS DOOR,  
192CL (192CR)



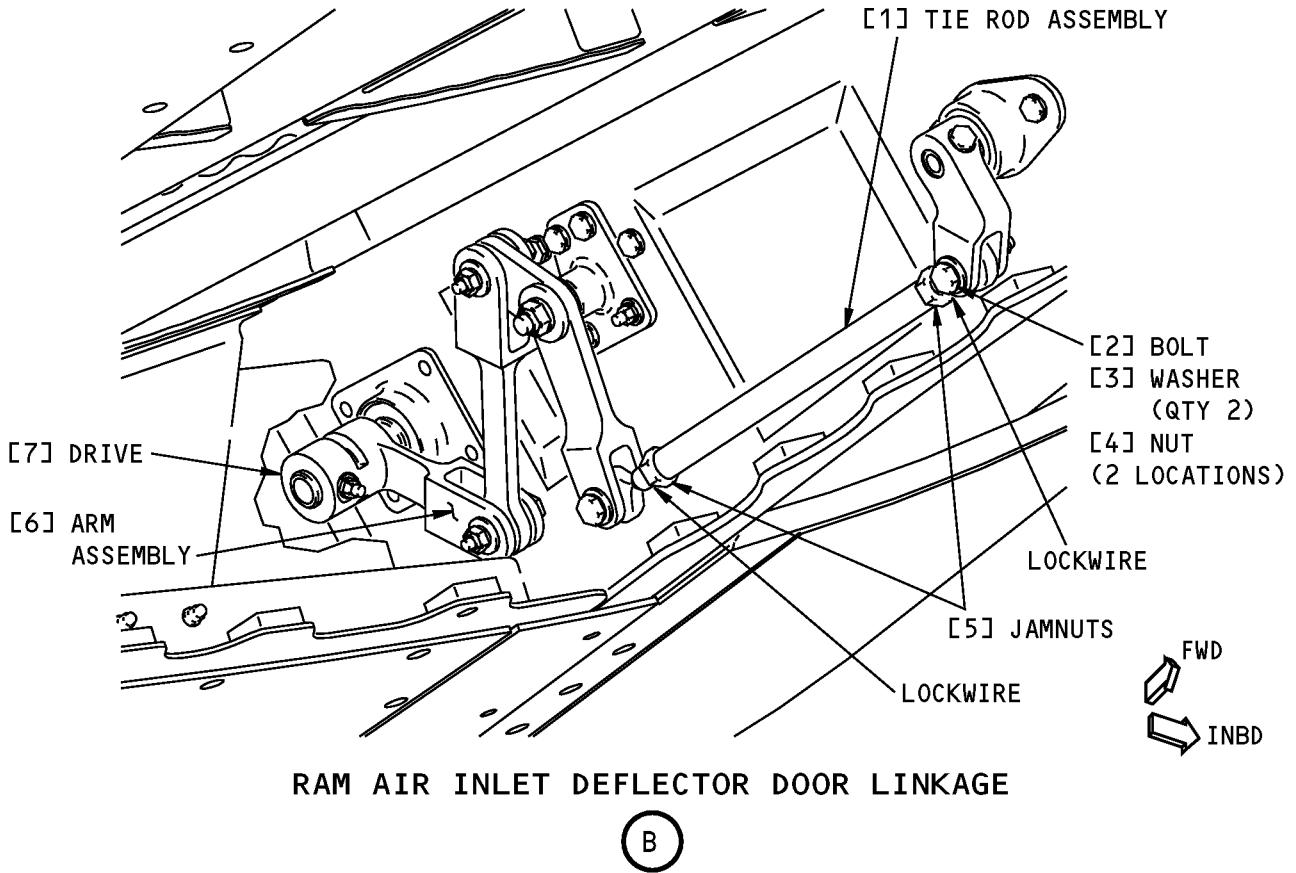
LEFT (RIGHT) FORWARD  
WING TO BODY FAIRING  
PANEL - MIDDLE,  
191CL (191CR)

**Ram Air Inlet System**

**Figure 502 (Sheet 1 of 5)/21-51-22-990-805**

<b>EFFECTIVITY</b> HAP 001-013, 015-026, 028-054
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**21-51-22**



**Ram Air Inlet System**  
**Figure 502 (Sheet 2 of 5)/21-51-22-990-805**

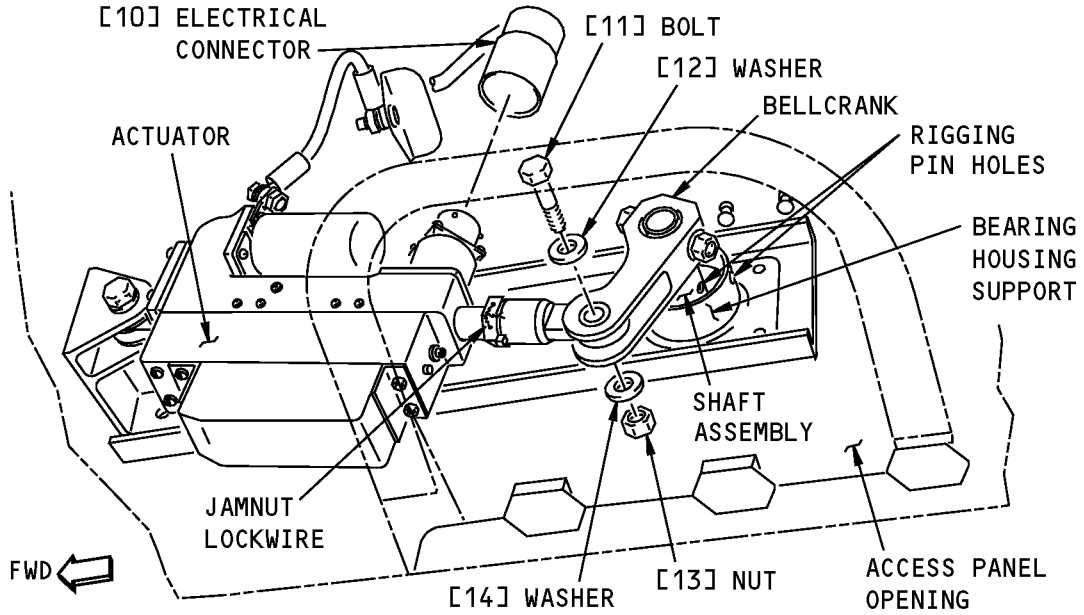
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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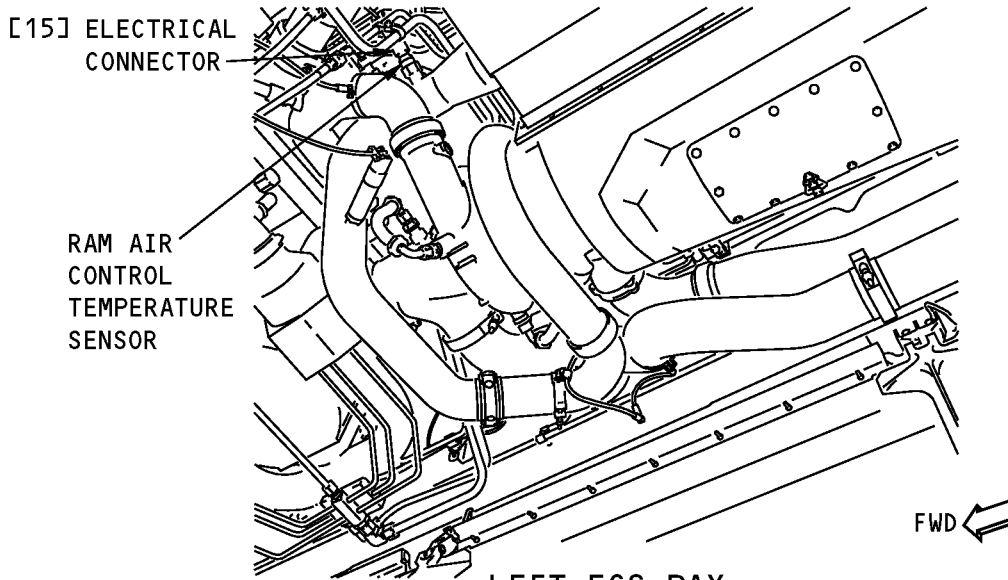
D633A101-HAP

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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)**

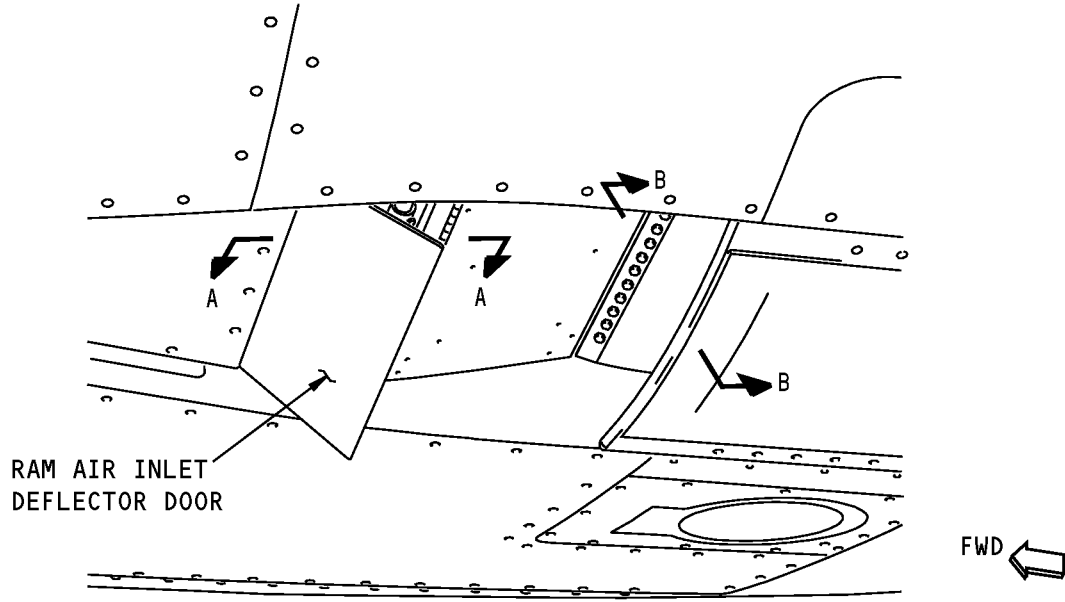
(D)

**Ram Air Inlet System  
Figure 502 (Sheet 3 of 5)/21-51-22-990-805**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

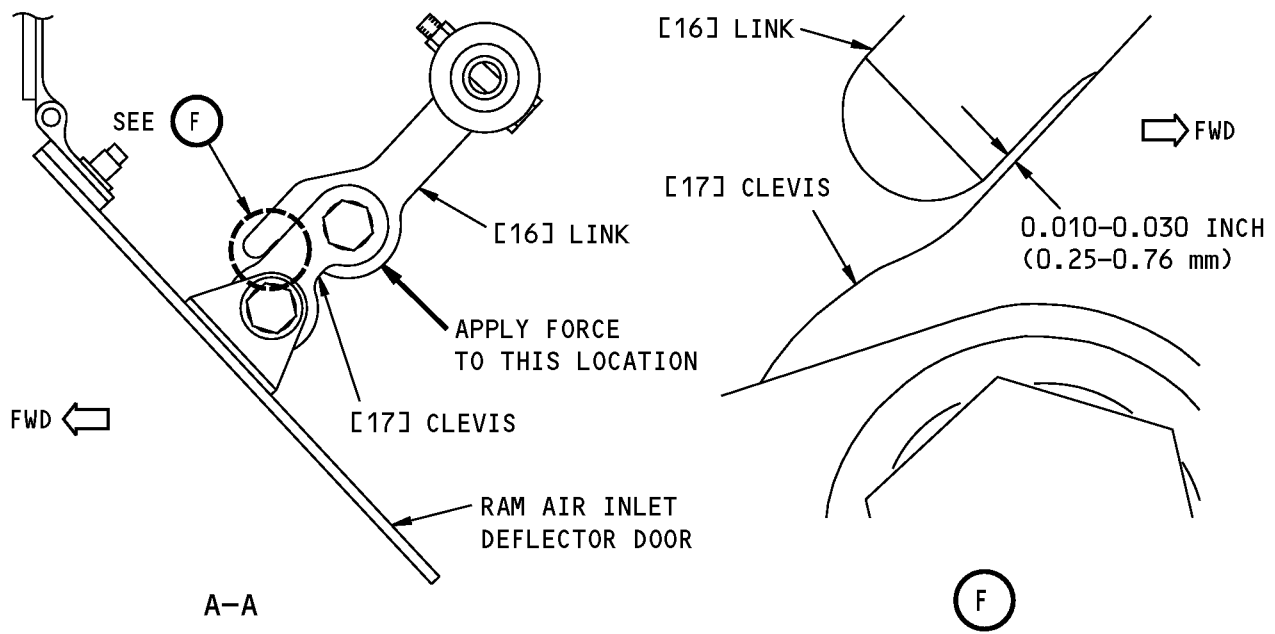
**21-51-22**





**RAM AIR INLET**

(E)



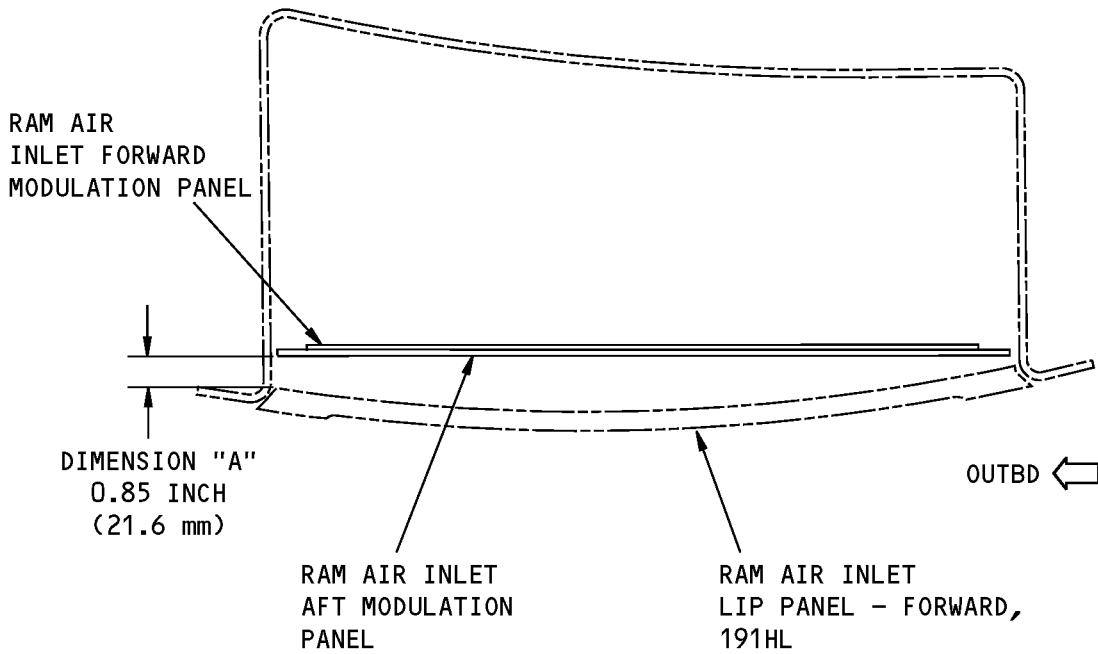
**Ram Air Inlet System  
Figure 502 (Sheet 4 of 5)/21-51-22-990-805**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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(FORWARD AND AFT MODULATION PANELS  
SHOWN IN FLIGHT FULL CLOSED POSITION)  
B-B

**Ram Air Inlet System**  
**Figure 502 (Sheet 5 of 5)/21-51-22-990-805**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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# AIRCRAFT MAINTENANCE MANUAL

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

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

C. Preparation for the Removal

SUBTASK 21-51-23-860-001

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

SUBTASK 21-51-23-860-002

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

SUBTASK 21-51-23-860-003

(3) For the modulation panels for the left ram air inlet, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT

SUBTASK 21-51-23-860-004

(4) For the modulation panels for the right ram air inlet, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT

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:

EFFECTIVITY HAP ALL	
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## AIRCRAFT MAINTENANCE MANUAL

- (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** —————

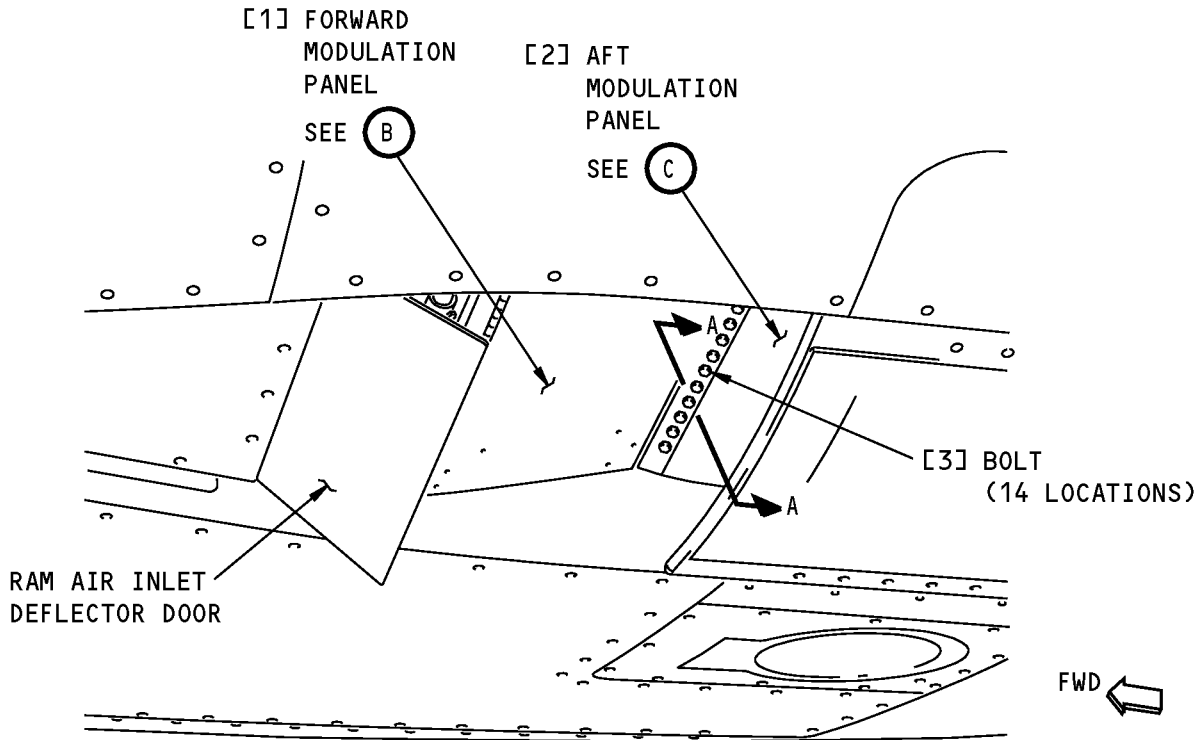
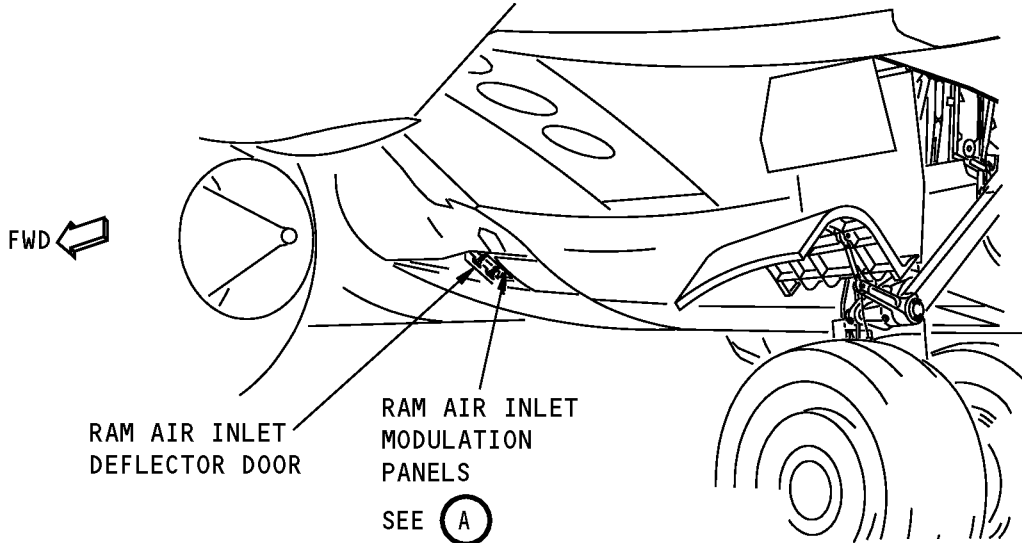
EFFECTIVITY  
HAP ALL

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AIRCRAFT MAINTENANCE MANUAL**



**RAM AIR INLET MODULATION PANELS  
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)**

(A)

**Ram Air Inlet Modulation Panels Installation  
Figure 401 (Sheet 1 of 5)/21-51-23-990-801**

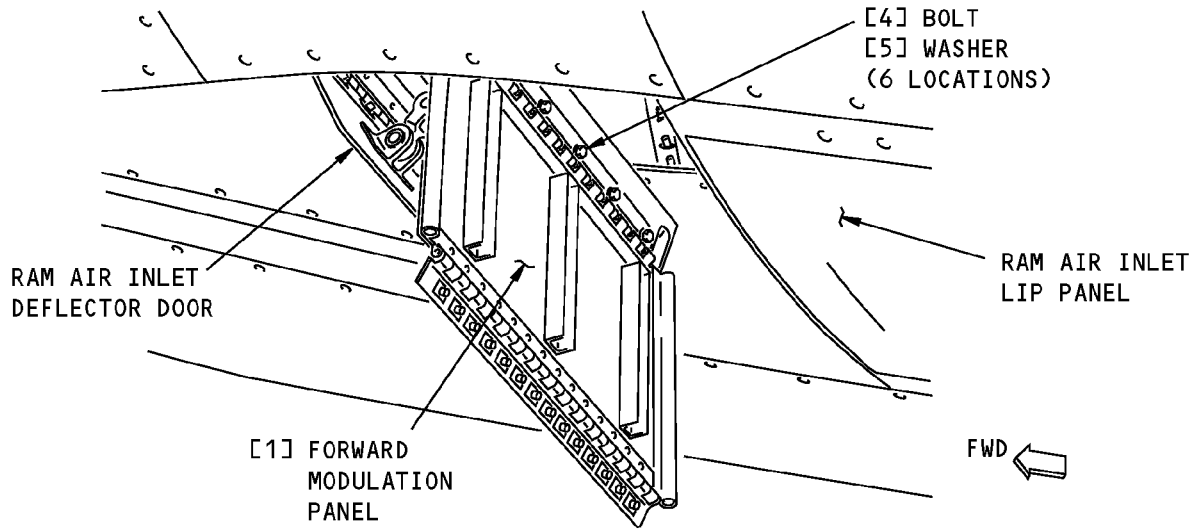
EFFECTIVITY  
HAP ALL

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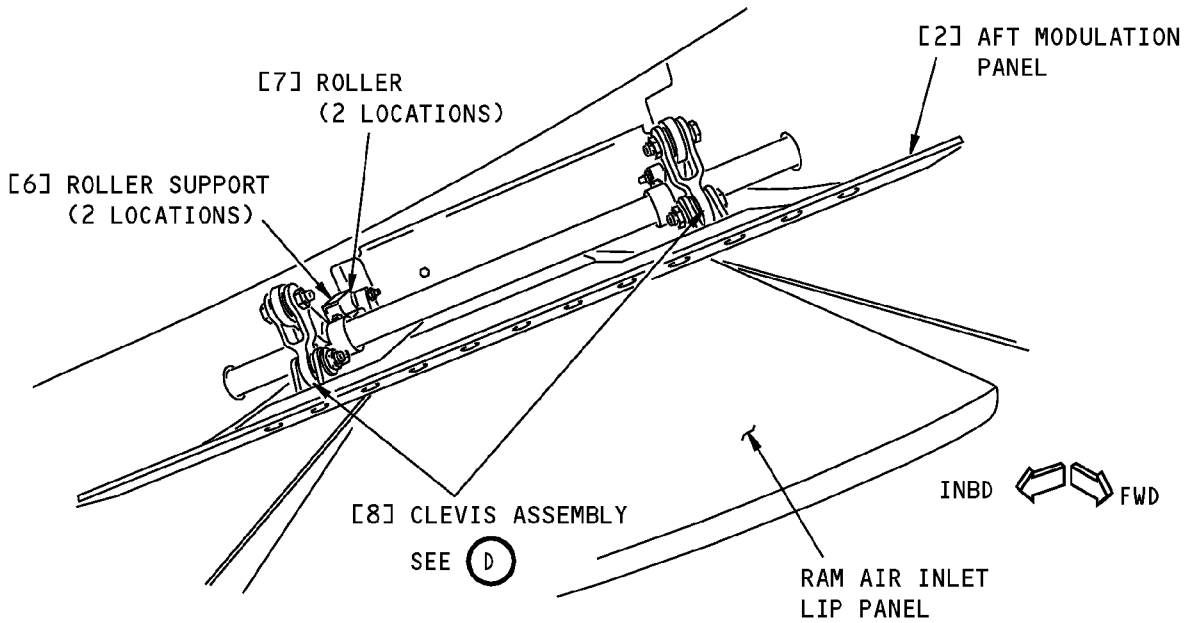
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**AIRCRAFT MAINTENANCE MANUAL**



**FORWARD MODULATION PANEL**

(B)



**AFT MODULATION PANEL**

(C)

**Ram Air Inlet Modulation Panels Installation**  
Figure 401 (Sheet 2 of 5)/21-51-23-990-801

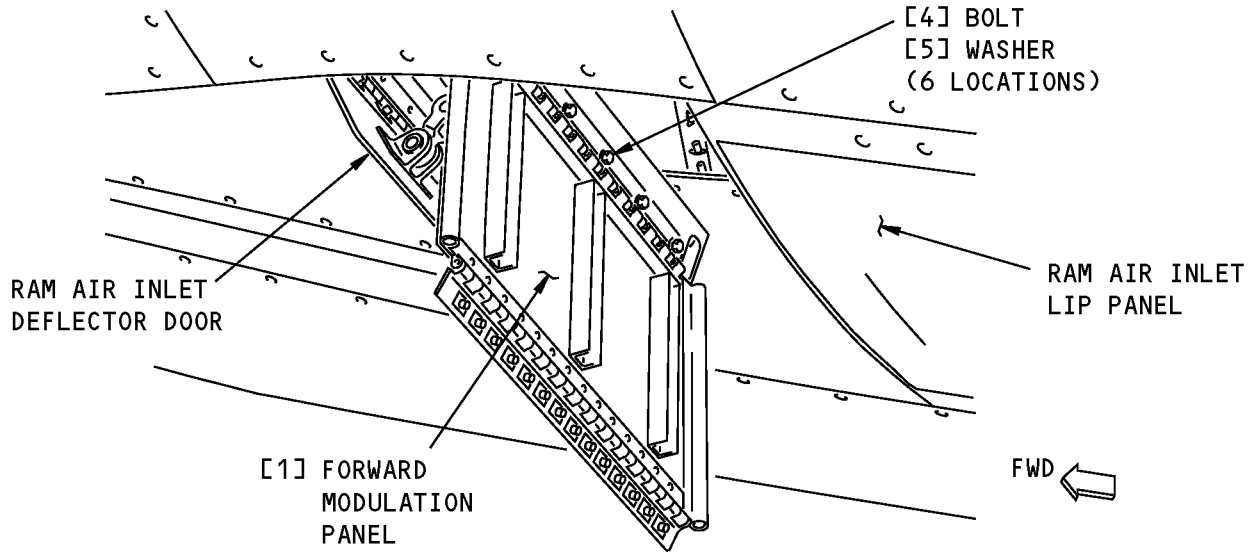
EFFECTIVITY  
HAP 001-013, 015-026, 028-030 PRE SB 737-21-1148

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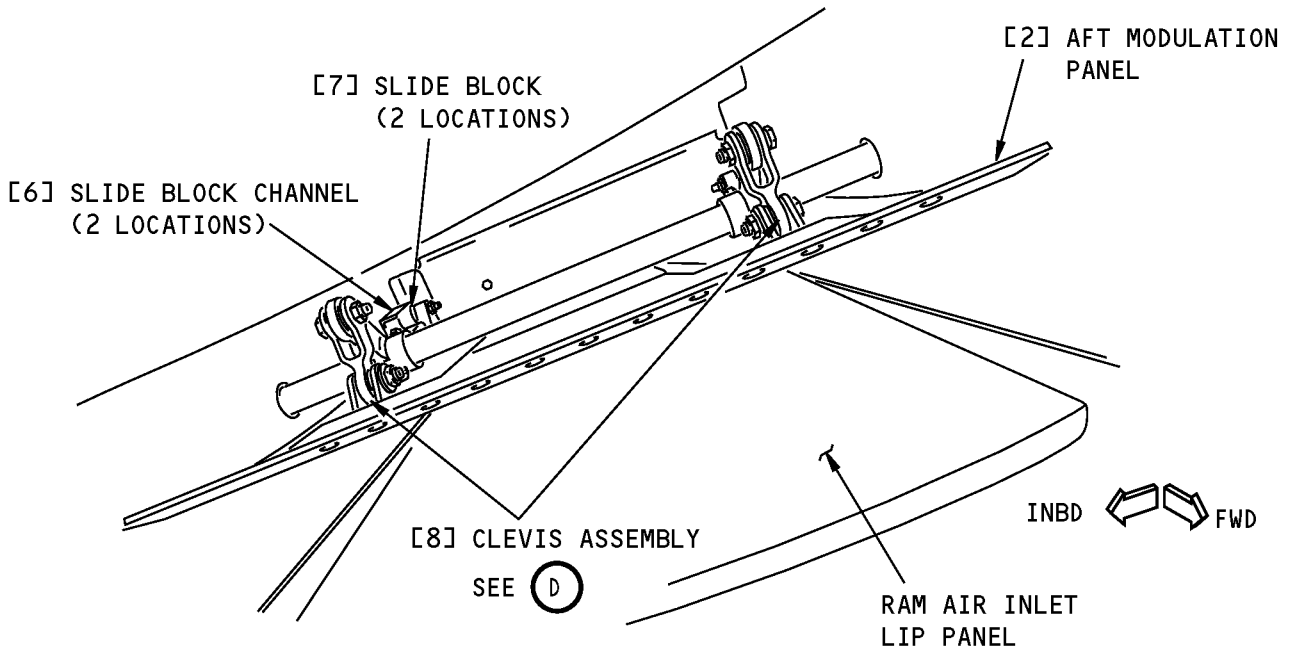
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**AIRCRAFT MAINTENANCE MANUAL**



**FORWARD MODULATION PANEL**

(B)



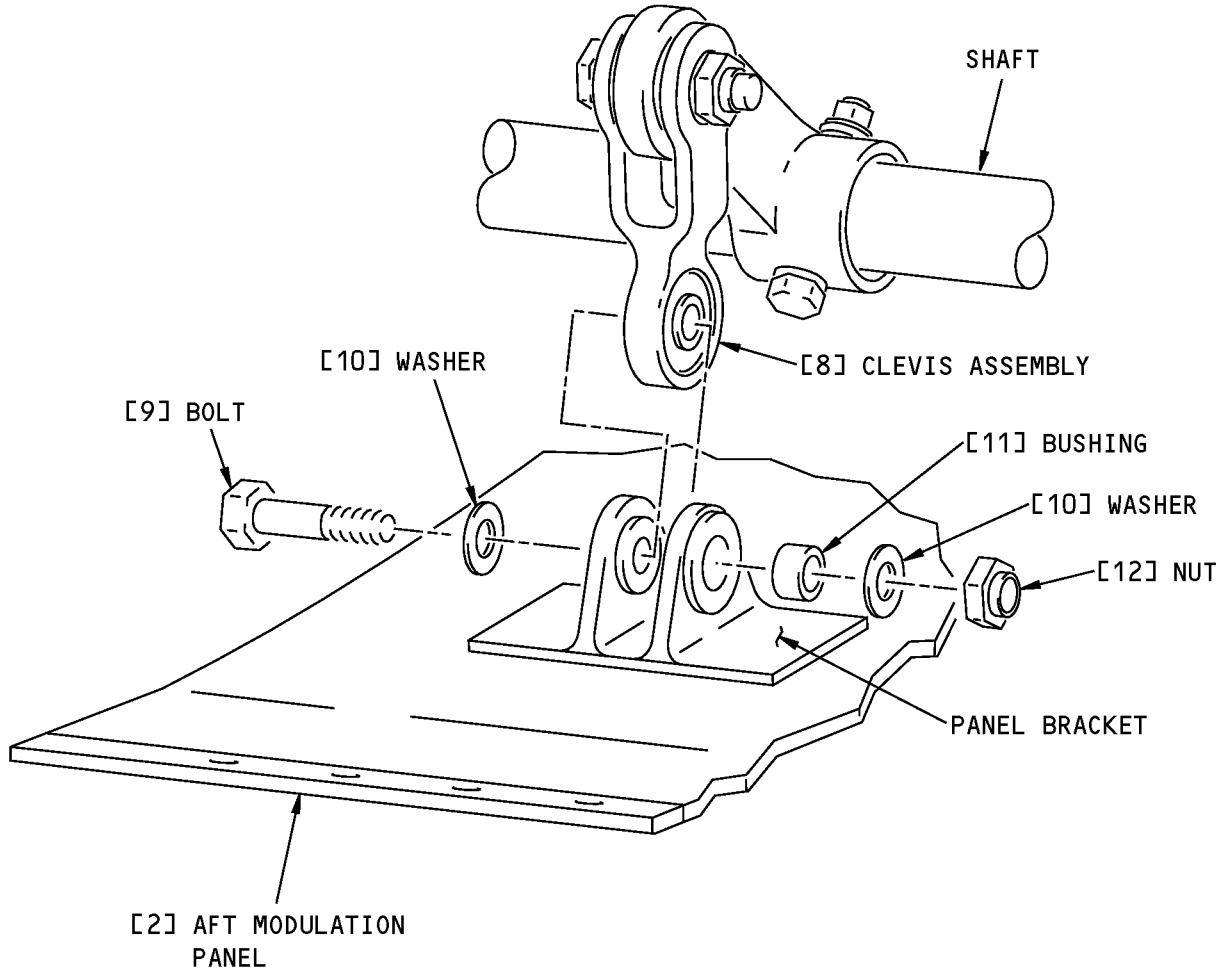
**AFT MODULATION PANEL**

(C)

**Ram Air Inlet Modulation Panels Installation**  
Figure 401 (Sheet 3 of 5)/21-51-23-990-801

EFFECTIVITY  
HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST  
SB 737-21-1148

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**CLEVIS ASSEMBLY  
(EXAMPLE)**

D

**Ram Air Inlet Modulation Panels Installation  
Figure 401 (Sheet 4 of 5)/21-51-23-990-801**

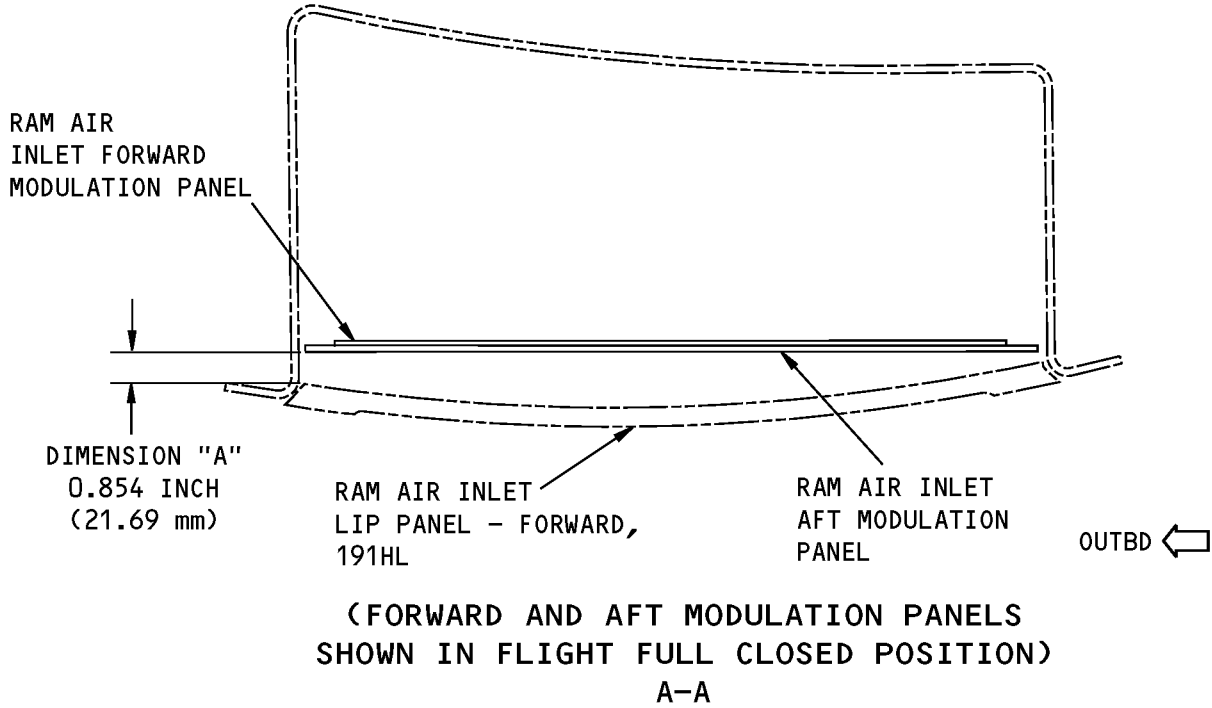
EFFECTIVITY  
HAP ALL

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**Ram Air Inlet Modulation Panels Installation**  
Figure 401 (Sheet 5 of 5)/21-51-23-990-801

EFFECTIVITY  
HAP ALL

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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)
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	Air Conditioning Access Door
192CR	Air Conditioning 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.

#### **HAP 001-013, 015-026, 028-030 PRE SB 737-21-1148**

- (b) Make sure the rollers [7] are in the roller supports [6].

#### **HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-21-1148**

- (c) Make sure the slide blocks [7] are in the slide block channels [6].

#### **HAP ALL**

- (d) 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.

EFFECTIVITY <b>HAP ALL</b>
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### AIRCRAFT MAINTENANCE MANUAL

- (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) 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 tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT

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 tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT

#### 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

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Row	Col	Number	Name
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 LEFT
<b>HAP 101-999</b>			
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT
C	4	C00257	AIR CONDITIONING OVERHEAT
<b>HAP ALL</b>			
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

(b) Open this access panel:

Number	Name/Location
192CL	Air Conditioning 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 RIGHT
<b>HAP 101-999</b>			
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT
C	4	C00257	AIR CONDITIONING OVERHEAT
<b>HAP ALL</b>			
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT

(b) Open this access panel:

Number	Name/Location
192CR	Air Conditioning 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 21-51-23-730-008

- (13) Measure the distance (refer to View A-A) between the ram air inlet lip panel and the left (right) ram air inlet modulation panels:

- (a) Make sure that the dimension "A" is approximately 0.854 (21.69).

### HAP 101-999

SUBTASK 21-51-23-010-003

- (14) Disconnect the electrical connector D1288 (D1290) from the left (right) ram air sensor.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-51-23-010-002

- (15) Disconnect the electrical connector D3916 (D3918) from the left (right) ram air sensor.

### HAP 101-999

SUBTASK 21-51-23-480-001

- (16) Install a jumper wire between pins 1 and 2 of electrical connector D1288 (D1290).

### HAP ALL

SUBTASK 21-51-23-730-009

- (17) Make sure that the ram air inlet modulation panels move to a more open position.

### HAP 101-999

SUBTASK 21-51-23-080-001

- (18) Remove the jumper wire from pins 1 and 2 of connector D1288 (D1290).

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**HAP 101-999 (Continued)**

SUBTASK 21-51-23-410-006

(19) Connect the electrical connector D1288 (D1290) to the left (right) ram air sensor.

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-51-23-410-001

(20) Connect the electrical connector D3916 (D3918) to the left (right) ram air sensor.

**HAP ALL**

SUBTASK 21-51-23-410-002

(21) Make sure the ram air inlet modulation panels move to a more closed position.

SUBTASK 21-51-23-860-014

(22) 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

(23) Make sure that the left (right) ram air inlet modulation panels move to a more open position.

SUBTASK 21-51-23-860-016

(24) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 21-51-23-730-015

(25) Make sure the ram air inlet modulation panels move to a more open position.

SUBTASK 21-51-23-700-002

(26) Make sure that the ram air inlet deflector door opens to the fully deployed position.

SUBTASK 21-51-23-860-017

(27) Connect the electrical connector D486 (D490) to the pack flow control and shutoff valve.

SUBTASK 21-51-23-220-001

(28) 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.

**F. Put the Airplane Back to Its Usual Condition**

SUBTASK 21-51-23-410-007

(1) Close the applicable access panels:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door

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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## AIRCRAFT MAINTENANCE MANUAL

### 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.

#### HAP 036-054, 101-999

- (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.

#### HAP ALL

#### 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)
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	Air Conditioning Access Door
192CR	Air Conditioning 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.

EFFECTIVITY <b>HAP ALL</b>	
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## AIRCRAFT MAINTENANCE MANUAL

(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:

<u>Number</u>	<u>Name/Location</u>
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-24-010-005

(7) To get access to the right ram air exhaust duct, open these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

### E. Ram Air Inlet Duct Removal

#### HAP 036-054, 101-999

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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### HAP 036-054, 101-999 (Continued)

- (b) Move the end of the flexible hose [17] off of the end of heat exchanger inlet duct [1].

#### HAP ALL

SUBTASK 21-51-24-020-001

- (2) Do these steps to remove the heat exchanger inlet duct [1]:

#### HAP 036-054, 101-999

- (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.

#### HAP ALL

- (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 Exhaust Duct Removal

SUBTASK 21-51-24-020-005

- (1) Do these steps to remove the flanged exhaust duct [11]:  
(a) Loosen the clamps [15].  
(b) Move the end of the hose [14] off the flanged exhaust duct [11].  
(c) Remove the bolts [16].  
(d) Remove the flanged exhaust duct [11].  
(e) Remove the clamps [15] and the hose [14].

SUBTASK 21-51-24-020-007

- (2) Do these steps to remove the elbow [10]:  
(a) Remove the bolts [12] and washers [13].  
(b) Remove the elbow [10] of the ram air exhaust duct.

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SUBTASK 21-51-24-480-002

(3) Put covers on the duct openings to keep out unwanted materials.

————— **END OF TASK** —————

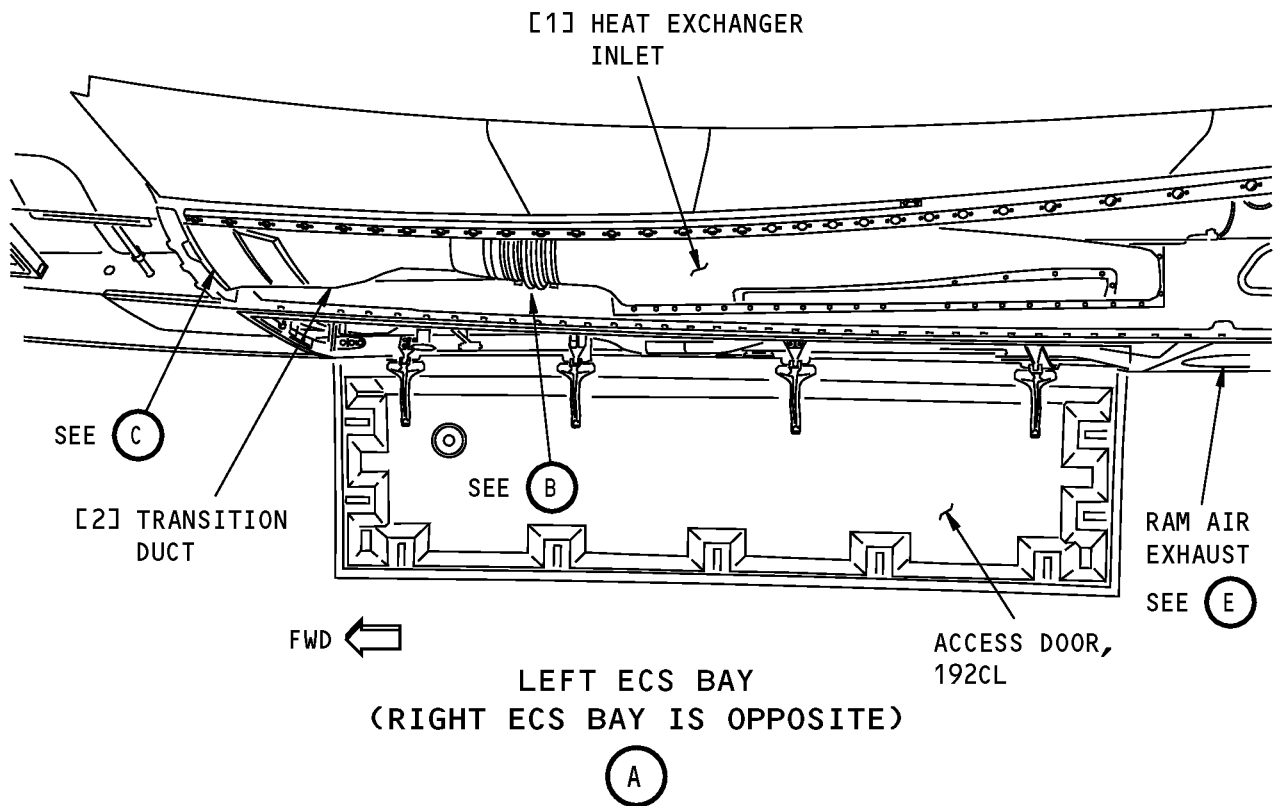
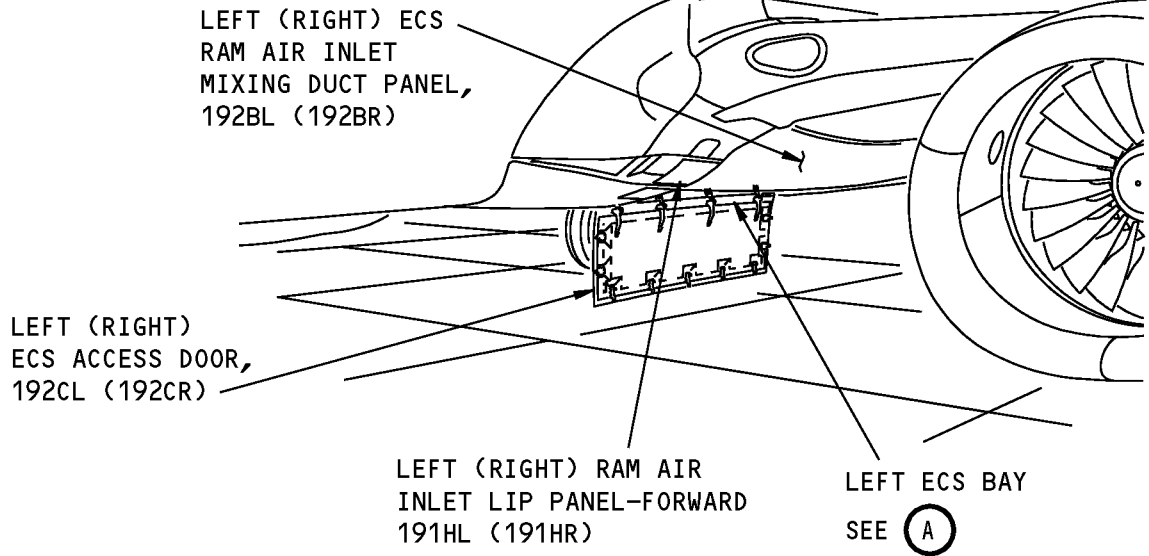
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**Ram Air Ducts Installation**  
**Figure 401 (Sheet 1 of 6)/21-51-24-990-801**

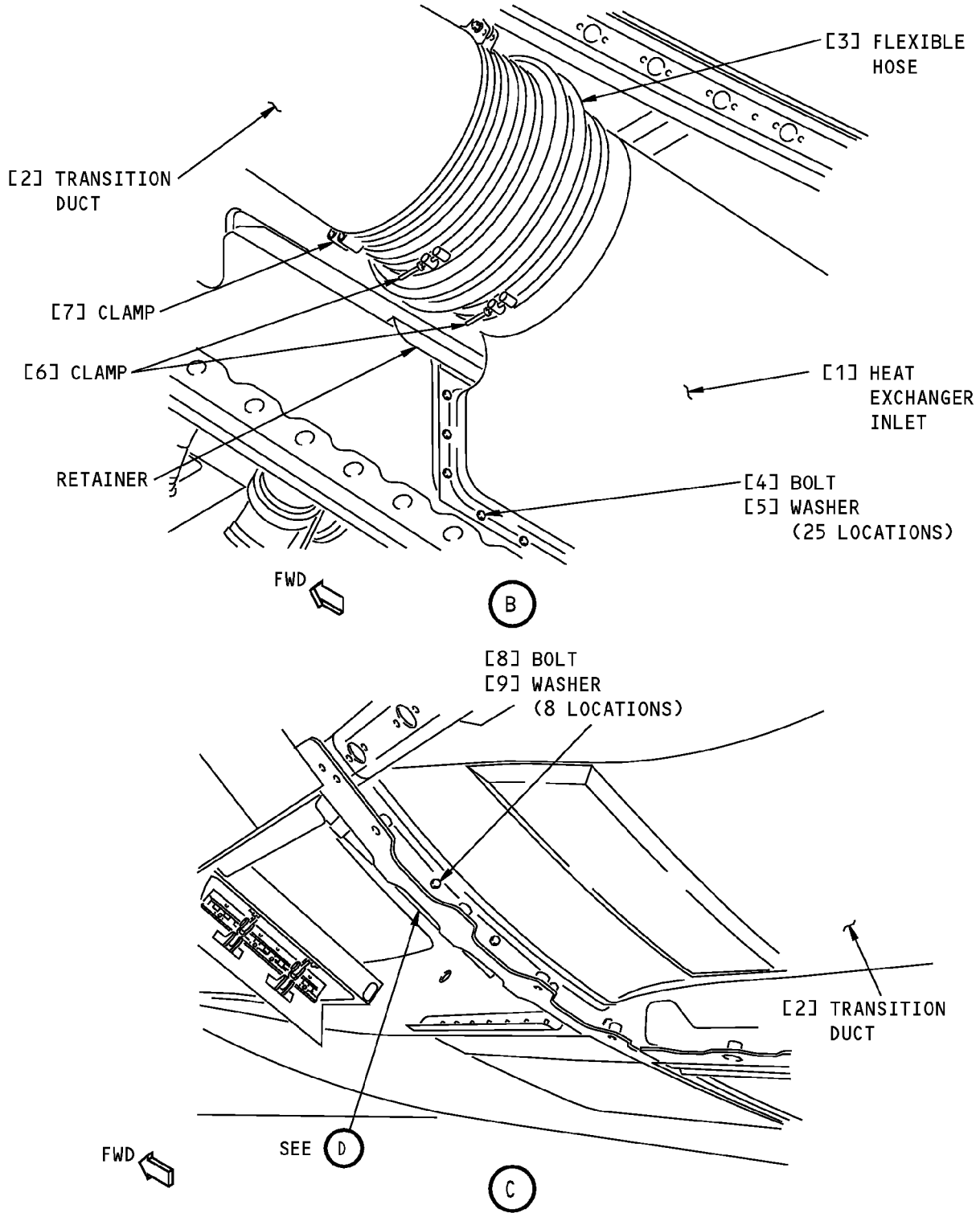
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**Ram Air Ducts Installation  
Figure 401 (Sheet 2 of 6)/21-51-24-990-801**

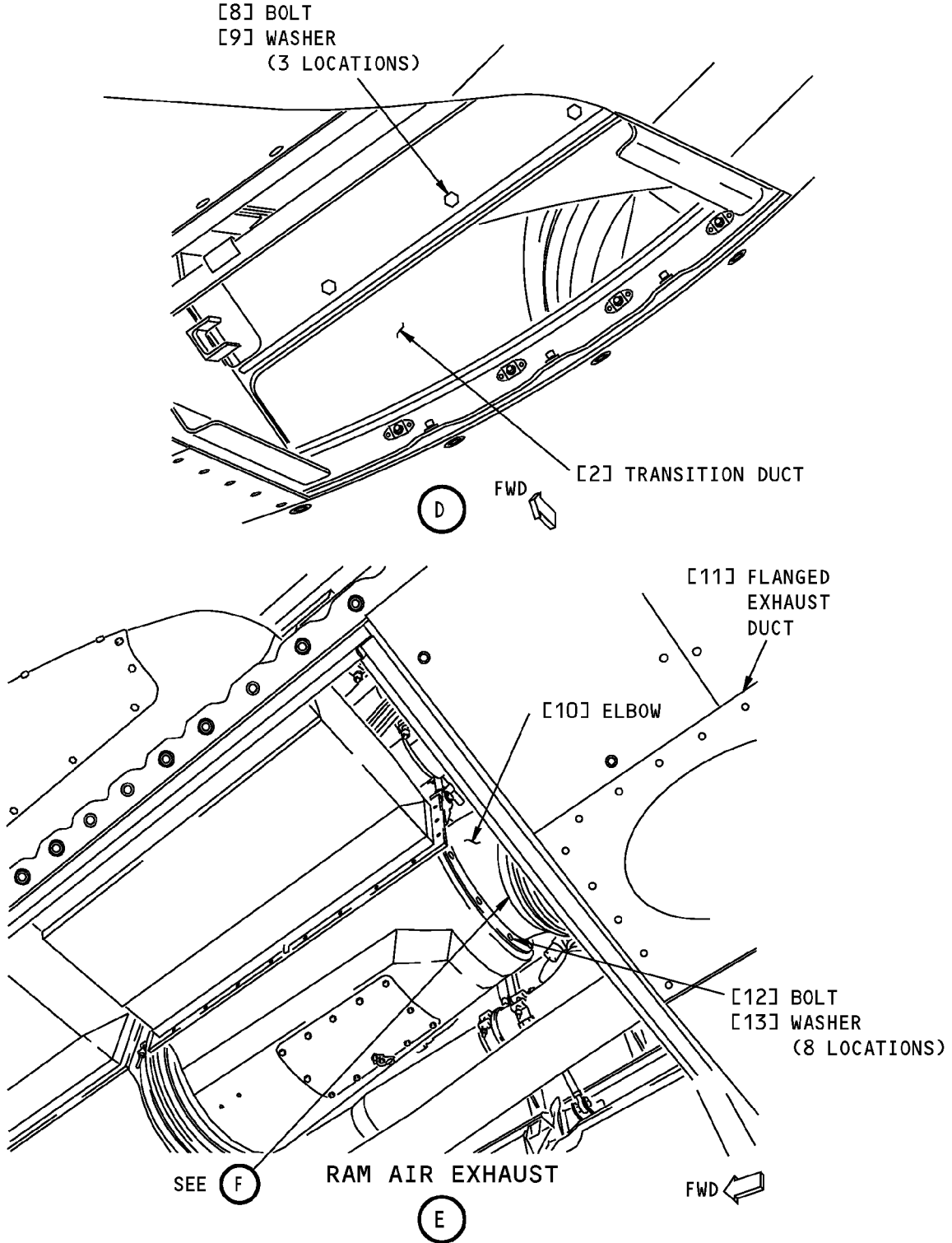
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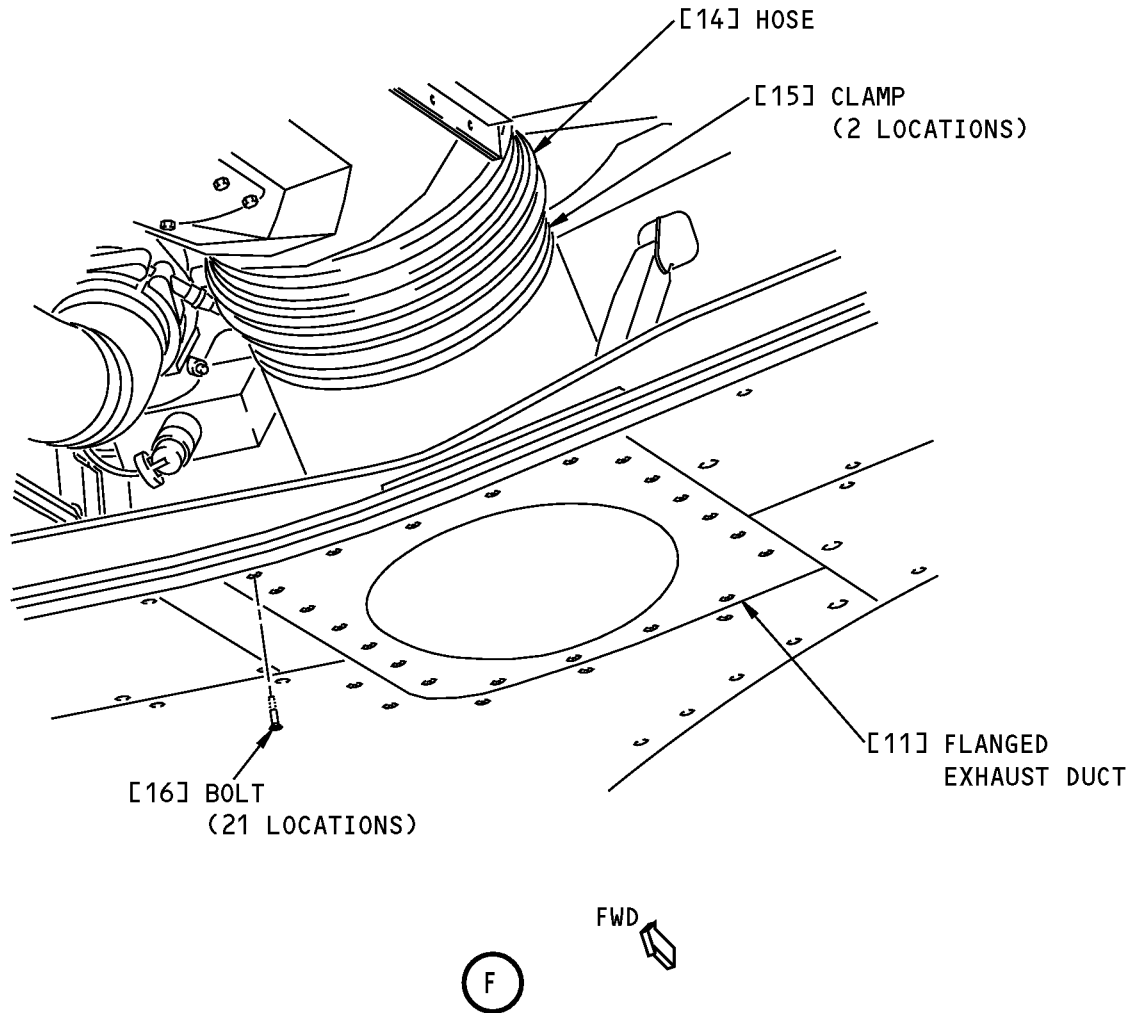
**Ram Air Ducts Installation  
Figure 401 (Sheet 3 of 6)/21-51-24-990-801**

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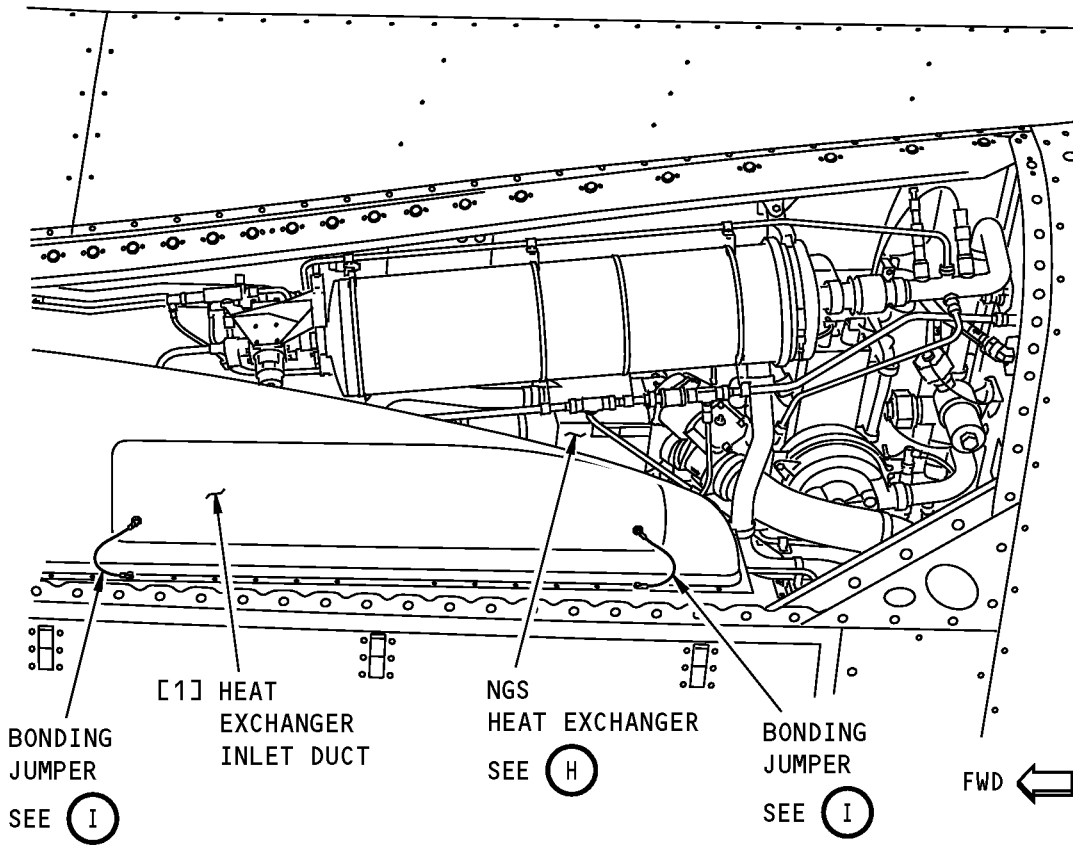
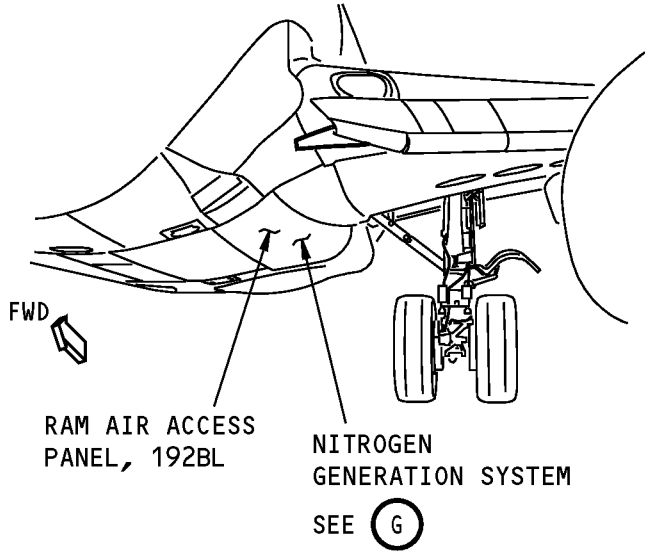
**Ram Air Ducts Installation**  
**Figure 401 (Sheet 4 of 6)/21-51-24-990-801**

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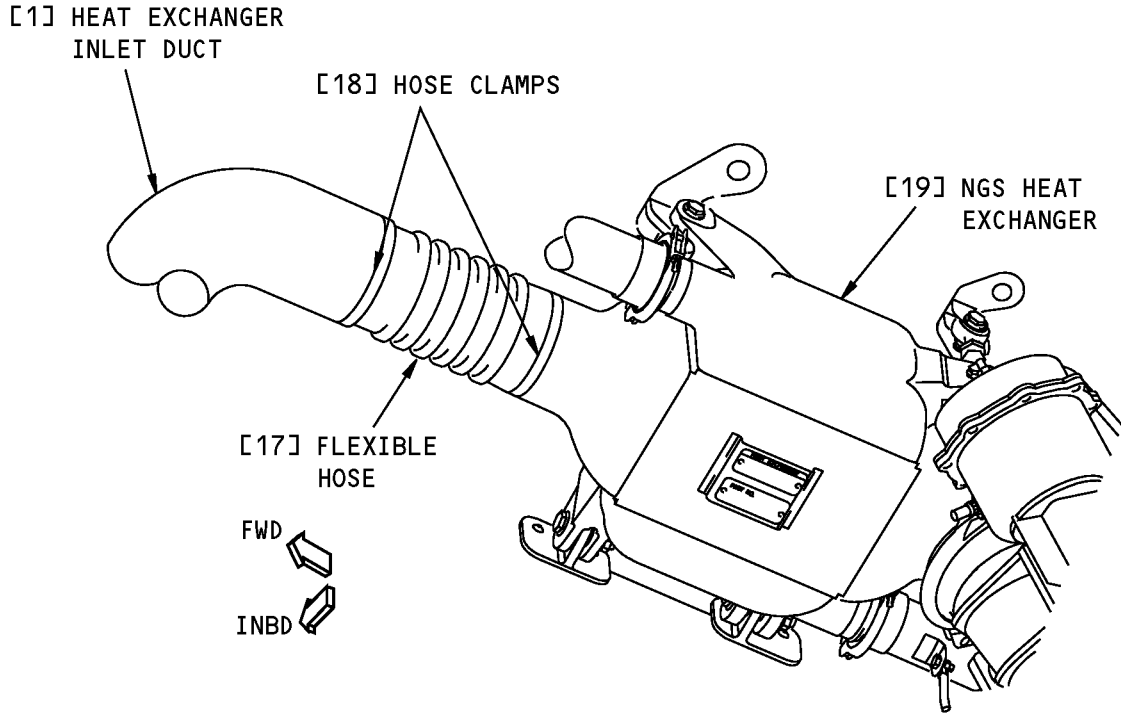
**NITROGEN GENERATION SYSTEM (NGS)**

(G)

**Ram Air Ducts Installation**  
**Figure 401 (Sheet 5 of 6)/21-51-24-990-801**

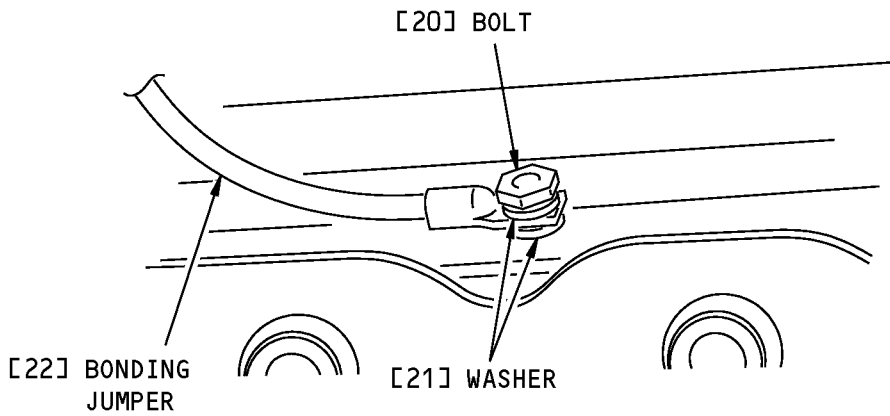
EFFECTIVITY  
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**NGS HEAT EXCHANGER**

(H)



**BONDING JUMPER  
(EXAMPLE)**

(I)

**Ram Air Ducts Installation  
Figure 401 (Sheet 6 of 6)/21-51-24-990-801**

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TASK 21-51-24-400-801

3. Ram Air Ducts Installation

(Figure 401)

A. References

Reference	Title
20-30-80	AIRPLANE STRUCTURE CLEANING SOLVENTS (Series 80)
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)
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	Duct	21-51-24-04-145	HAP 001-013, 015-026, 028-030		
		21-51-24-04-150	HAP 001-013, 015-026, 028-030		
		21-51-24-04A-160	HAP 044-054, 102-999		
		21-51-24-04B-165	HAP 044-054, 102-999		
		21-51-24-04C-145	HAP 031-043, 101		
		21-51-24-04C-150	HAP 031-043, 101		
		2	Transition duct	21-51-24-04-115	HAP 001-013, 015-026, 028-030
				21-51-24-04-120	HAP 001-013, 015-026, 028-030
				21-51-24-04A-115	HAP 044-054, 102-999
				21-51-24-04B-120	HAP 044-054, 102-999
21-51-24-04C-115	HAP 031-043, 101				
21-51-24-04C-120	HAP 031-043, 101				
21-51-24-04C-135	HAP 031-043, 101				
21-51-24-04C-140	HAP 031-043, 101				
10	Elbow			21-51-24-01-045	HAP 001-013, 015-026, 028-030
				21-51-24-01A-055	HAP 031-054, 101-999
11	Duct	21-51-24-01-035	HAP 001-013, 015-026, 028-030		
		21-51-24-01-040	HAP 001-013, 015-026, 028-030		
		21-51-24-01A-035	HAP 031-054, 101-999		
		21-51-24-01A-040	HAP 031-054, 101-999		

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

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### D. 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

### E. 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 [4] and the washers [5].
  - (c) Install the clamp [7] on the transition duct [2].
  - (d) Install the flexible hose [3] and a clamp [6] on the transition duct [2].

**NOTE:** Make sure the clamp [6] 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 flexible hose.

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.

**NOTE:** Make sure that the top flange is in the retainer on the lower wing beam and 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.

#### HAP 036-054, 101-999

- (d) Clean the mating surfaces of the bolts [20], the washers [21], and the bonding jumpers [22] (AIRPLANE STRUCTURE CLEANING SOLVENTS (Series 80), SUBJECT 20-30-80).
- (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].

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### HAP 036-054, 101-999 (Continued)

- 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.

#### HAP ALL

- (g) Install the other clamp [6] on the flexible hose [3].

NOTE: Make sure the clamp [6] 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 flexible hose.

#### HAP 036-054, 101-999

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 no more than 18 inch-pounds.

#### HAP ALL

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.

### F. Ram Air Exhaust Duct Installation

SUBTASK 21-51-24-080-002

- (1) Remove the covers from the duct openings.

SUBTASK 21-51-24-420-003

- (2) Do these steps to install the elbow [10]:
  - (a) Put the elbow [10] in its position.
  - (b) Install the bolts [12] and the washers [13].
  - (c) Install one of the clamps [15] and the hose [14] on the elbow [10].

NOTE: Make sure the clamp [15] 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 21-51-24-420-004

- (3) Do these steps to install the flanged exhaust duct [11]:
  - (a) Put the flanged exhaust duct [11] in its position.
  - (b) Install the bolts [16] which attach the flanged exhaust duct [11] to the airplane structure.
  - (c) Loosely install the other clamp [15] on the hose [14].
  - (d) Move the hose [14] on to the flanged exhaust duct [11].
  - (e) Install the other clamp [15].

**NOTE:** Make sure the clamp [15] 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.

### G. 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. THE HOT DUCTS CAN CAUSE INJURY TO PERSONS.

- (4) Make sure there is no air leakage at the applicable ram air duct connections.

### H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-24-860-006

- (1) Shutdown 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:

<u>Number</u>	<u>Name/Location</u>
192BL	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 21-51-24-410-003

- (3) Install this access panel:

<u>Number</u>	<u>Name/Location</u>
191HL	Ram Air Inlet Lip Panel - Forward

SUBTASK 21-51-24-410-004

- (4) Install this access panel:

<u>Number</u>	<u>Name/Location</u>
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

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SUBTASK 21-51-24-410-005

(5) Install this access panel:

<u>Number</u>	<u>Name/Location</u>
191HR	Ram Air Inlet Lip Panel - Forward

SUBTASK 21-51-24-410-006

(6) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-24-410-007

(7) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
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	
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS 8-201, Type IV (Supersedes BMS 8-201, Type II)

#### 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.

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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 the applicable resin, G50400 or resin, G02451 to repair the damaged area of the 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.

SUBTASK 21-51-24-340-002

- (2) Allow the resin to cure for 24 hours at room temperature.

### 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.

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### AIRCRAFT MAINTENANCE MANUAL

#### 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
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
G00031	Fabric - Glass, Finished, For Resin Laminates	SAE-AMS-~ C-9084 (MIL-C-9084 specification canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
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	
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS 8-201, Type IV (Supersedes BMS 8-201, 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.

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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:
  - (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.

### 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 —————

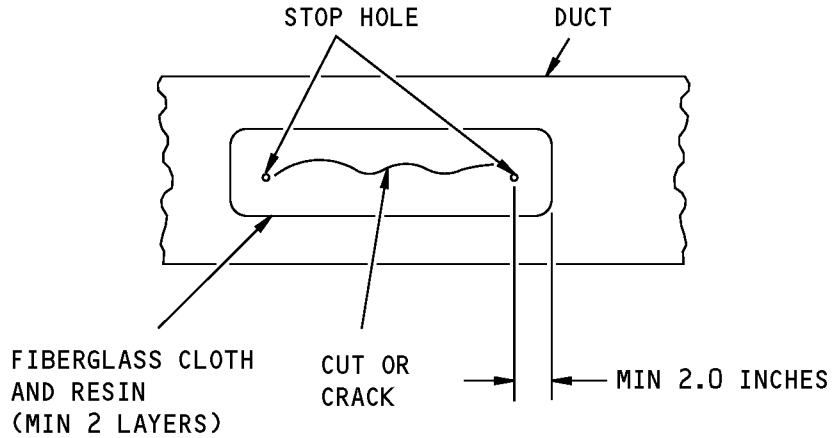
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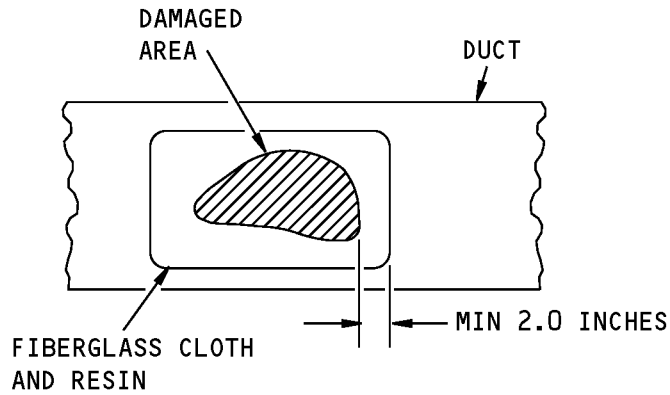
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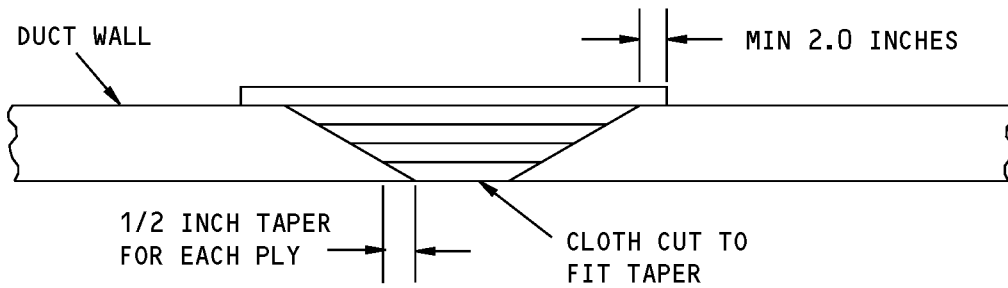
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**EXTERNAL PATCH - FIBERGLASS DUCT**



**STRUCTURAL REPAIR - FIBERGLASS - OVERHEAD VIEW**



**STRUCTURAL REPAIR - FIBERGLASS - CROSS-SECTION VIEW**

**Ram Air Ducts Approved 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
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
G00031	Fabric - Glass, Finished, For Resin Laminates	SAE-AMS-~ C-9084 (MIL-C-9084 specification canceled)
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
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	
G50400	Resin - Fiberglass Layup, Short Worklife, Non-Brominated	BMS 8-201, Type IV (Supersedes BMS 8-201, 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.

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

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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 ( $1/2 \times 6 = 3$  inches)( $12.7 \times 6 = 76.2$  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.

SUBTASK 21-51-24-340-018

- (3) Soak the fiberglass fabric with the applicable resin.

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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 wrinkles.

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.

### 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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LOW LIMIT (35 DEGREE F) VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the low limit (35°F) valve
- (2) An installation of the low limit (35°F) valve.

**TASK 21-51-30-000-801**

2. Low Limit (35 Degree F) 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-30-860-001

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

SUBTASK 21-51-30-840-001

- (2) To remove the low limit valve [1] 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
A	1	C00344	AIR CONDITIONING TEMP CONTROL 35 DEG F LEFT

- (b) Open this access panel:

Number	Name/Location
192CL	Air Conditioning Access Door

SUBTASK 21-51-30-840-002

- (3) To remove the low limit valve [1] for the right cooling pack, do this task:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00345	AIR CONDITIONING TEMP CONTROL 35 DEG F RIGHT

(b) Open these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

**E. Low Limit Valve Removal**

SUBTASK 21-51-30-020-001

(1) Disconnect the electrical connector [2] from the low limit valve [1].

SUBTASK 21-51-30-020-002

(2) Remove the nut [6], washer [5], and screw [3].

SUBTASK 21-51-30-020-003

(3) Disconnect the bonding jumper [4] from the low limit valve [1].

SUBTASK 21-51-30-020-004

(4) Remove the clamps [7].

SUBTASK 21-51-30-020-005

(5) Remove the low limit valve [1].

————— **END OF TASK** —————

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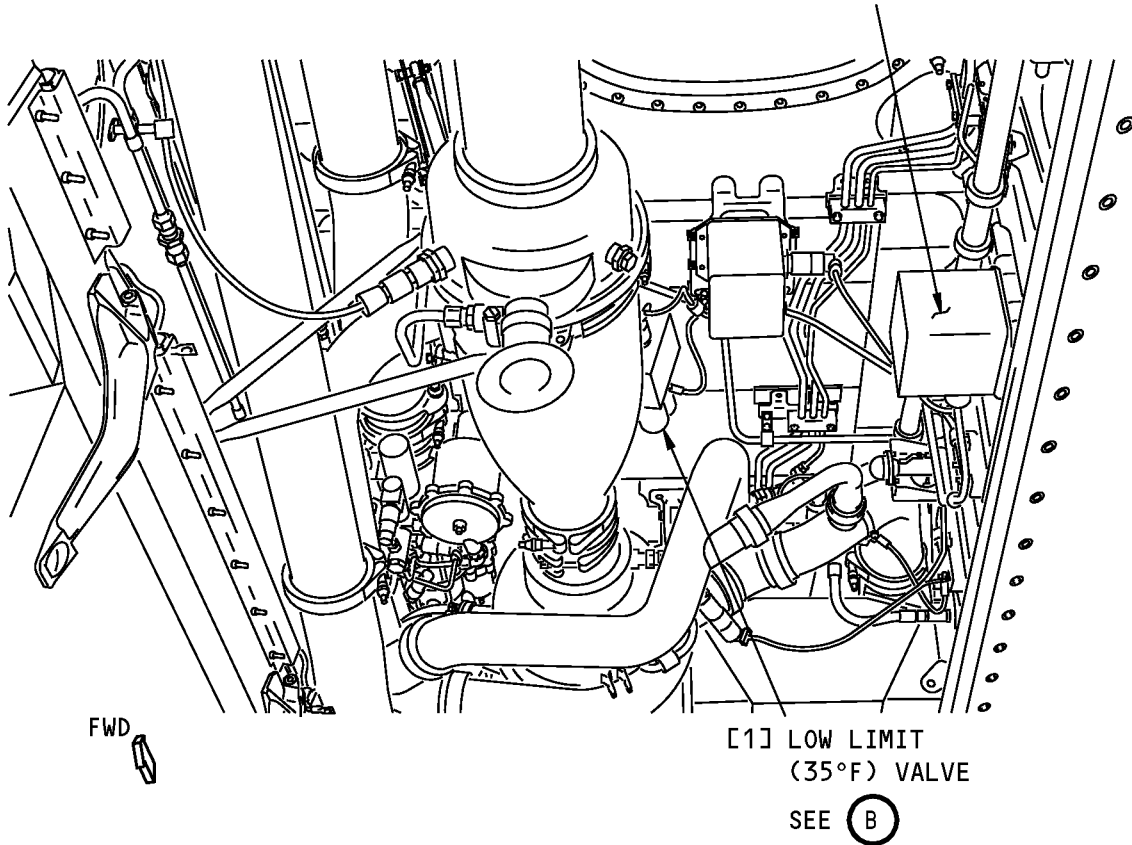
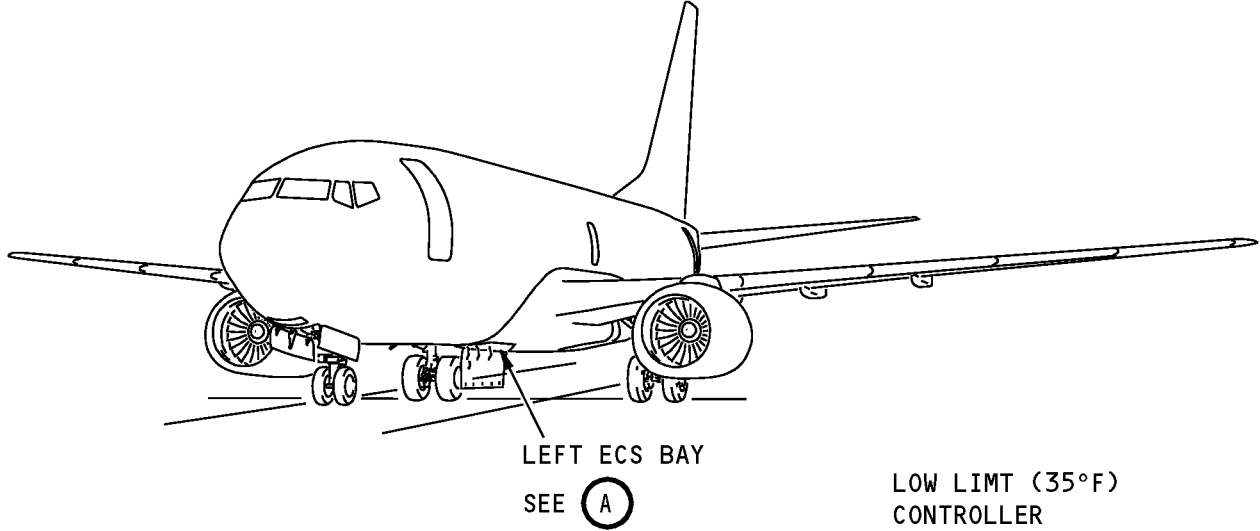
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LEFT ECS BAY  
(RIGHT ECS BAY IS OPPOSITE)

(A)

Low Limit (35 Degree Fahrenheit) Valve Installation  
Figure 401 (Sheet 1 of 2)/21-51-30-990-801

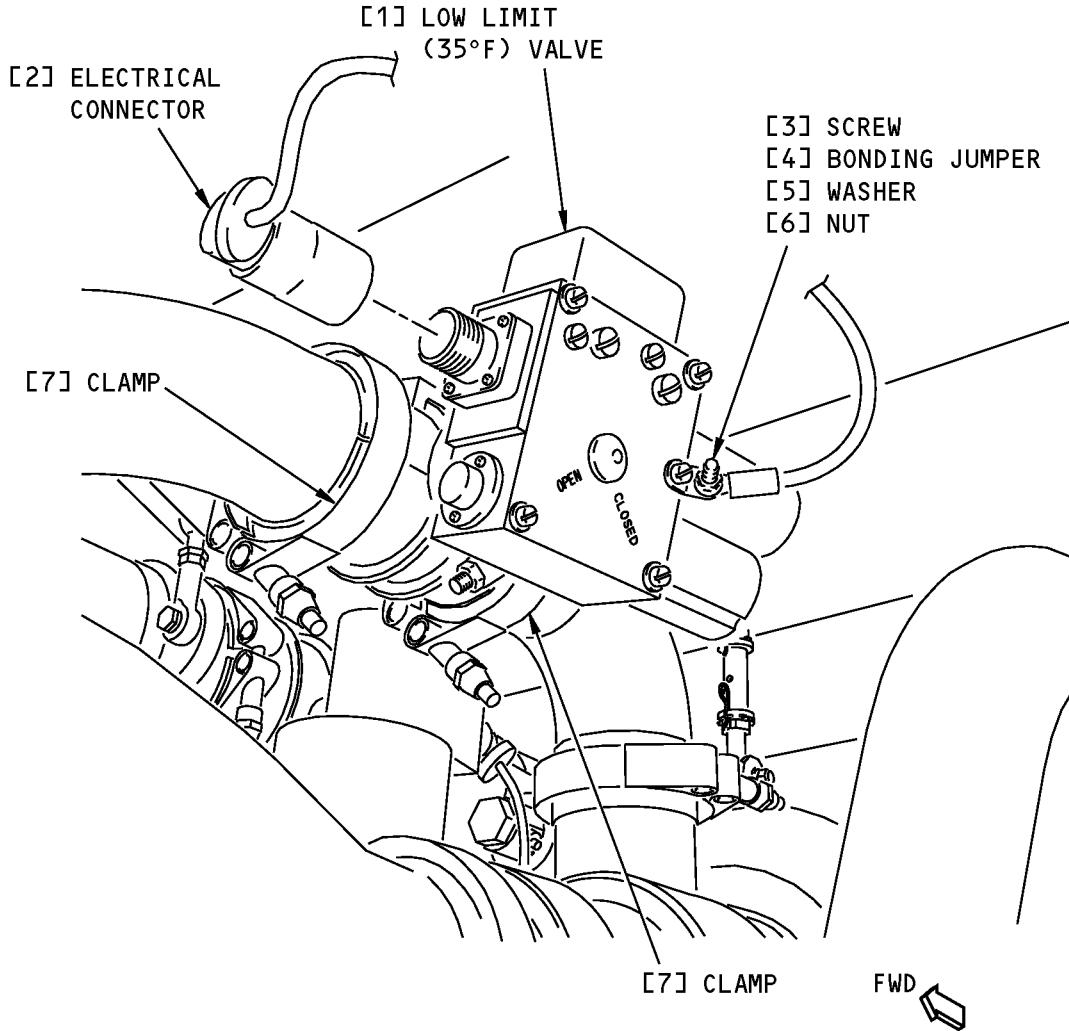
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**LOW LIMIT (35°F) VALVE**

**B**

**Low Limit (35 Degree Fahrenheit) Valve Installation  
Figure 401 (Sheet 2 of 2)/21-51-30-990-801**

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#### TASK 21-51-30-400-801

### 3. Low Limit (35 Degree F) 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)

#### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-51-30-03-045	HAP 101-999
		21-51-30-04-060	HAP 101-999

#### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

#### E. Low Limit Valve Installation

SUBTASK 21-51-30-420-001

(1) Put the low limit valve [1] in its position.

SUBTASK 21-51-30-420-002

(2) Install the clamps [7].

SUBTASK 21-51-30-420-003

(3) Put the bonding jumper [4] in its position on the low limit valve [1].

**NOTE:** Make sure the jumper connection is clean.

SUBTASK 21-51-30-420-004

(4) Install the screw [3], washer [5], and nut [6].

SUBTASK 21-51-30-420-005

(5) Connect the electrical connector [2] on the low limit valve [1].

#### F. Do a Post Installation Test of the Low Limit Valve

SUBTASK 21-51-30-860-002

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

SUBTASK 21-51-30-860-003

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C00344	AIR CONDITIONING TEMP CONTROL 35 DEG F LEFT

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00345	AIR CONDITIONING TEMP CONTROL 35 DEG F RIGHT

SUBTASK 21-51-30-860-004

- (3) Put the L PACK and R PACK switches to the OFF position.

SUBTASK 21-51-30-710-001

- (4) Get access to the left pack or right pack low limit controller.

SUBTASK 21-51-30-740-001

- (5) Do these steps to do a BITE test on the low limit controller:
- (a) Push the GO and the NO GO lights on the low limit controller.
    - 1) Make sure the lights come on when you push them.
  - (b) Put the TEST SWITCH to position 2.
    - 1) Make sure the GO light comes on.
    - 2) Make sure the low limit valve goes to the full open position.
  - (c) Put the TEST SWITCH to position 4.
    - 1) Make sure the GO light comes on.
    - 2) Make sure the low limit valve goes to the full closed position.
  - (d) Put the TEST SWITCH to the FLIGHT position.

### G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-30-410-001

- (1) If you installed the low limit valve [1] for the left cooling pack, do this task:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-30-410-002

- (2) If you installed the low limit valve [1] for the right cooling pack, do this task:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

SUBTASK 21-51-30-860-005

- (3) Put the L PACK and R PACK switches to the AUTO position.

SUBTASK 21-51-30-860-006

- (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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### LOW LIMIT (35 DEGREE F) CONTROLLER - REMOVAL/INSTALLATION

#### 1. General

A. This procedure has these tasks:

- (1) A removal of the low limit (35°F) controller.
- (2) An installation of the low limit (35°F) controller.

#### **TASK 21-51-31-000-801**

#### 2. Low Limit (35 Degree F) Controller 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-31-860-001

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

SUBTASK 21-51-31-840-001

- (2) Do these steps to remove the low limit controller [1] for the left cooling pack:
  - (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C00344	AIR CONDITIONING TEMP CONTROL 35 DEG F LEFT

- (b) Open this access panel:

Number	Name/Location
192CL	Air Conditioning Access Door

SUBTASK 21-51-31-840-002

- (3) Do these steps to remove the low limit controller [1] for the right cooling pack:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00345	AIR CONDITIONING TEMP CONTROL 35 DEG F RIGHT

- (b) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

- (c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

### E. Low Limit Controller Removal

SUBTASK 21-51-31-020-001

- (1) Disconnect the electrical connector [4] from the low limit controller [1].

SUBTASK 21-51-31-020-002

- (2) Remove the screws [2] and washers [3].

SUBTASK 21-51-31-020-003

- (3) Remove the low limit controller [1].

————— **END OF TASK** —————

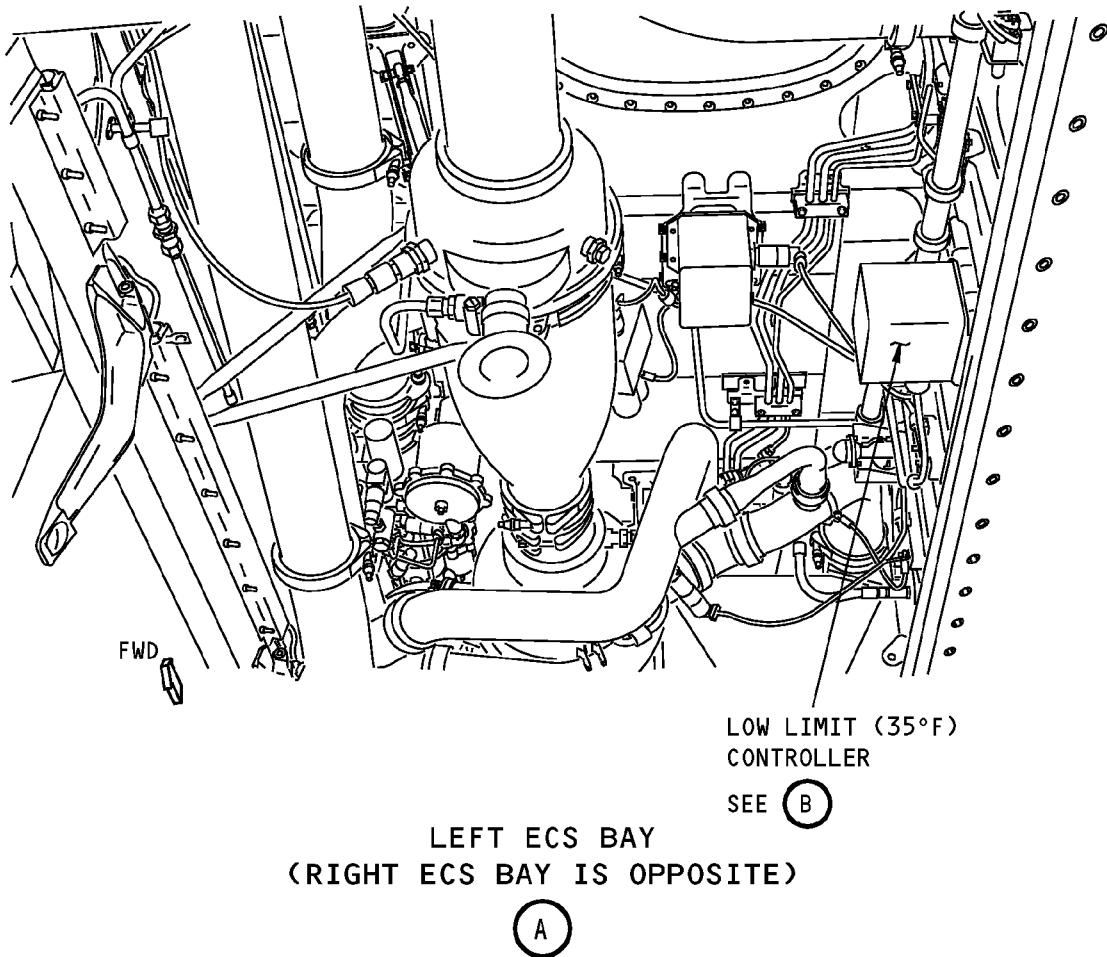
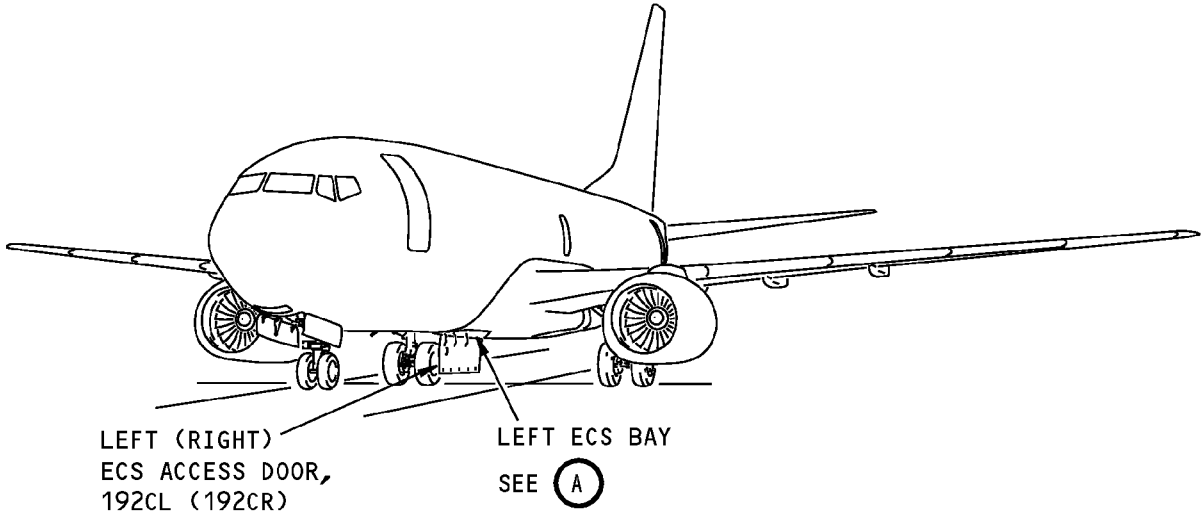
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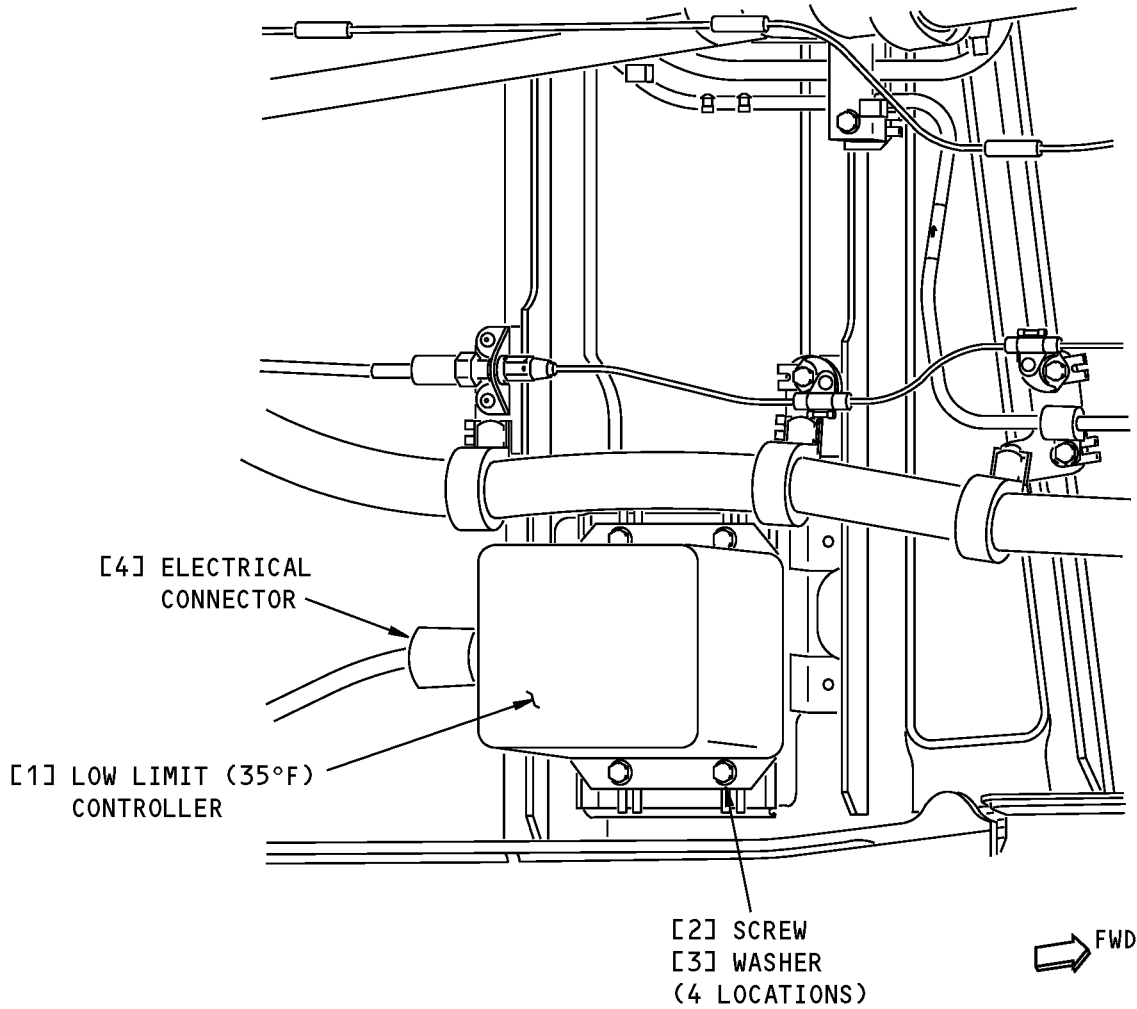
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**Low Limit 35 Degree Fahrenheit Controller Installation  
Figure 401 (Sheet 1 of 2)/21-51-31-990-801**

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**LOW LIMIT (35°F) CONTROLLER**



**Low Limit 35 Degree Fahrenheit Controller Installation  
Figure 401 (Sheet 2 of 2)/21-51-31-990-801**

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#### TASK 21-51-31-400-801

### 3. Low Limit (35 Degree F) Controller 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	Controller	21-51-31-03-015	HAP 101-999
		21-51-31-04-015	HAP 101-999

#### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

#### E. Low Limit Controller Installation

SUBTASK 21-51-31-420-001

(1) Put the low limit controller [1] in its position.

SUBTASK 21-51-31-420-002

(2) Install the washers [3] and the screws [2].

SUBTASK 21-51-31-420-003

(3) Install the electrical connector [4] on the low limit controller [1].

#### F. Do a Post Installation Test of the Low Limit Controller

SUBTASK 21-51-31-860-002

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

SUBTASK 21-51-31-860-003

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	1	C00344	AIR CONDITIONING TEMP CONTROL 35 DEG F LEFT
B	1	C00345	AIR CONDITIONING TEMP CONTROL 35 DEG F RIGHT

SUBTASK 21-51-31-860-004

(3) Put the L PACK and R PACK switches to the OFF position.

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SUBTASK 21-51-31-710-001

- (4) Get access to the left pack or right pack low limit controller [1].

SUBTASK 21-51-31-740-001

- (5) Do these steps to do a BITE test on the low limit controller [1]:
- (a) Push the GO and the NO GO lights on the low limit controller [1].
    - 1) Make sure the lights come on when you push them.
  - (b) Turn the TEST SWITCH to position 1.

NOTE: The TEST SWITCH is spring loaded to go back to the FLIGHT position. You must hold the TEST SWITCH in each position to do the steps of this test.

- 1) Make sure the GO light comes on.
- (c) Turn the TEST SWITCH to position 2.
  - 1) Make sure the GO light comes on.
  - 2) Make sure the low limit valve goes to the full open position.
- (d) Turn the TEST SWITCH to position 3.
  - 1) Make sure the GO light comes on.
- (e) Turn the TEST SWITCH to position 4.
  - 1) Make sure the GO light comes on.
  - 2) Make sure the low limit valve goes to the full closed position.
- (f) Turn the TEST SWITCH to position 5.
  - 1) Make sure the GO light comes on.
- (g) Turn the TEST SWITCH to the FLIGHT position.

### G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-31-410-001

- (1) If you installed the low limit controller [1] for the left cooling pack, do this task:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-31-410-002

- (2) If you installed the low limit controller [1] for the right cooling pack, do this task:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

SUBTASK 21-51-31-860-005

- (3) Put the L PACK and R PACK switches to the AUTO position.

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SUBTASK 21-51-31-860-006

- (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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### LOW LIMIT TEMPERATURE (35 DEGREE FAHRENHEIT) SENSOR - REMOVAL/INSTALLATION

#### 1. General

A. This procedure has these tasks:

- (1) A removal of the low limit (35°F) temperature sensor
- (2) An installation of the low limit (35°F) temperature sensor.

#### **TASK 21-51-32-000-801**

#### 2. Low Limit (35 Degree Fahrenheit) 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-51-32-860-001

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

SUBTASK 21-51-32-010-001

- (2) To get access to the temperature sensor for the left cooling pack, open this access panel:

Number	Name/Location
192CL	Air Conditioning Access Door

SUBTASK 21-51-32-010-002

- (3) To get access to the temperature sensor for the right cooling pack, open these access panels in this sequence:

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

E. Temperature Sensor Removal

SUBTASK 21-51-32-020-001

**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 [1] from the temperature sensor [2].

SUBTASK 21-51-32-020-002

- (2) Remove and discard the lockwire from the temperature sensor [2].

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SUBTASK 21-51-32-020-003

**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 [2].

**NOTE:** Use one wrench to hold the boss. Use the other wrench to turn the temperature sensor [2].

SUBTASK 21-51-32-020-004

(4) Remove and discard the O-ring [3] from the temperature sensor [2].

————— **END OF TASK** —————

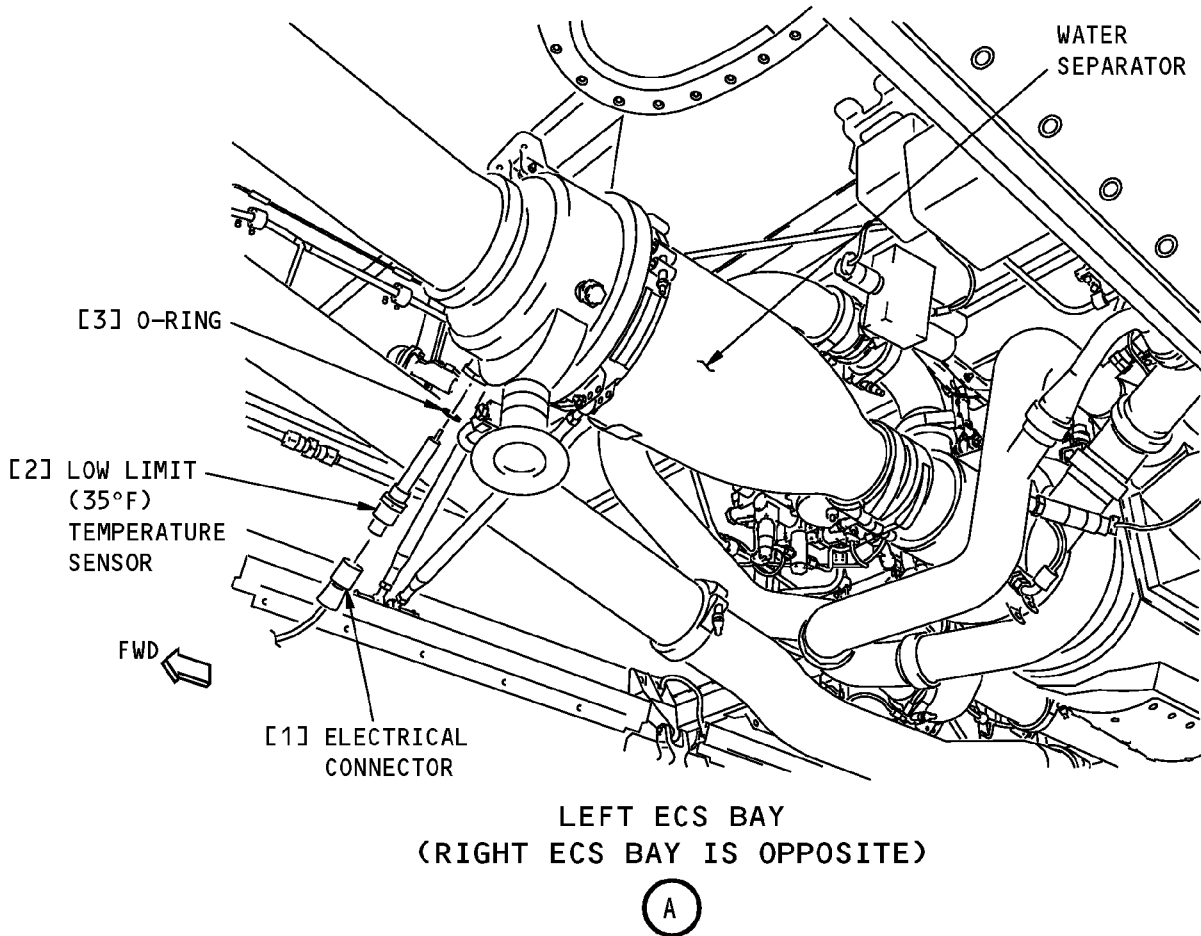
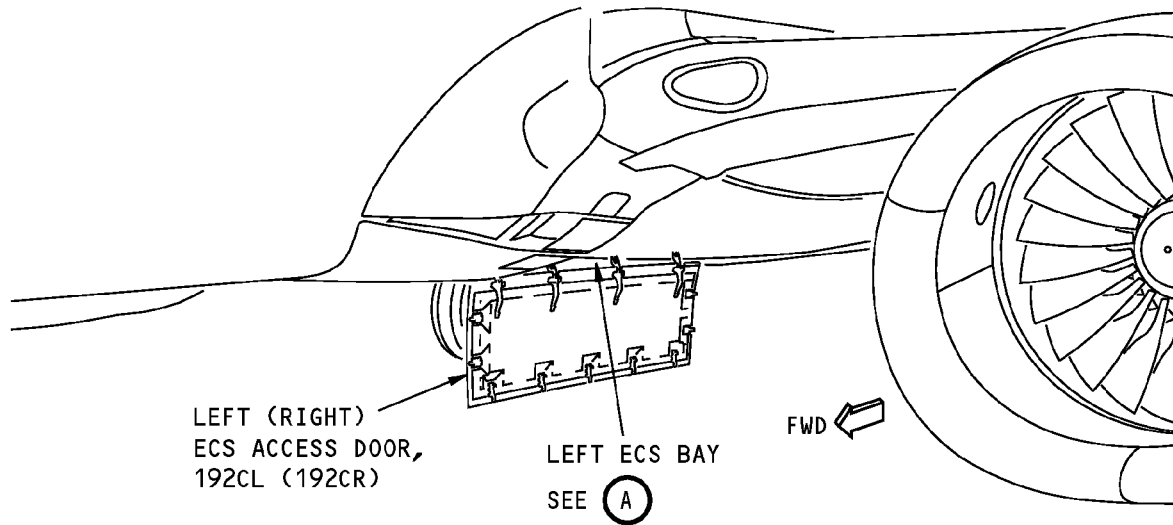
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**Low Limit (35 Degree Fahrenheit) Temperature Sensor Installation  
Figure 401/21-51-32-990-801**

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## TASK 21-51-32-400-801

### 3. Low Limit (35 Degree Fahrenheit) Temperature Sensor 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. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT-8N	MIL-PRF-907F
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~ C32

#### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

#### E. Temperature Sensor Installation

SUBTASK 21-51-32-420-001

(1) Install a new O-ring [3] on the temperature sensor [2].

SUBTASK 21-51-32-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut are clean.

SUBTASK 21-51-32-640-001

(3) Apply a thin layer of the Never-Seez NSBT-8N compound, D00006 to the threads of the temperature sensor [2].

SUBTASK 21-51-32-420-002

**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.

(4) Use two wrenches to install the temperature sensor [2].

**NOTE:** Use one wrench to hold the boss. Use the other wrench to turn the temperature sensor [2].

SUBTASK 21-51-32-420-003

(5) Install a new lockwire, G01048 on the temperature sensor [2].

SUBTASK 21-51-32-420-004

(6) Connect the electrical connector [1] to the temperature sensor [2].

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### F. Temperature Sensor Installation Test

SUBTASK 21-51-32-860-002

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

SUBTASK 21-51-32-860-003

- (2) Make sure the L PACK and R PACK switches are in the OFF position.

SUBTASK 21-51-32-740-001

- (3) Do these steps to make sure the GO and NO GO lights on the low limit controller work correctly.

NOTE: The low limit controller for the left pack is found in the left pack bay. The low limit controller for the right pack is found in the right pack bay.

- (a) Push the GO light on the applicable low limit controller.
- 1) Make sure the green GO light comes on.
- (b) Push the NO GO light on the applicable low limit controller.
- 1) Make sure the red NO GO light comes on.

SUBTASK 21-51-32-740-002

- (4) Do these steps to do a test of the low limit temperature sensor:

- (a) Turn and hold the POSN selector from the FLIGHT POSN to POSN 5.
- 1) Make sure the green GO light comes on.

NOTE: If the green GO light comes on, the temperature sensor works correctly.

- (b) Turn the POSN selector to the FLIGHT POSN.

### G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-32-410-001

- (1) If the temperature sensor for the right cooling pack was replaced, close these access panels in this sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-32-410-002

- (2) If the temperature sensor for the left cooling pack was replaced, close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-32-860-004

- (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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## AIRCRAFT MAINTENANCE MANUAL

### 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	Air Conditioning Access Door
192CR	Air Conditioning 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.

#### **HAP 101-999**

SUBTASK 21-51-40-860-009

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	4	C00257	AIR CONDITIONING OVERHEAT

#### **HAP 001-013, 015-026, 028-054**

SUBTASK 21-51-40-860-003

- (3) 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

- (4) To replace the overheat switch for the right cooling pack, do this step:

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HAP 001-013, 015-026, 028-054 (Continued)

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

HAP ALL

SUBTASK 21-51-40-010-001

(5) To get access to the overheat switch on the left cooling pack, do this task:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-40-010-002

(6) To get access to the overheat switch on the right cooling pack, do this task:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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 —————

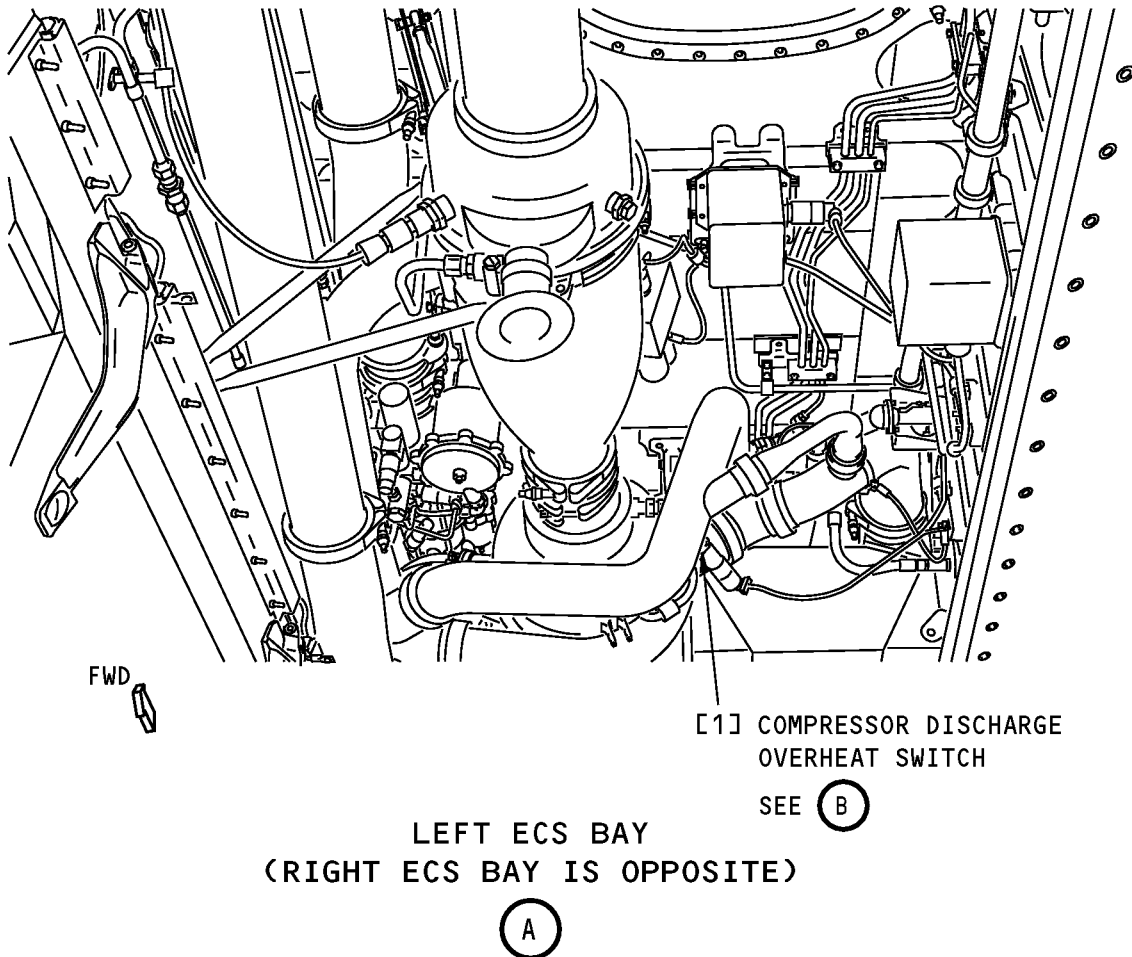
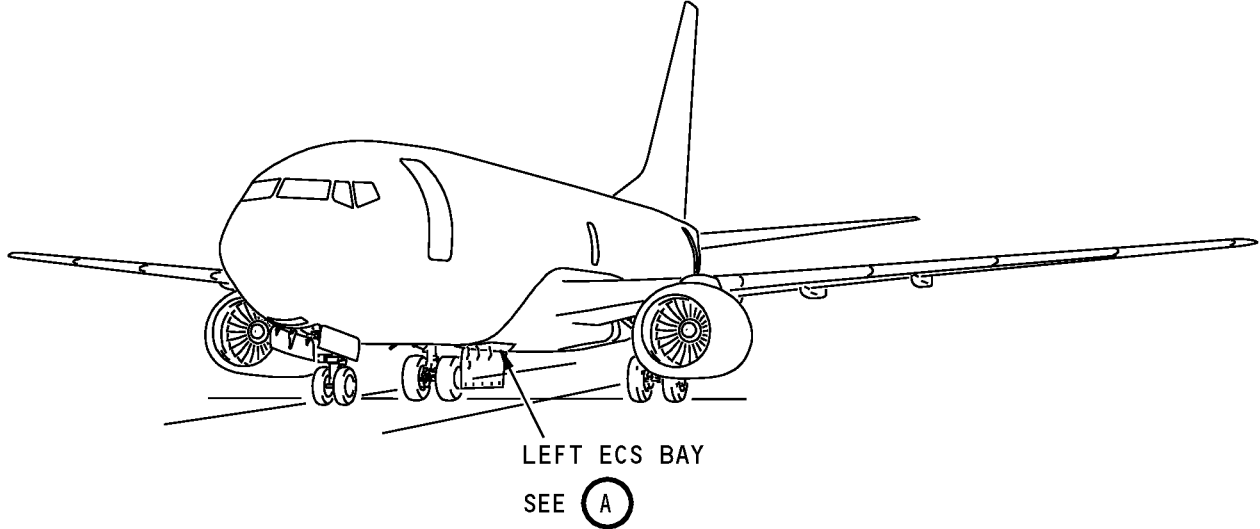
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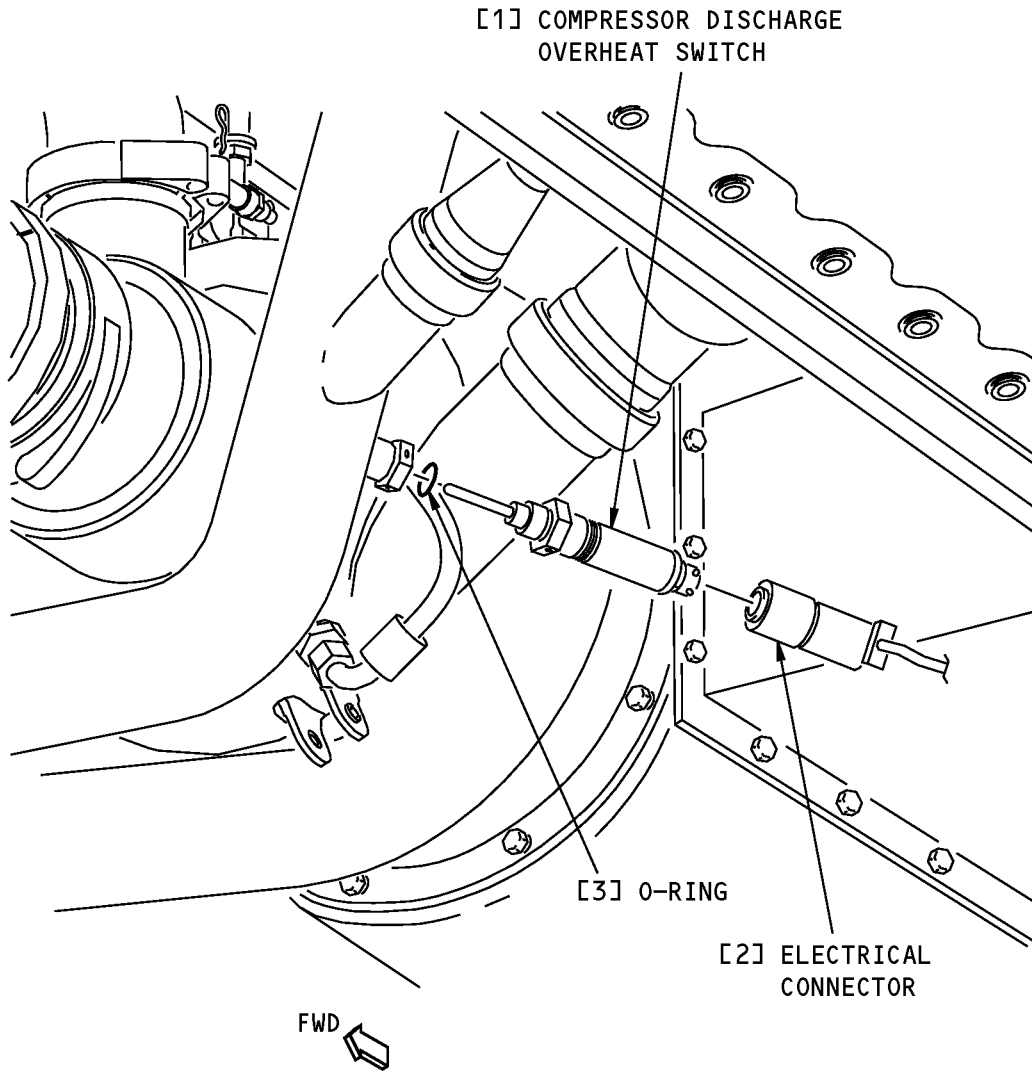
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**Compressor Discharge Overheat Switch Installation  
Figure 401 (Sheet 1 of 4)/21-51-40-990-801**

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**COMPRESSOR DISCHARGE OVERHEAT SWITCH**

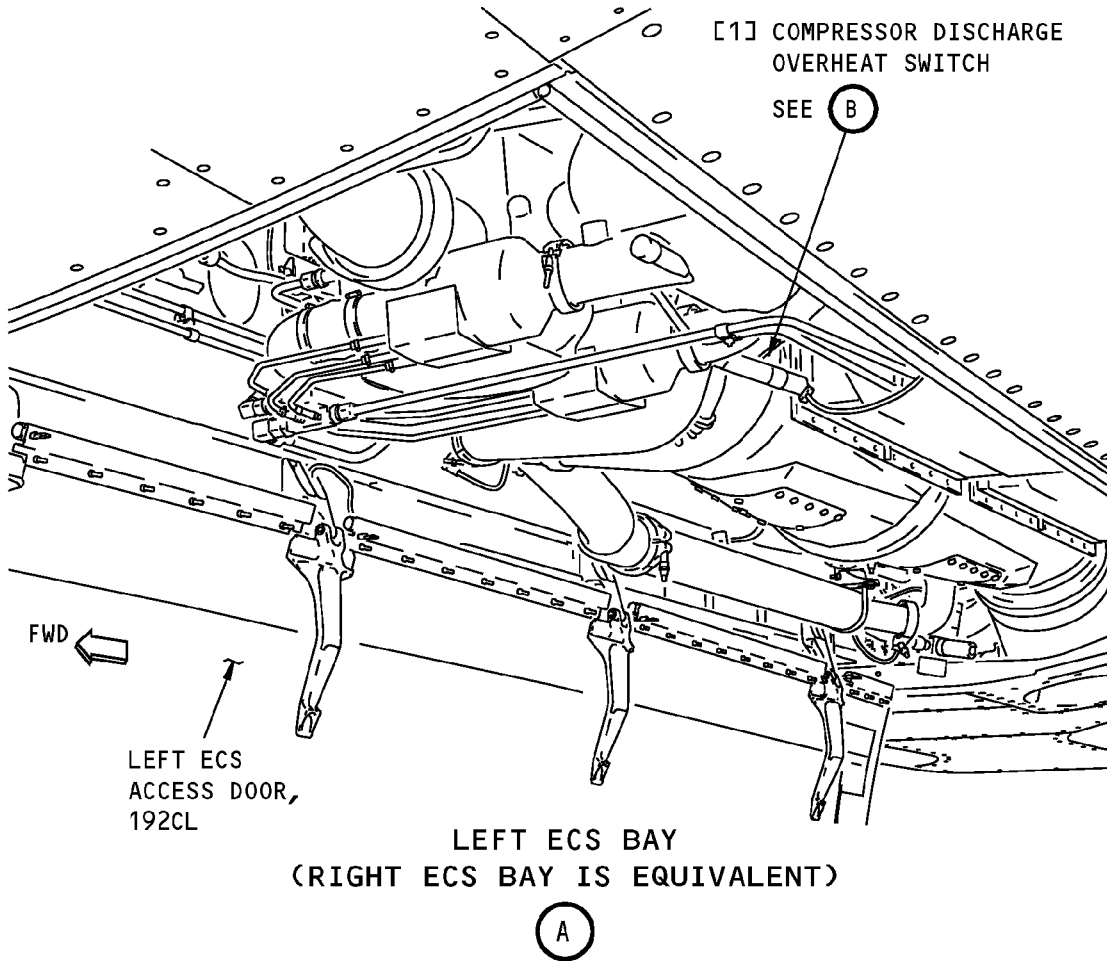
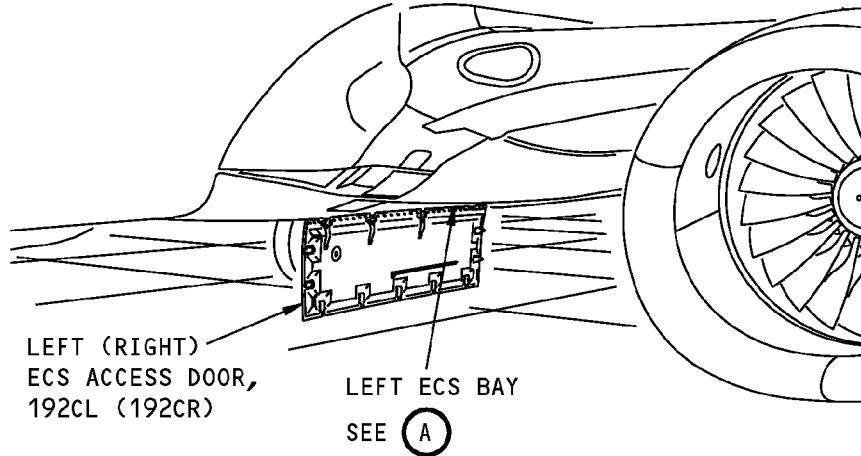
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**Compressor Discharge Overheat Switch Installation  
Figure 401 (Sheet 2 of 4)/21-51-40-990-801**

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**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**



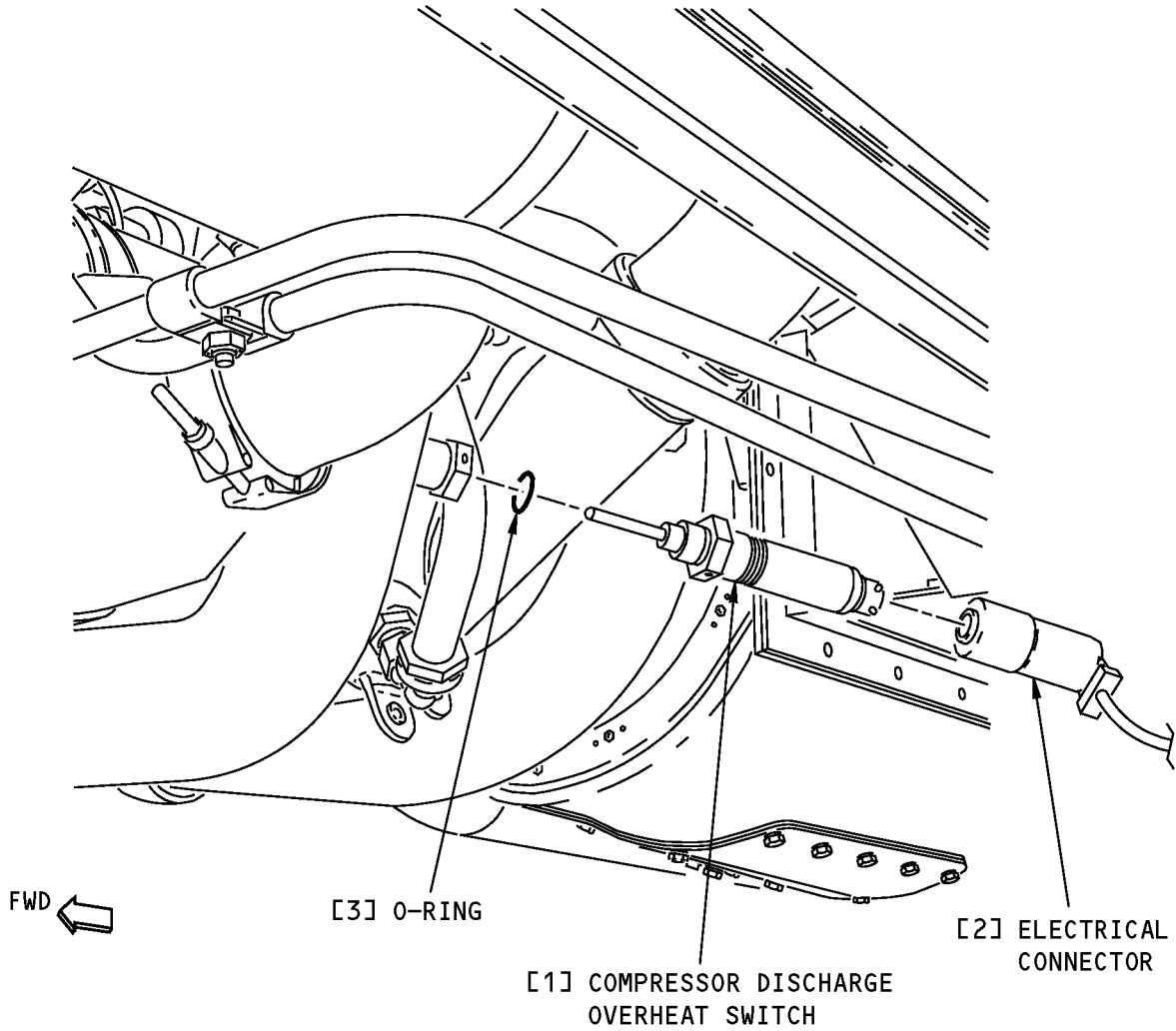
**Compressor Discharge Overheat Switch Installation  
Figure 401 (Sheet 3 of 4)/21-51-40-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**COMPRESSOR DISCHARGE OVERHEAT SWITCH**

**B**

**Compressor Discharge Overheat Switch Installation  
Figure 401 (Sheet 4 of 4)/21-51-40-990-801**

EFFECTIVITY  
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### AIRCRAFT MAINTENANCE MANUAL

#### 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-8N	MIL-PRF-907F
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~C32

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch	21-51-40-01-020	HAP 001-013, 015-026, 028-046, 054
		21-51-40-01-022	HAP 101-999
		21-51-40-01-060	HAP 101-999
3	O-ring	21-51-40-01-025	HAP 001-013, 015-026, 028-046, 054
		21-51-40-01-030	HAP 101-999
		21-51-40-01-065	HAP 101-999

##### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

##### F. Overheat Switch Installation

SUBTASK 21-51-40-420-001

(1) Install a new O-ring [3] on the overheat switch [1].

SUBTASK 21-51-40-160-001

(2) Make sure the mating surfaces of the boss and the overheat switch nut are clean.

SUBTASK 21-51-40-640-001

(3) Apply a thin layer of the Never-Seez NSBT-8N compound, D00006 to the threads of the overheat switch [1].

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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.

(4) Use two wrenches to install the overheat switch [1].

**NOTE:** Use one wrench to hold the boss. Use the other wrench to turn the overheat switch [1].

SUBTASK 21-51-40-420-003

(5) Install a new lockwire, G01048 on the overheat switch [1].

SUBTASK 21-51-40-420-004

(6) Connect the electrical connector [2] to the overheat switch [1].

G. Put the Airplane Back to Its Usual Condition

## HAP 101-999

SUBTASK 21-51-40-860-005

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00257	AIR CONDITIONING OVERHEAT

## HAP 001-013, 015-026, 028-054

SUBTASK 21-51-40-860-006

(2) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-40-860-007

(3) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

## HAP ALL

SUBTASK 21-51-40-410-001

(4) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

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SUBTASK 21-51-40-410-002

(5) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

SUBTASK 21-51-40-860-008

(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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# AIRCRAFT MAINTENANCE MANUAL

## 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 - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~ C32

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	Air Conditioning Access Door
192CR	Air Conditioning 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.

#### **HAP 101-999**

SUBTASK 21-51-41-860-007

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	4	C00257	AIR CONDITIONING OVERHEAT

#### **HAP 001-013, 015-026, 028-054**

SUBTASK 21-51-41-860-005

- (3) To replace the turbine inlet overheat switch for the left cooling pack, do this task:

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### AIRCRAFT MAINTENANCE MANUAL

HAP 001-013, 015-026, 028-054 (Continued)

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-41-860-006

- (4) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

#### HAP ALL

SUBTASK 21-51-41-010-001

- (5) To get access to the overheat switch on the left cooling pack, do this task:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-41-010-002

- (6) To get access to the overheat switch for the right cooling pack, do this task:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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 lockwire, G01048 from the overheat switch [1].

SUBTASK 21-51-41-020-003

- (3) Remove the overheat switch [1] from the duct.

————— END OF TASK —————

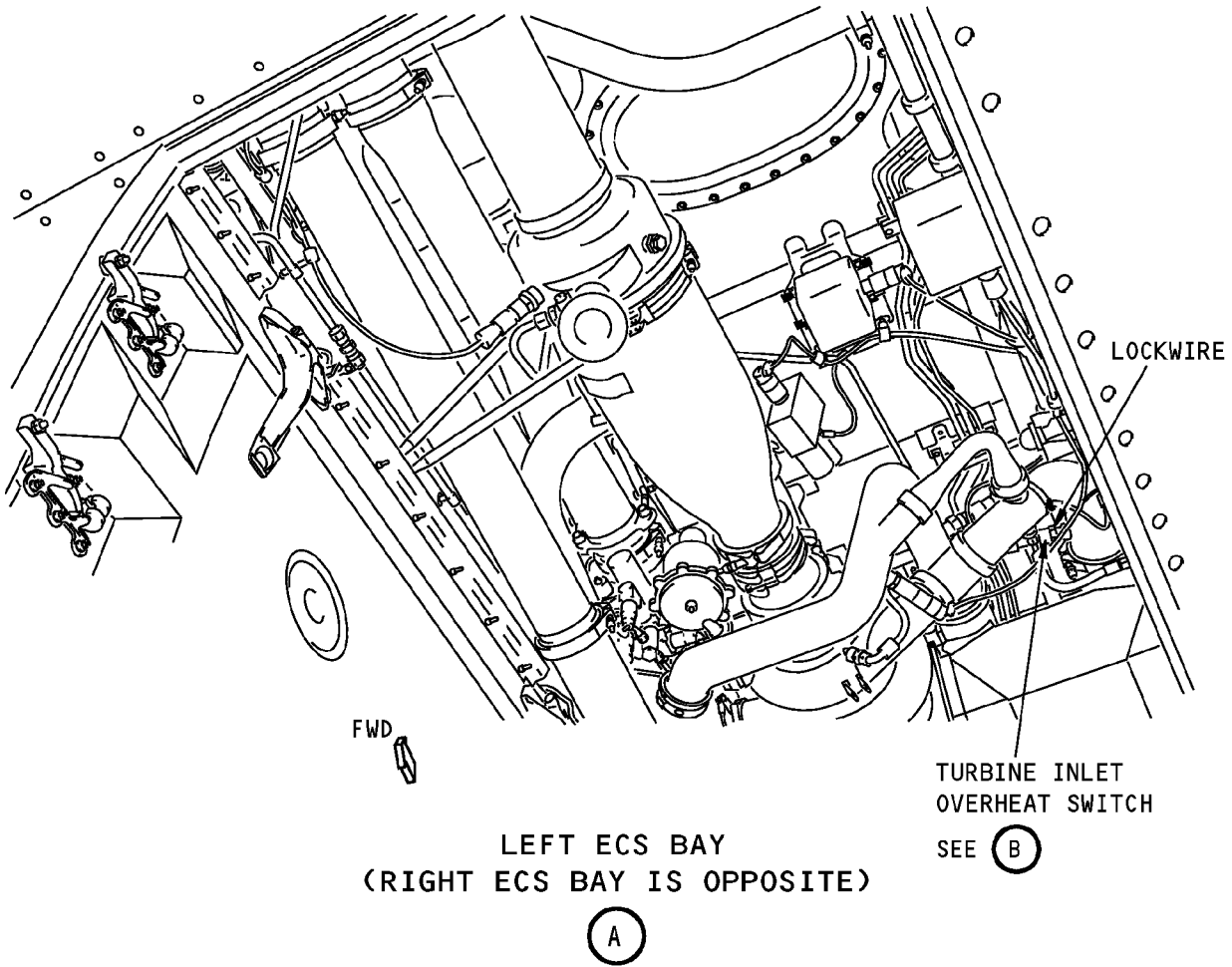
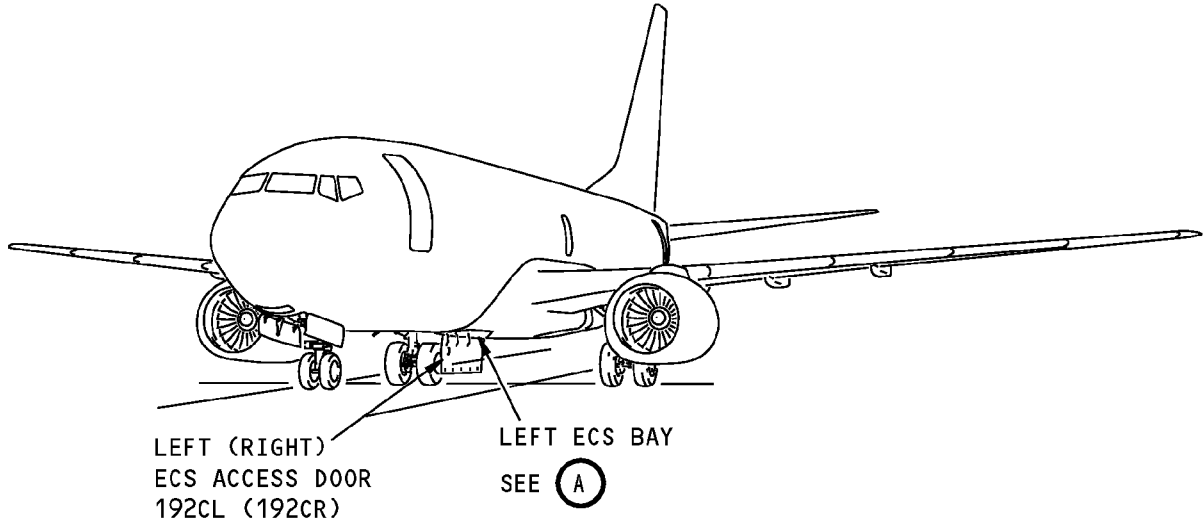
EFFECTIVITY
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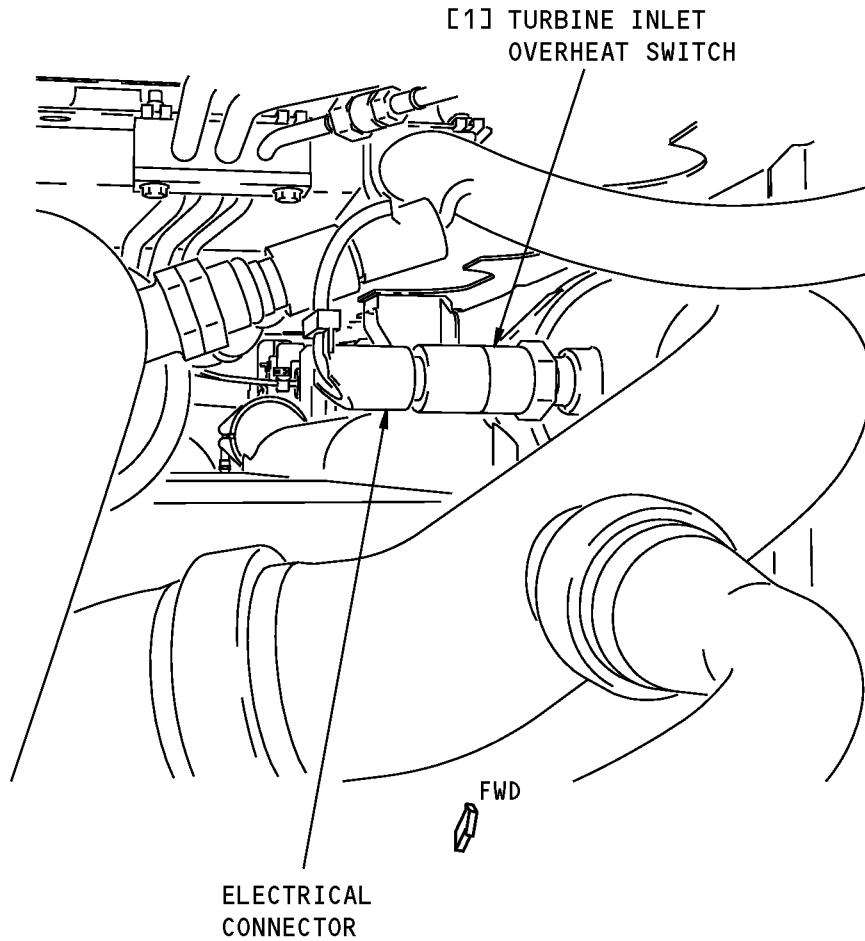
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**Turbine Inlet Overheat Switch Installation  
Figure 401 (Sheet 1 of 4)/21-51-41-990-801**

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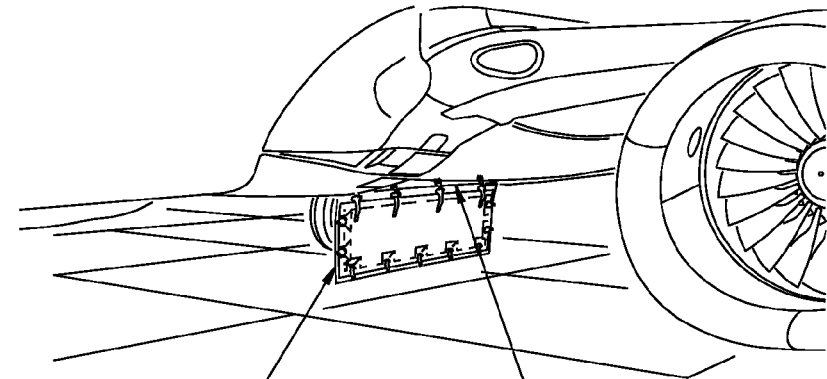
**TURBINE INLET OVERHEAT SWITCH**

(B)

**Turbine Inlet Overheat Switch Installation  
Figure 401 (Sheet 2 of 4)/21-51-41-990-801**

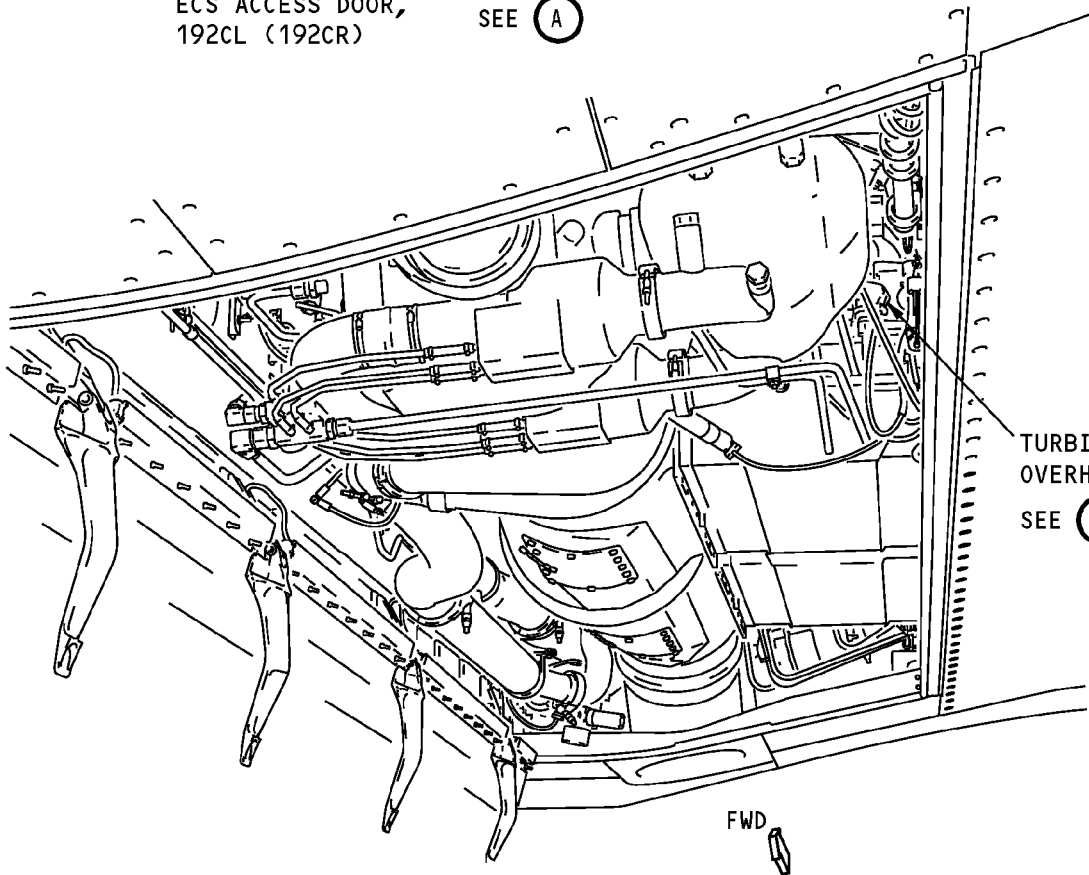
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LEFT (RIGHT)  
ECS ACCESS DOOR,  
192CL (192CR)

LEFT ECS BAY  
SEE (A)



TURBINE INLET  
OVERHEAT SWITCH  
SEE (B)

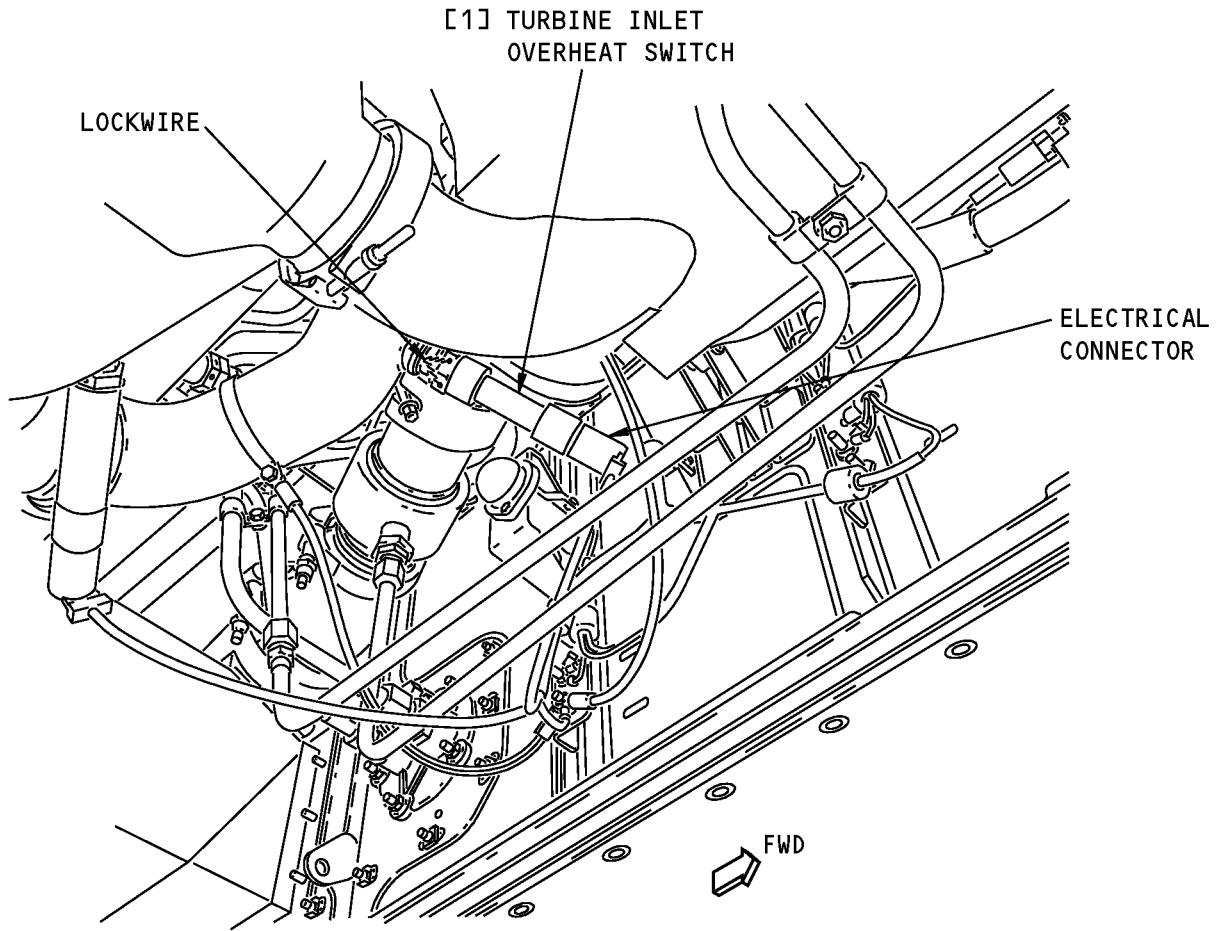
LEFT ECS BAY  
(RIGHT ECS BAY IS OPPOSITE)

(A)

**Turbine Inlet Overheat Switch Installation  
Figure 401 (Sheet 3 of 4)/21-51-41-990-801**

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HAP 001-013, 015-026, 028-054

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**TURBINE INLET OVERHEAT SWITCH**

**(B)**

**Turbine Inlet Overheat Switch Installation  
Figure 401 (Sheet 4 of 4)/21-51-41-990-801**

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HAP 001-013, 015-026, 028-054

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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-8N	MIL-PRF-907F
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~ C32

#### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch	21-51-41-03-105	HAP 001-013, 015-026, 028-030
		21-51-41-04-005	HAP 001-013, 015-026, 028-030
		21-51-41-05-080	HAP 101-999
		21-51-41-06-080	HAP 101-999
		21-51-41-07-045	HAP 031-046, 054
		21-51-41-08-045	HAP 031-046, 054

#### 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	Air Conditioning Access Door
192CR	Air Conditioning 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 21-51-41-640-001

(2) Apply a thin layer of the Never-Seez NSBT-8N compound, D00006 to the threads of the overheat switch [1].

SUBTASK 21-51-41-420-001

(3) Install the overheat switch [1] on the duct.

SUBTASK 21-51-41-420-002

(4) Install the new lockwire, G01048 on the overheat switch [1].

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SUBTASK 21-51-41-420-003

(5) Connect the electrical connector to the overheat switch [1].

G. Put the Airplane Back to Its Usual Condition

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SUBTASK 21-51-41-860-010

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00257	AIR CONDITIONING OVERHEAT

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-51-41-860-014

(2) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

SUBTASK 21-51-41-860-015

(3) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT

**HAP ALL**

SUBTASK 21-51-41-410-001

(4) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-41-410-002

(5) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

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SUBTASK 21-51-41-860-004

- (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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# AIRCRAFT MAINTENANCE MANUAL

## PACK DISCHARGE DUCT OVERHEAT SWITCH - REMOVAL/INSTALLATION

### 1. General

A. This procedure has these tasks:

- (1) A removal of the left pack discharge duct overheat switch.
- (2) A removal of the right pack discharge duct overheat switch.
- (3) An installation of the left pack discharge duct overheat switch.
- (4) An installation of the right pack discharge duct overheat switch.

### **TASK 21-51-42-000-804-001**

### 2. Pack Discharge Duct Overheat Switch Removal

(Figure 401, Figure 402)

A. References

Reference	Title
25-21-45-000-801	Sculptured 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 21-51-42-860-013-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
C	4	C00257	AIR CONDITIONING OVERHEAT

SUBTASK 21-51-42-010-013-001

(2) To get access to the pack discharge overheat switch for the left cooling pack, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-51-42-010-014-001

(3) To get access to the pack discharge overheat switch for the right cooling pack, remove the ceiling liner that is five windows forward of the overwing escape hatches.

**NOTE:** To remove the liner, do this task: Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

E. Right Pack Discharge Overheat Switch Removal

SUBTASK 21-51-42-020-015-001

(1) Disconnect the electrical connector [2] from the duct overheat switch [1].

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SUBTASK 21-51-42-020-016-001

(2) Remove the screws [3] from the duct overheat switch [1].

SUBTASK 21-51-42-020-017-001

(3) Remove the gasket [4] and the duct overheat switch [1].

SUBTASK 21-51-42-020-018-001

(4) Discard the gasket [4].

**F. Left Pack Discharge Overheat Switch Removal**

SUBTASK 21-51-42-020-019-001

(1) Disconnect the electrical connector [22] from the duct overheat switch [21].

SUBTASK 21-51-42-020-020-001

(2) Remove the screws [23] from the duct overheat switch [21].

SUBTASK 21-51-42-020-021-001

(3) Remove the gasket [24] and the duct overheat switch [21].

SUBTASK 21-51-42-020-022-001

(4) Discard the gasket [24].

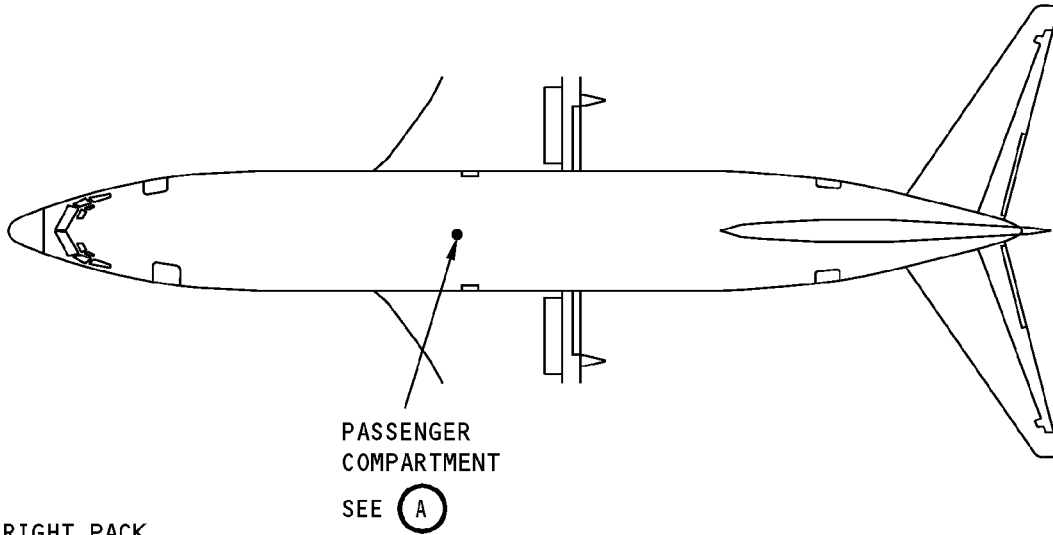
————— **END OF TASK** —————

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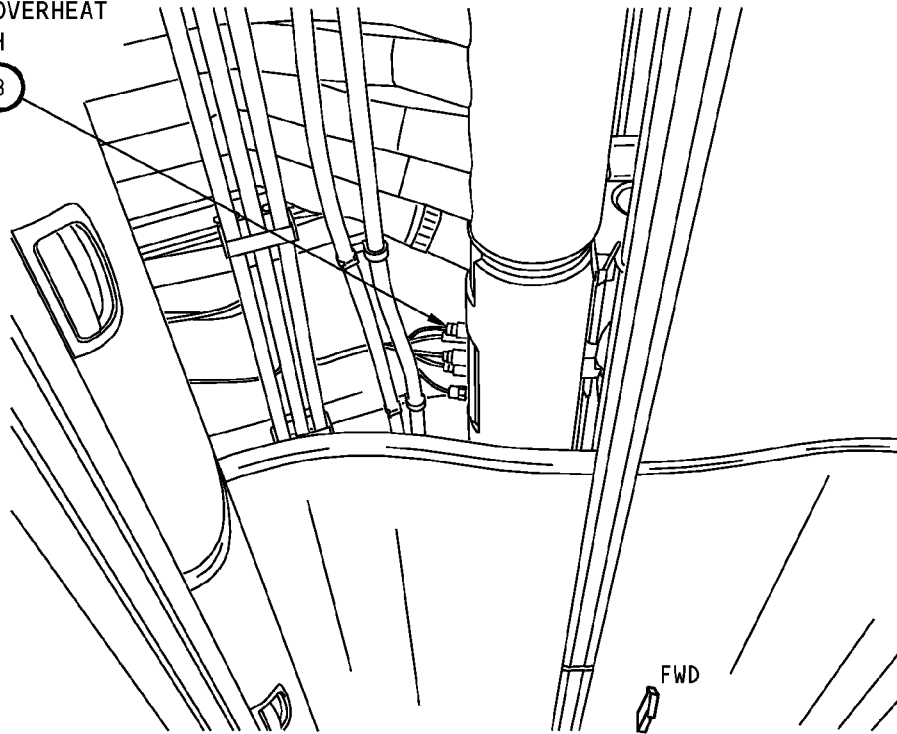
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RIGHT PACK  
DISCHARGE  
DUCT OVERHEAT  
SWITCH  
SEE (B)



PASSENGER COMPARTMENT  
(OVERHEAD VIEW, CEILING PANEL REMOVED)

(A)

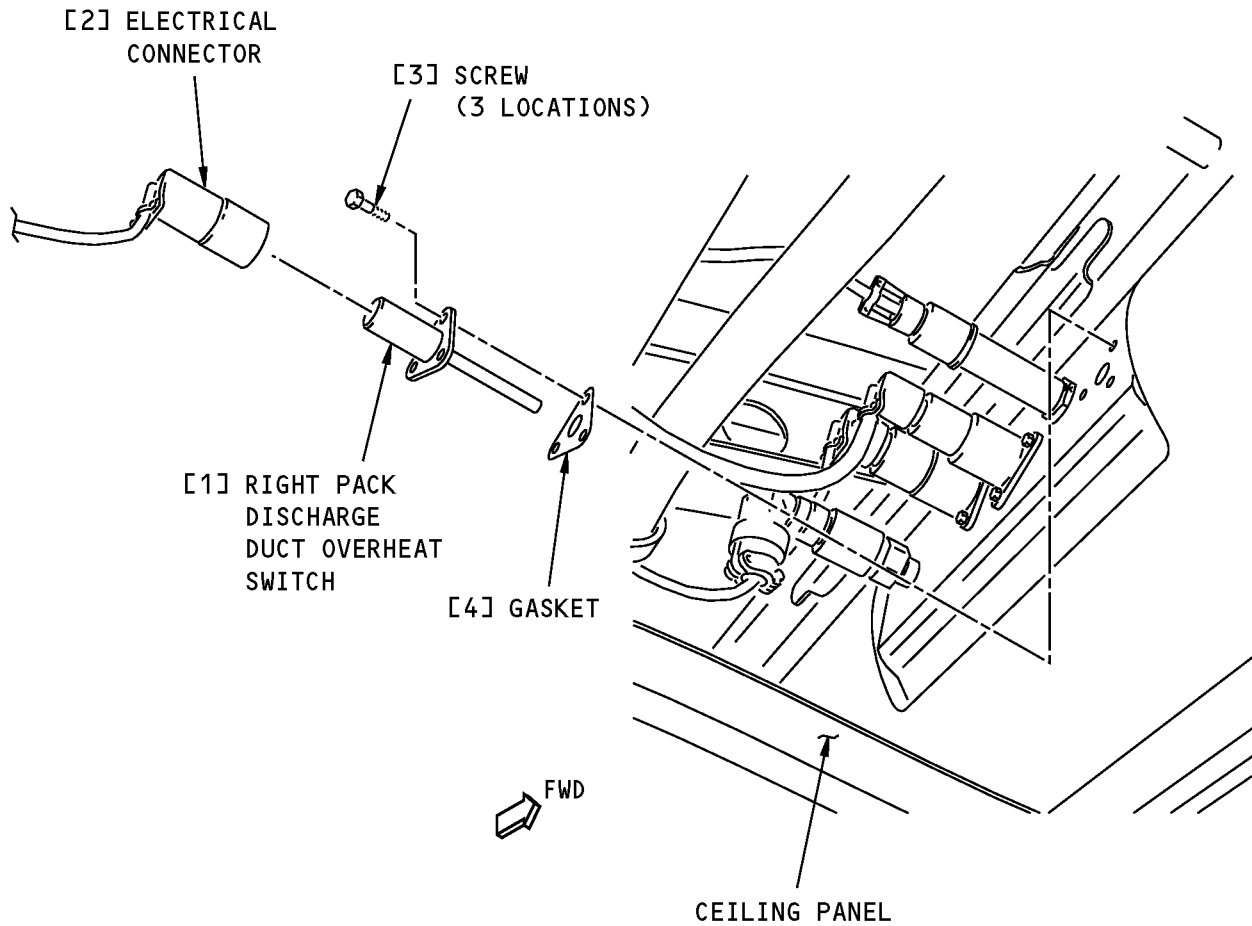
**Right Pack Discharge Duct Overheat Switch Installation**  
**Figure 401 (Sheet 1 of 2)/21-51-42-990-805-001**

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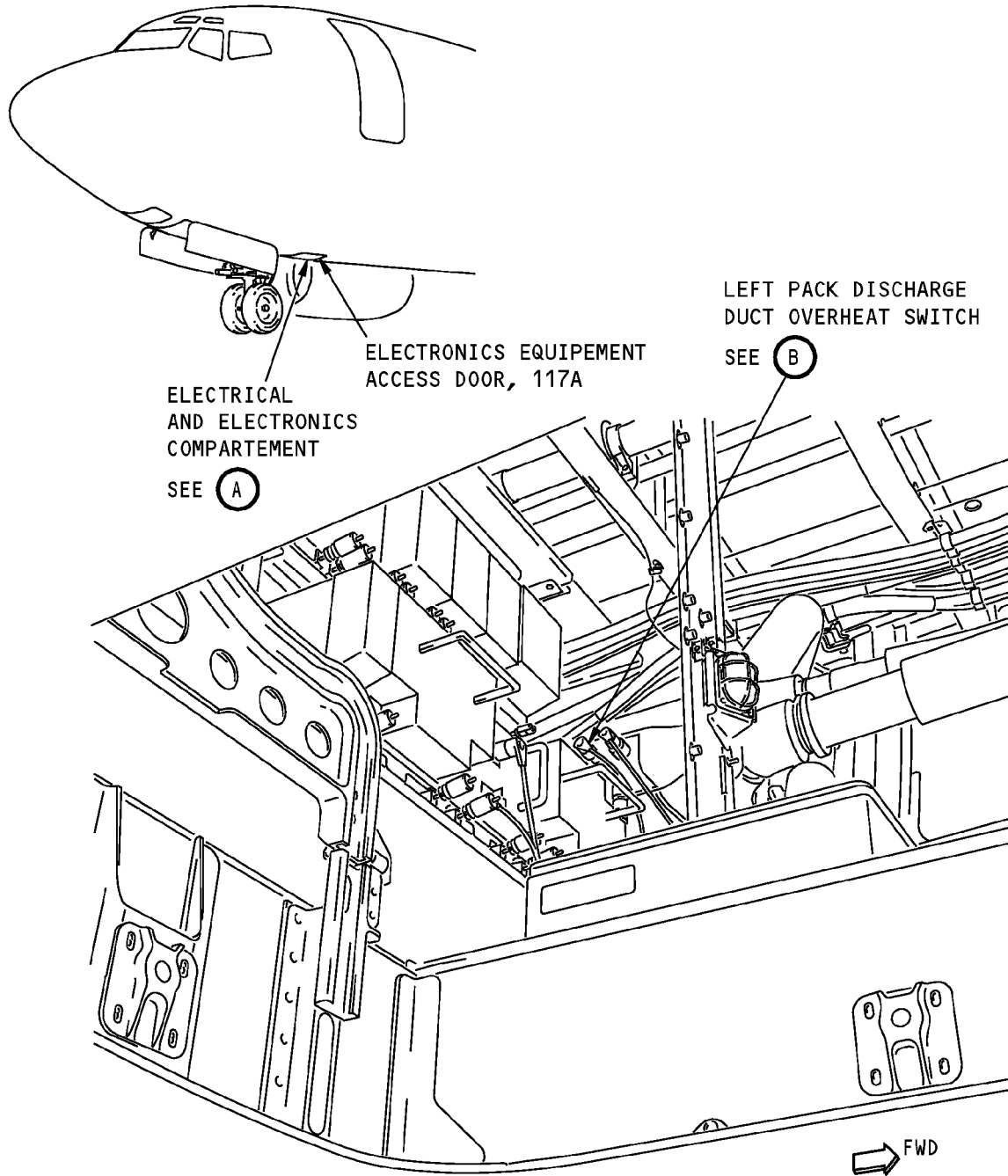
**RIGHT PACK DISCHARGE DUCT OVERHEAT SWITCH**

**B**

**Right Pack Discharge Duct Overheat Switch Installation  
Figure 401 (Sheet 2 of 2)/21-51-42-990-805-001**

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**ELECTRICAL AND ELECTRONICS COMPARTEMENT  
(VIEW THROUGH ACCESS DOOR, 117A)**

(A)

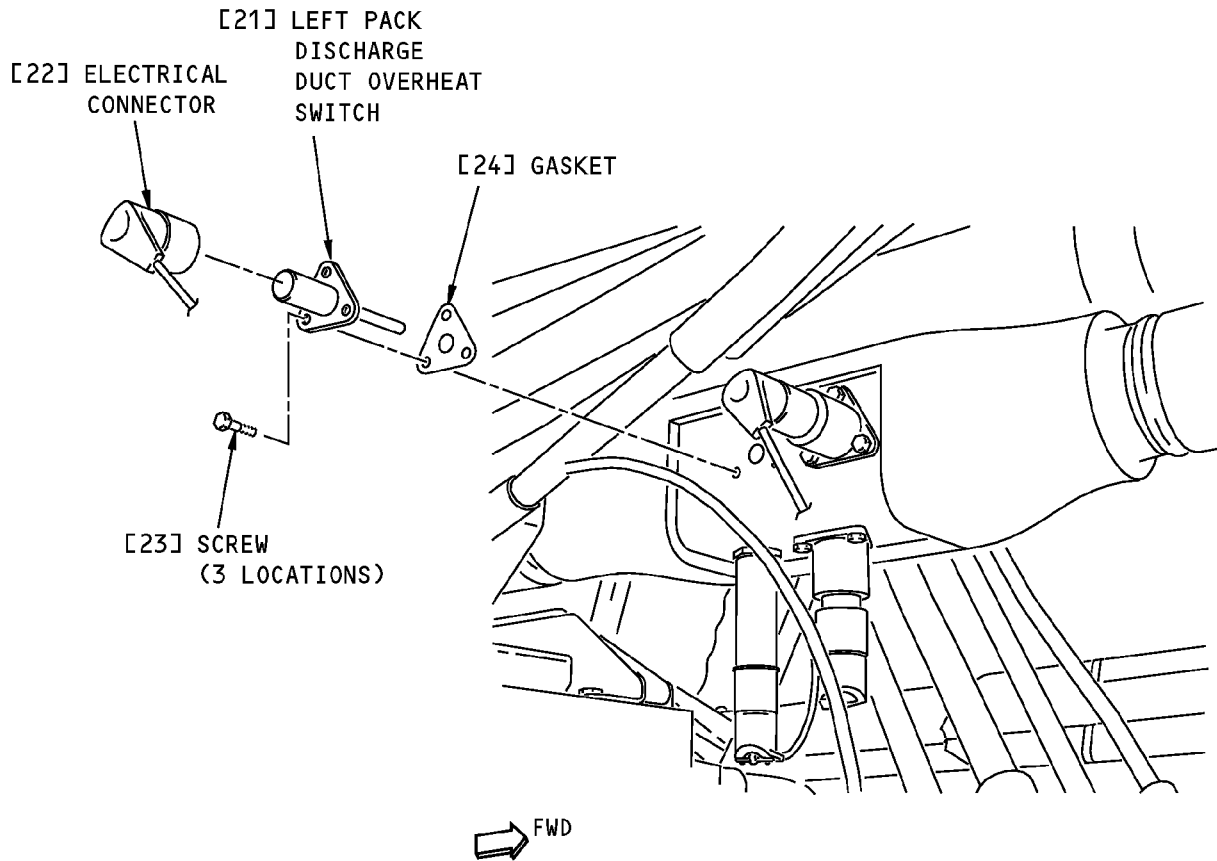
**Left Pack Discharge Duct Overheat Switch Installation  
Figure 402 (Sheet 1 of 2)/21-51-42-990-806-001**

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**LEFT PACK DISCHARGE DUCT OVERHEAT SWITCH**

(B)

**Left Pack Discharge Duct Overheat Switch Installation  
Figure 402 (Sheet 2 of 2)/21-51-42-990-806-001**

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**TASK 21-51-42-400-804-001**

#### 3. Pack Discharge Duct Overheat Switch Installation

(Figure 401)

##### A. References

Reference	Title
25-21-45-400-801	Sculptured Ceiling Panel Installation (P/B 401)

##### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Switch	21-61-05-20-015	HAP 101-999
4	Gasket	Not Specified	
21	Switch	21-22-00-04-295	HAP 101-999
24	Gasket	21-22-00-04-065	HAP 101-999

##### 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. Right Pack Discharge Duct Overheat Switch Installation

SUBTASK 21-51-42-420-015-001

(1) Install a new gasket [4] on the duct overheat switch [1].

SUBTASK 21-51-42-420-016-001

(2) Put the duct overheat switch [1] in its position on the duct.

SUBTASK 21-51-42-420-017-001

(3) Install the screws [3].

SUBTASK 21-51-42-420-018-001

(4) Connect the electrical connector [2] to the duct overheat switch [1].

##### F. Left Pack Discharge Duct Overheat Switch Installation

SUBTASK 21-51-42-420-019-001

(1) Install a new gasket [24] on the duct overheat switch [21].

SUBTASK 21-51-42-420-020-001

(2) Put the duct overheat switch [21] in its position on the duct.

SUBTASK 21-51-42-420-021-001

(3) Install the screws [23].

SUBTASK 21-51-42-420-022-001

(4) Connect the electrical connector [22] to the duct overheat switch [21].

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-42-860-014-001

(1) Close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00257	AIR CONDITIONING OVERHEAT

SUBTASK 21-51-42-010-015-001

(2) If you replaced the pack discharge overheat switch [1] for the left cooling pack, close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-51-42-010-016-001

(3) If you replaced the pack discharge overheat switch [1] for the right cooling pack, install the ceiling liner that is five windows forward of the overwing escape hatches.

NOTE: To install the liner, do this task: Sculptured Ceiling Panel Installation, TASK 25-21-45-400-801.

————— END OF TASK —————

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AIRCRAFT MAINTENANCE MANUAL

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

Table with 2 columns: Reference, Title. Row: 25-52-17-000-801, Forward Cargo Compartment Aft Bulkhead Liner Removal (P/B 401)

B. Consumable Materials

Table with 3 columns: Reference, Description, Specification. Row: G01048, Lockwire - Corrosion Resistant Steel (0.032 In. Dia.), NASM20995~ C32

C. Location Zones

Table with 2 columns: Zone, Area. Rows: 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

Table with 4 columns: Row, Col, Number, Name. Row: 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

Table with 4 columns: Row, Col, Number, Name. Row: 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.

EFFECTIVITY
HAP 001-013, 015-026, 028-054

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## AIRCRAFT MAINTENANCE MANUAL

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 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** —————

EFFECTIVITY

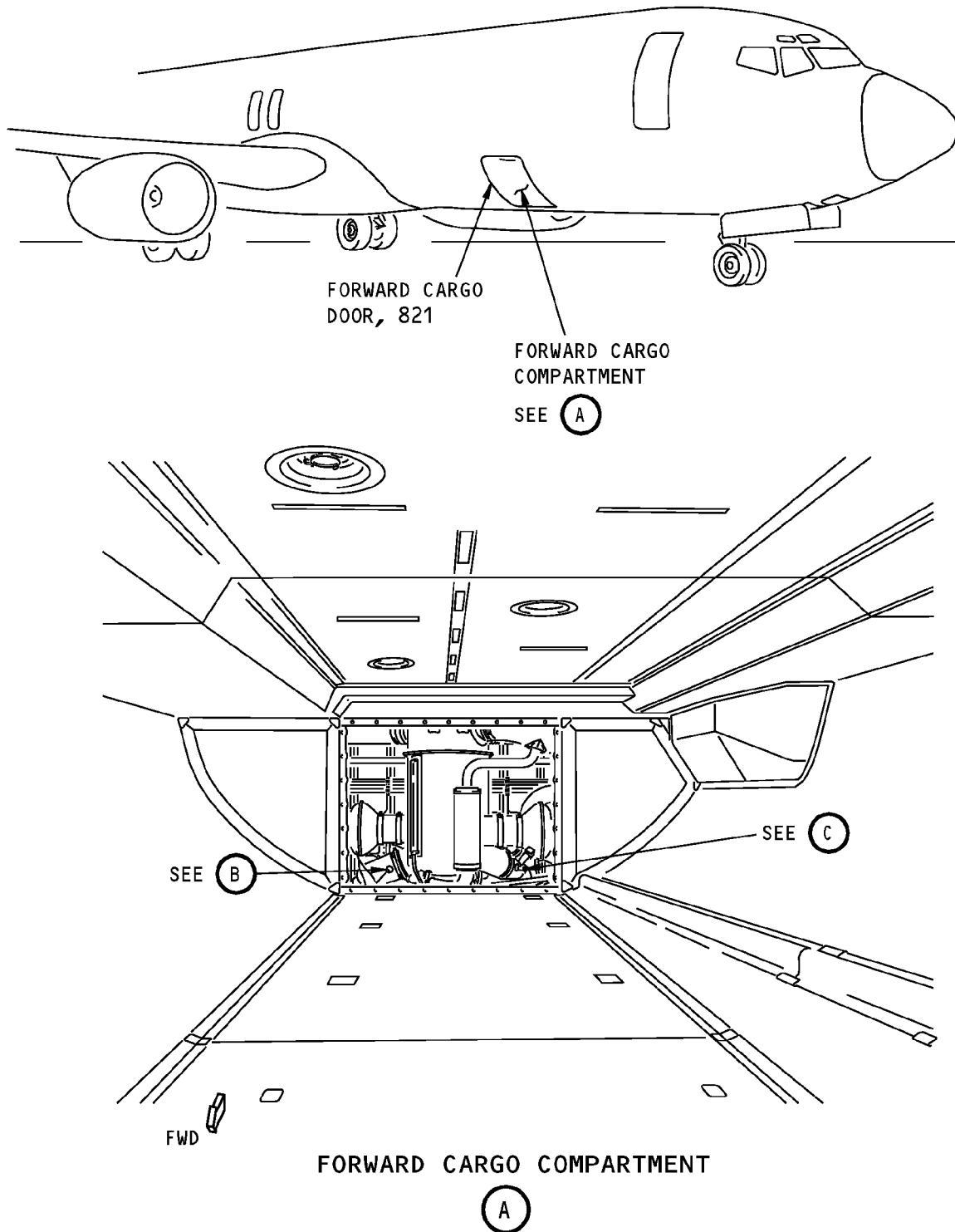
HAP 001-013, 015-026, 028-054

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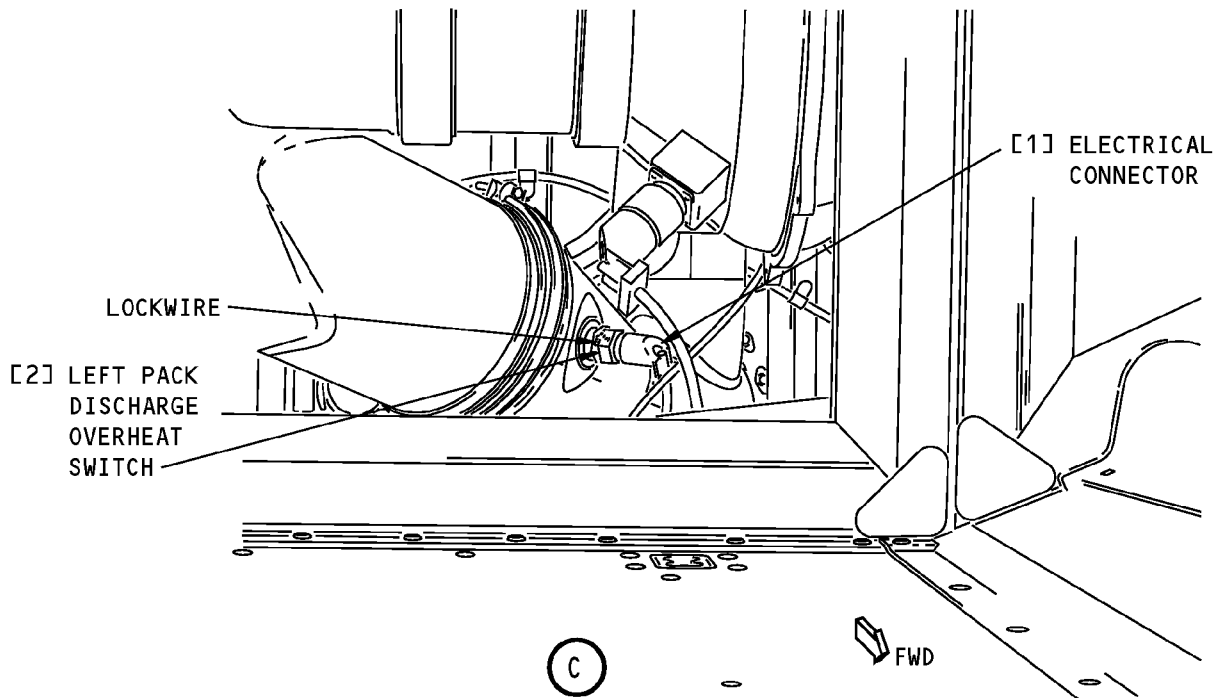
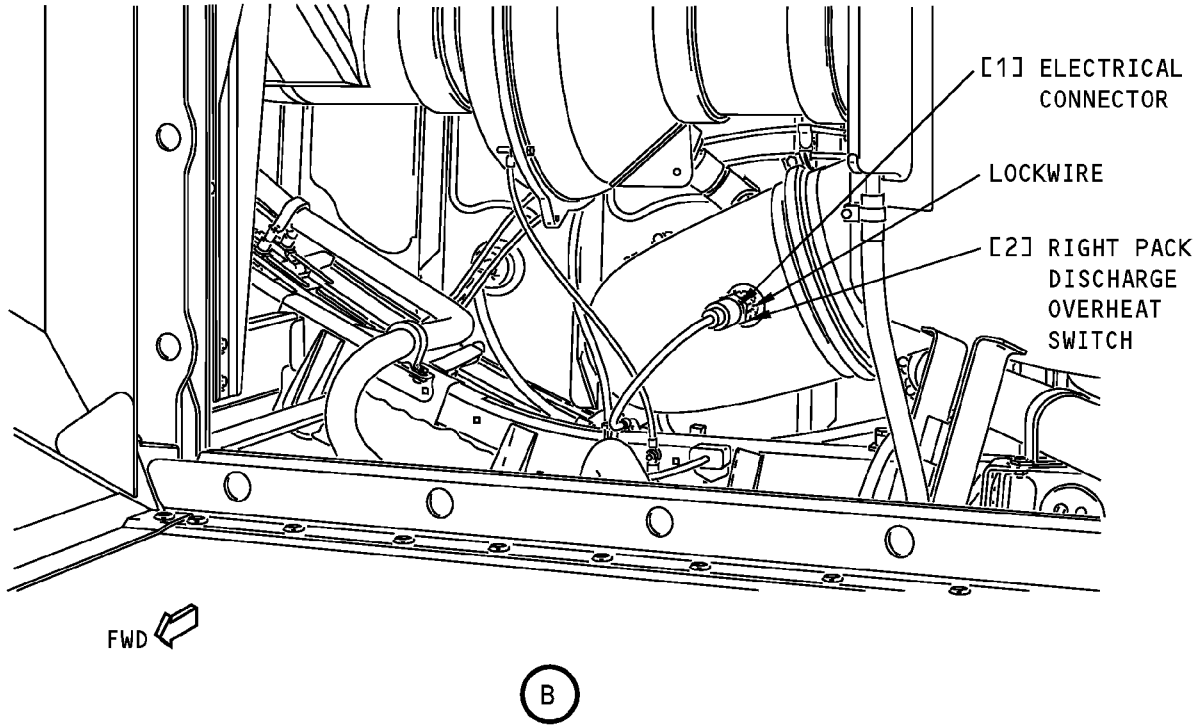


**Pack Discharge Overheat Switch Installation  
Figure 401 (Sheet 1 of 2)/21-51-42-990-804-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**Pack Discharge Overheat Switch Installation**  
**Figure 401 (Sheet 2 of 2)/21-51-42-990-804-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

#### 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-8N	MIL-PRF-907F
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~ C32

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Switch	21-51-42-01-025	HAP 001-013, 015-026, 028-054

##### 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-8N 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 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:

EFFECTIVITY HAP 001-013, 015-026, 028-054
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**AIRCRAFT MAINTENANCE MANUAL**

(a) Close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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** —————

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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# AIRCRAFT MAINTENANCE MANUAL

## 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	Air Conditioning Access Door
192CR	Air Conditioning 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:

### **HAP 101-999**

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT

### **HAP 001-013, 015-026, 028-054**

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT

EFFECTIVITY HAP ALL
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HAP 001-013, 015-026, 028-054 (Continued)

HAP ALL

(c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-50-010-002

(3) For the temperature sensor on the right cooling pack, do this task:

HAP 101-999

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

HAP 001-013, 015-026, 028-054

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT

HAP ALL

(c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

(d) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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].

HAP 001-013, 015-026, 028-054

SUBTASK 21-51-50-020-002

(2) Remove and discard the lockwire from the temperature sensor [1].

HAP ALL

EFFECTIVITY
HAP ALL

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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].

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-51-50-020-004

(4) Remove and discard the o-ring [3] from the temperature sensor [1].

**HAP ALL**

————— **END OF TASK** —————

EFFECTIVITY  
HAP ALL

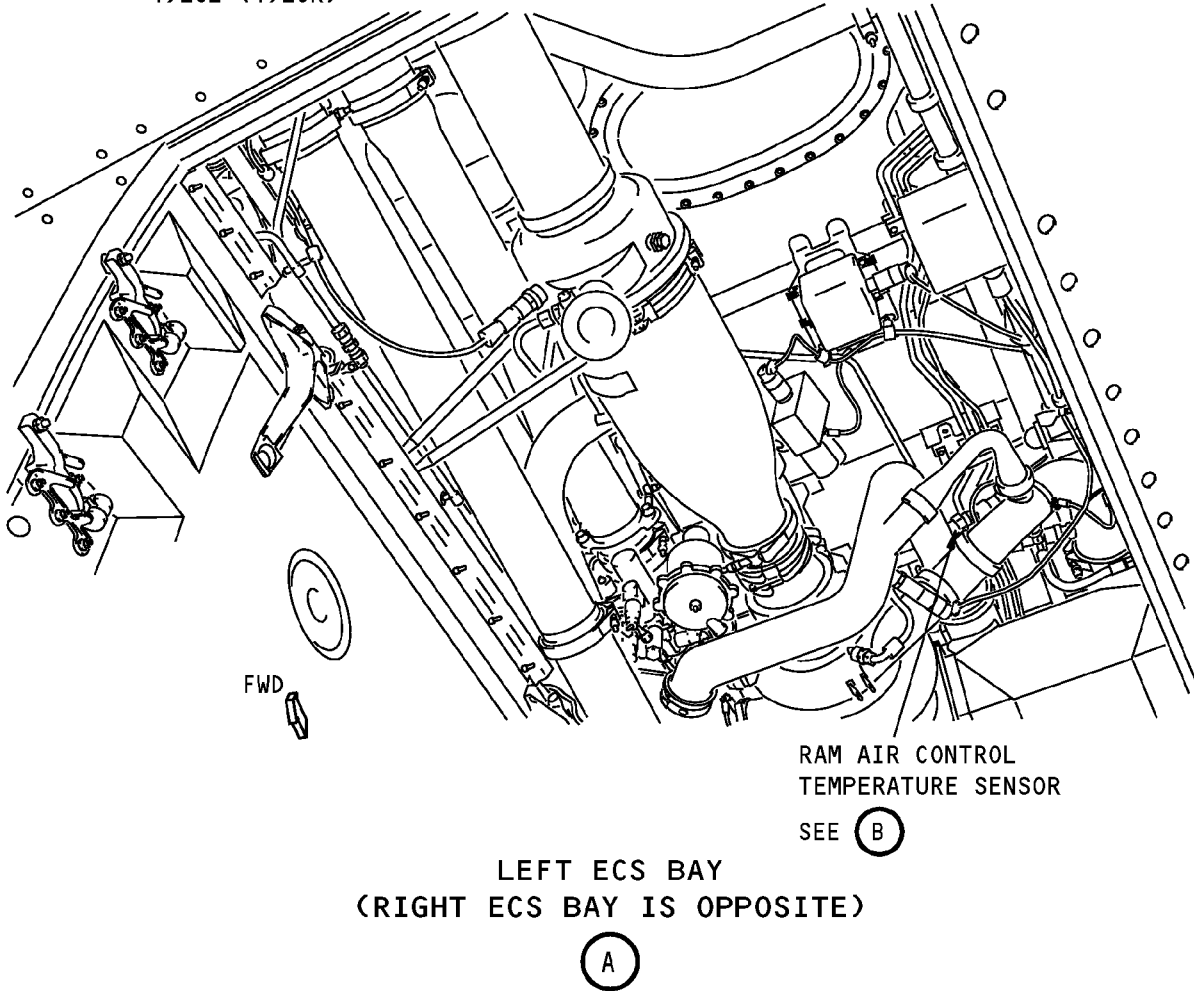
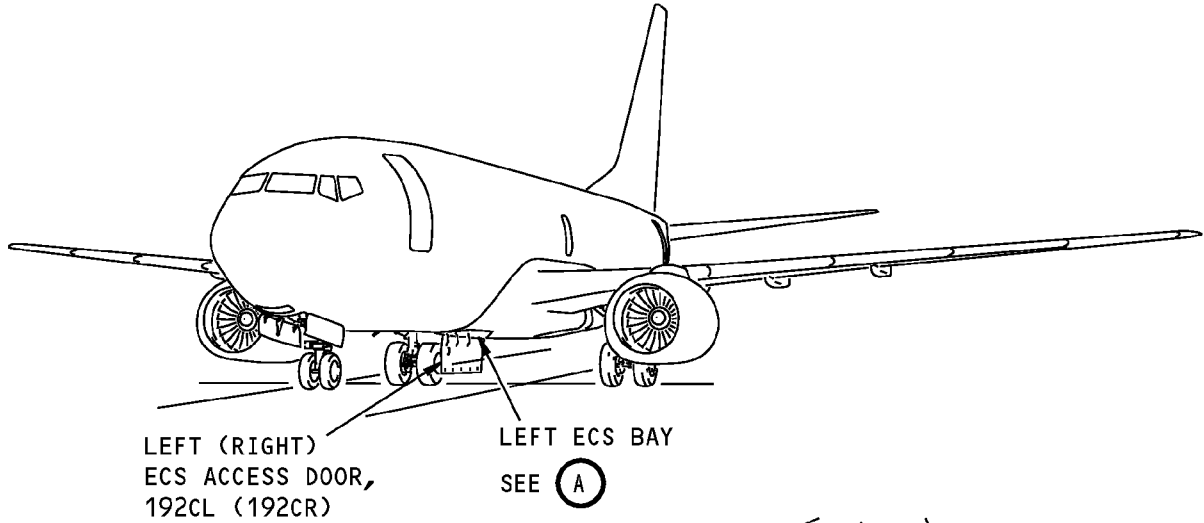
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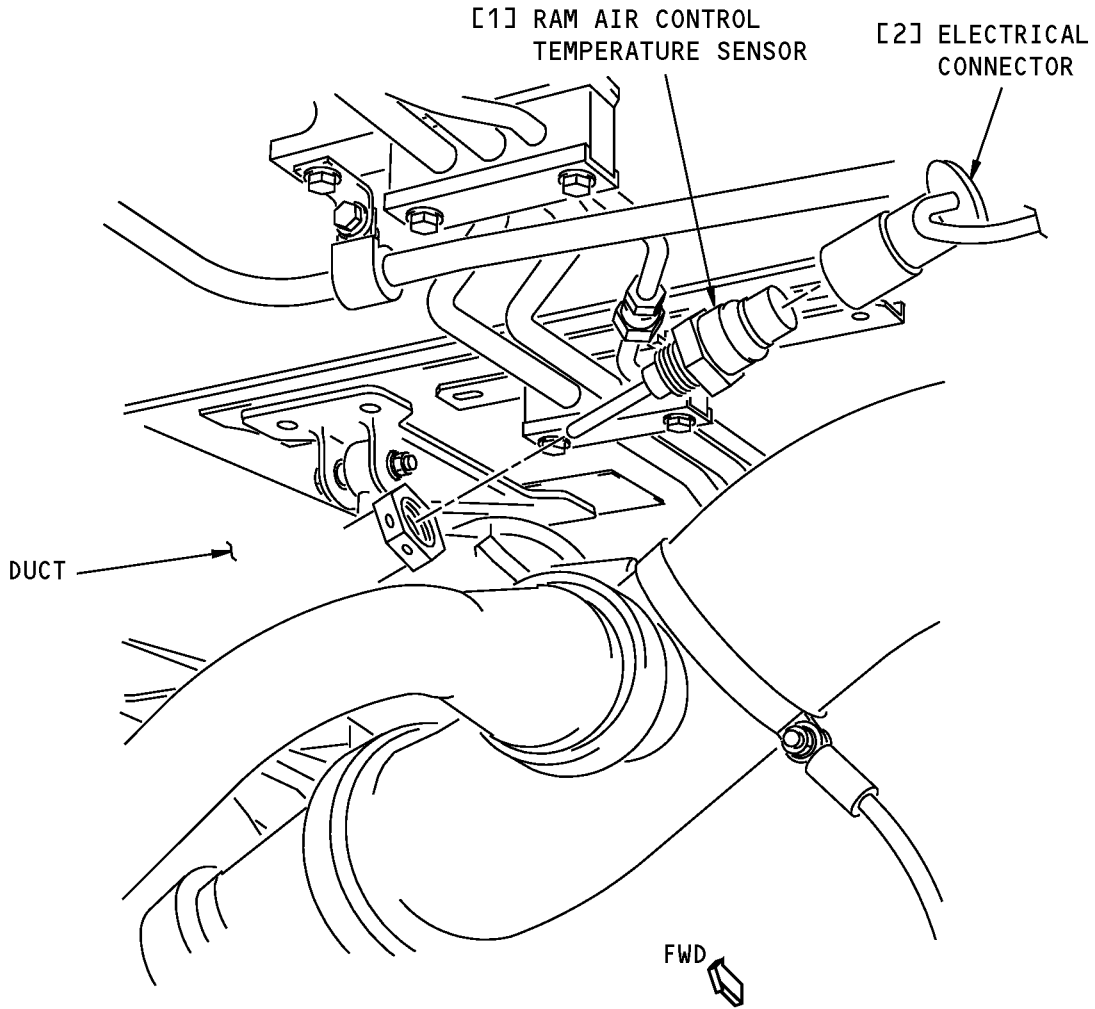
Ram Air Control Temperature Sensor Installation  
Figure 401 (Sheet 1 of 4)/21-51-50-990-801

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**RAM AIR CONTROL TEMPERATURE SENSOR**

**Ram Air Control Temperature Sensor Installation**  
**Figure 401 (Sheet 2 of 4)/21-51-50-990-801**

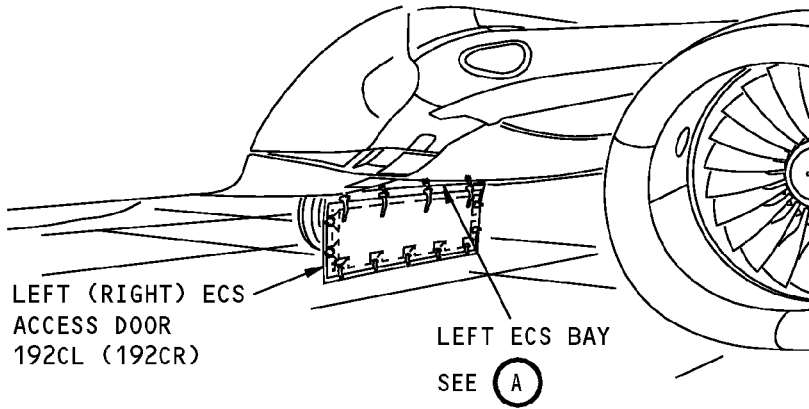
EFFECTIVITY  
HAP 101-999

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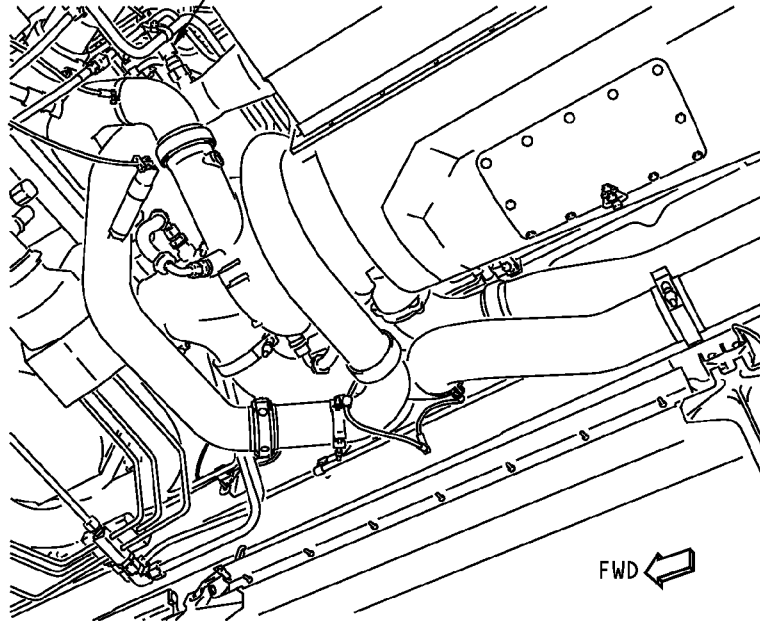
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[1] RAM AIR CONTROL  
TEMPERATURE SENSOR

SEE (B)



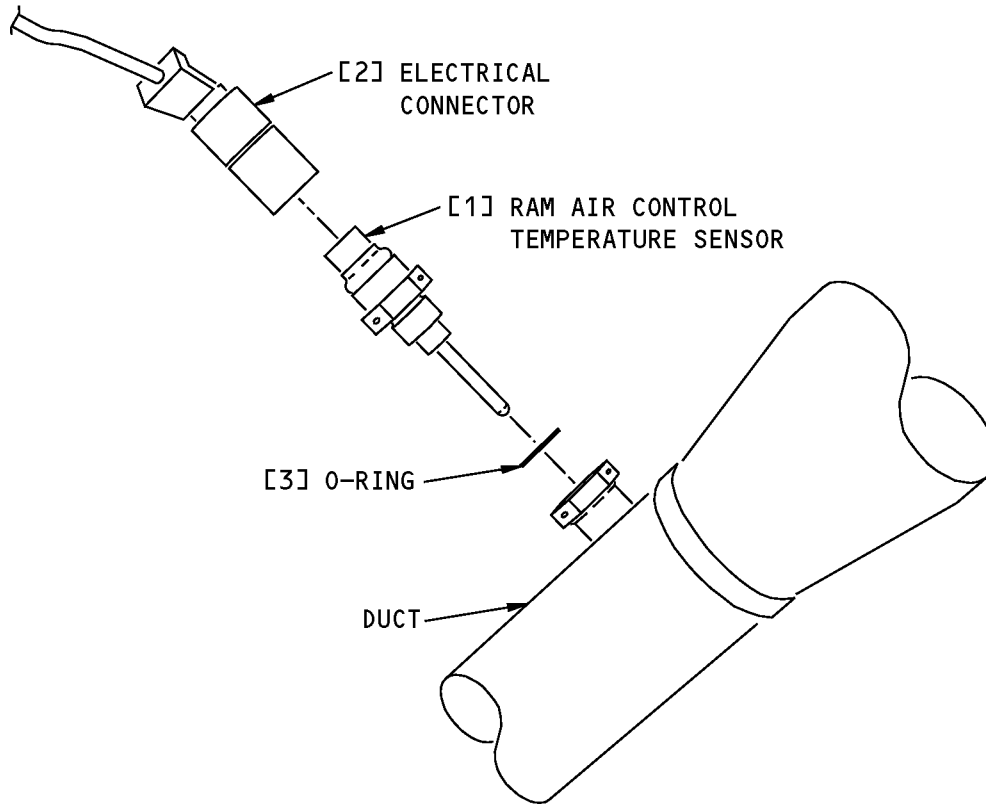
LEFT ECS BAY  
(RIGHT ECS BAY IS OPPOSITE)

(A)

**Ram Air Control Temperature Sensor Installation  
Figure 401 (Sheet 3 of 4)/21-51-50-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**RAM AIR CONTROL  
TEMPERATURE SENSOR**

**B**

**Ram Air Control Temperature Sensor Installation  
Figure 401 (Sheet 4 of 4)/21-51-50-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

#### TASK 21-51-50-400-801

#### 3. Ram Air Control Temperature Sensor 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-8N	MIL-PRF-907F

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-51-52-01-010	HAP 101-999
		21-51-52-02-010	HAP 001-013, 015-026, 028-054

##### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

##### F. Temperature Sensor Installation

#### **HAP 001-013, 015-026, 028-054**

SUBTASK 21-51-50-420-001

(1) Install a new o-ring [3] on the temperature sensor [1].

#### **HAP ALL**

SUBTASK 21-51-50-160-001

(2) Make sure the mating surfaces of the boss and the temperature sensor nut are clean.

SUBTASK 21-51-50-640-001

(3) Apply a thin layer of the Never-Seez NSBT-8N compound, D00006 to the threads of the temperature sensor [1].

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.

(4) Use two wrenches to install the temperature sensor [1].

**NOTE:** Use one wrench to hold the boss. Use the other wrench to turn the temperature sensor [1].

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**HAP 001-013, 015-026, 028-054**

SUBTASK 21-51-50-420-003

(5) Install a new lockwire on the temperature sensor [1].

**HAP ALL**

SUBTASK 21-51-50-420-004

(6) Connect the electrical connector [2] to the temperature sensor [1].

SUBTASK 21-51-50-860-002

(7) For the left cooling pack, do this step:

**HAP 101-999**

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00265	AIR CONDITIONING RAM AIR MOD CONT LEFT

**HAP 001-013, 015-026, 028-054**

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT

**HAP ALL**

SUBTASK 21-51-50-860-003

(8) For the right cooling pack, do this step:

**HAP 101-999**

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C00266	AIR CONDITIONING RAM AIR MOD CONT RIGHT

**HAP 001-013, 015-026, 028-054**

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT

**HAP ALL**

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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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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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HAP ALL

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# AIRCRAFT MAINTENANCE MANUAL

## MIX MANIFOLD TEMPERATURE SENSOR - REMOVAL/INSTALLATION

### 1. General

A. This procedure has these tasks:

- (1) A removal of the mix manifold temperature sensor.
- (2) An installation of the mix manifold temperature sensor.
- (3) 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 21-51-51-000-801**

### 2. Mix Manifold Temperature Sensor 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 21-51-51-860-001

- (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 21-51-51-860-002

- (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 21-51-51-860-003

- (3) Put 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

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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SUBTASK 21-51-51-010-001

(4) Open the forward cargo door.

SUBTASK 21-51-51-010-002

(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.

### D. Mix Manifold Temperature Sensor Removal

SUBTASK 21-51-51-020-001

(1) Disconnect the electrical connector [2] from the mix manifold temperature sensor [1].

SUBTASK 21-51-51-020-002

(2) Remove the screws [3] that hold the mix manifold temperature sensor [1] to the upper mix manifold.

SUBTASK 21-51-51-020-003

(3) Remove the mix manifold temperature sensor [1] from the upper mix manifold.

————— **END OF TASK** —————

EFFECTIVITY

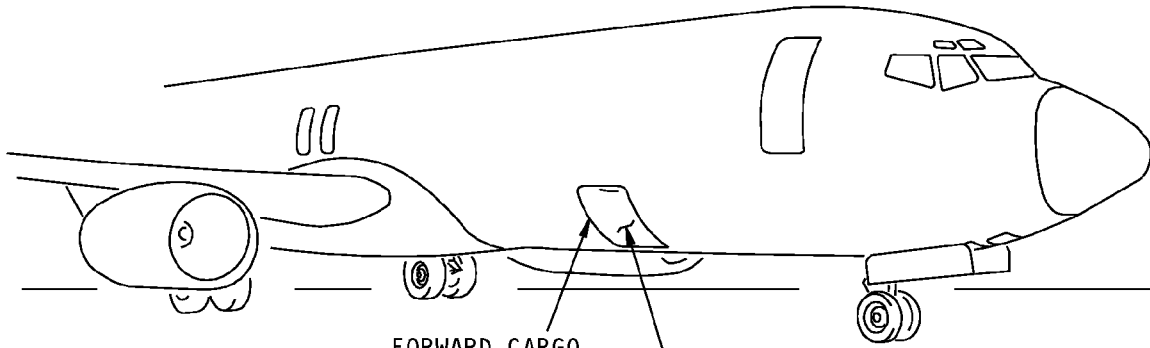
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# 21-51-51

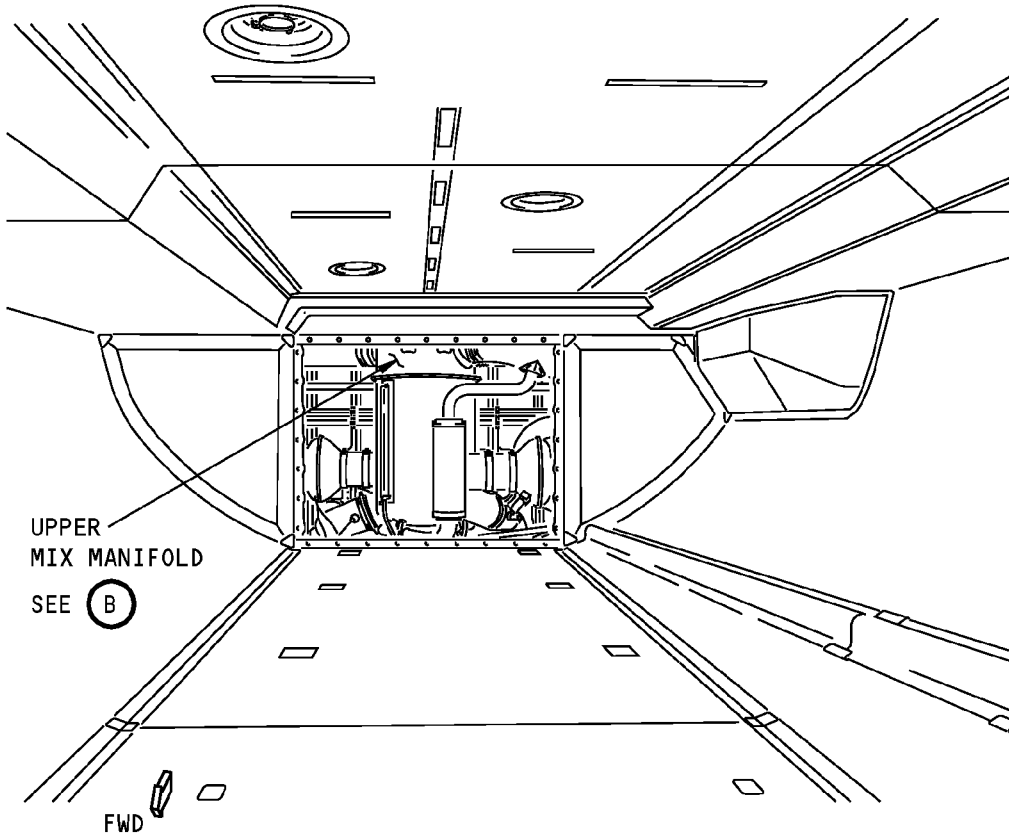
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FORWARD CARGO  
DOOR, 821

FORWARD CARGO  
COMPARTMENT  
SEE (A)



UPPER  
MIX MANIFOLD  
SEE (B)

FWD

FORWARD CARGO COMPARTMENT

(A)

**Mix Manifold Temperature Sensor Installation  
Figure 401 (Sheet 1 of 2)/21-51-51-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

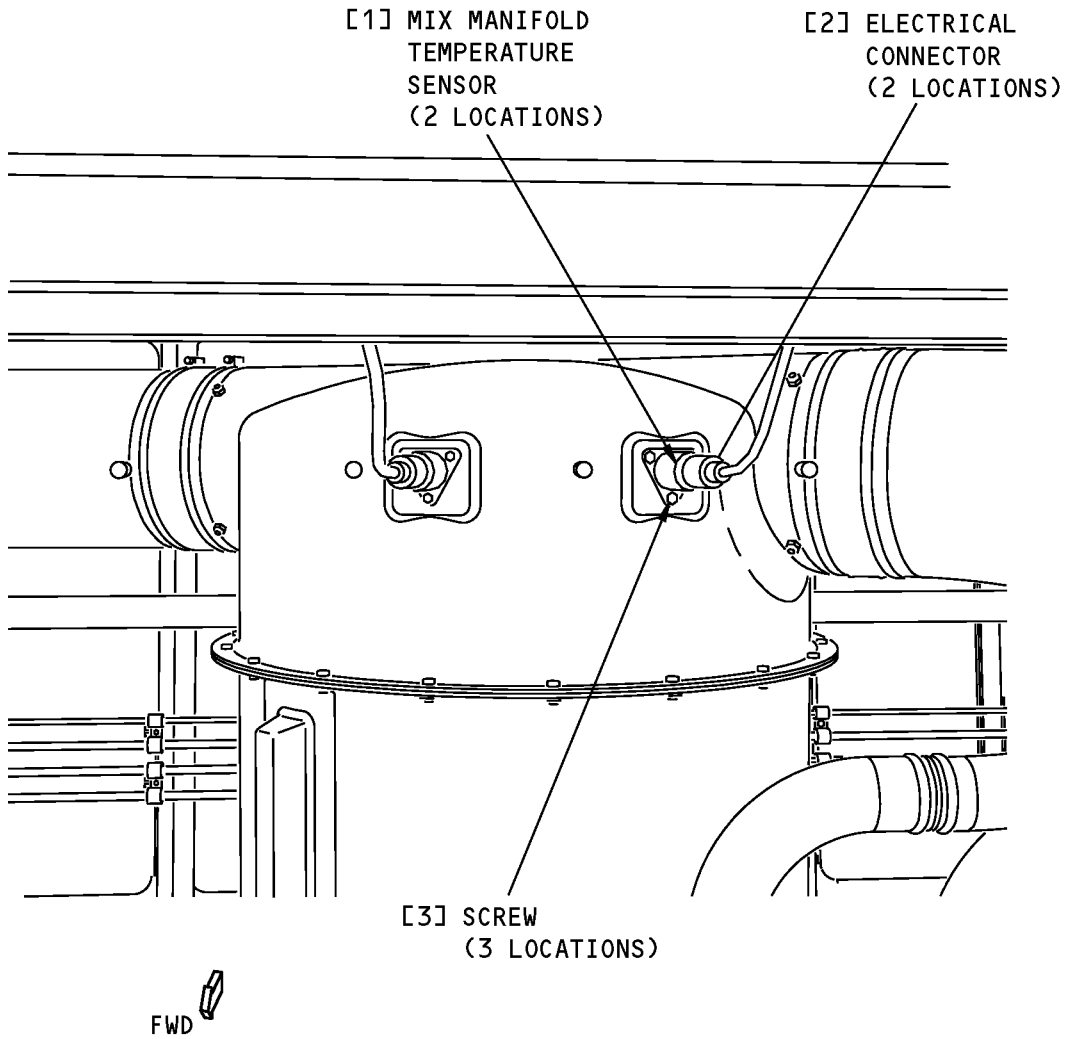
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UPPER MIX MANIFOLD



Mix Manifold Temperature Sensor Installation  
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EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

#### TASK 21-51-51-400-801

#### 3. Mix Manifold Temperature Sensor Installation

(Figure 401)

##### A. References

Reference	Title
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	21-51-51-02-005	HAP 001-013, 015-026, 028-054
		21-61-04-02-025	HAP 001-011
		21-61-04-05-005	HAP 001-013, 015-026, 028-054
		21-61-04-22-010	HAP 012, 013, 015-026, 028-054
		21-61-10-01B-025	HAP 001-011

##### 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 21-51-51-420-001

- (1) Put the mix manifold temperature sensor [1] in its position in the upper mix manifold.

SUBTASK 21-51-51-420-002

- (2) Install the screws [3] that attach the mix manifold temperature sensor [1] to the upper mix manifold.

SUBTASK 21-51-51-420-003

- (3) Connect the electrical connector [2] to the mix manifold temperature sensor [1].

##### E. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-51-860-004

- (1) When the mix manifold temperature sensor for the left cooling pack was replaced, do this task:
  - (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 21-51-51-860-005

- (2) When the mix manifold temperature sensor for the right cooling pack was replaced, do this task:

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

F/O Electrical System Panel, P6-4

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

SUBTASK 21-51-51-010-003

(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 21-51-51-010-004

(4) Close the forward cargo door.

————— **END OF TASK** —————

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# AIRCRAFT MAINTENANCE MANUAL

## 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
21-51-51-000-801	Mix Manifold Temperature Sensor Removal (P/B 401)
21-51-51-400-801	Mix Manifold Temperature Sensor 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-3945	Multimeter - Standard (Part #: 187, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: 87V, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: MODEL 21, Supplier: 89536, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: MODEL 27, Supplier: 89536, A/P Effectivity: 737-ALL)
COM-3955	Thermometer - Digital (Part #: 51 II, Supplier: 89536, A/P Effectivity: 737-600) (Opt Part #: 51-2, Supplier: 89536, A/P Effectivity: 737-600)
STD-4967	Multimeter

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).

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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).

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 either the standard multimeter, COM-3945 (preferred) or multimeter, STD-4967 (alternate) 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 21-51-51-000-801,  
Mix Manifold Temperature Sensor Installation, TASK 21-51-51-400-801.

### 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).

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**

**Mix Manifold Temperature Sensor - Temperature and Resistance Data  
Figure 501 (Sheet 1 of 2)/21-51-51-990-802**

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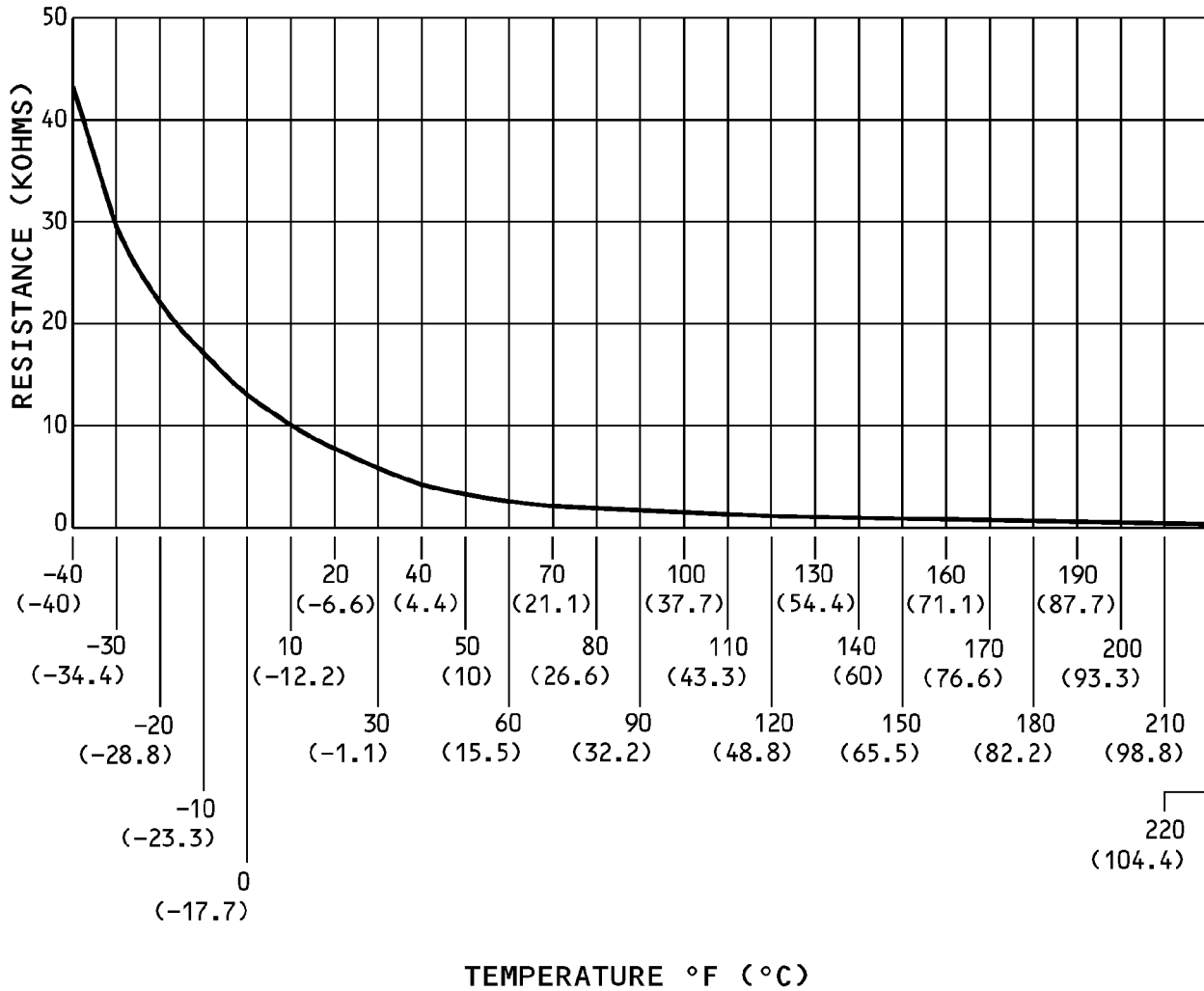
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MIX MANIFOLD TEMPERATURE SENSOR  
RESISTANCE VS TEMPERATURE GRAPH

Mix Manifold Temperature Sensor - Temperature and Resistance Data  
Figure 501 (Sheet 2 of 2)/21-51-51-990-802

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# AIRCRAFT MAINTENANCE MANUAL

## 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 - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~ C32

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	Air Conditioning Access Door
192CR	Air Conditioning 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	Air Conditioning 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

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

- (b) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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 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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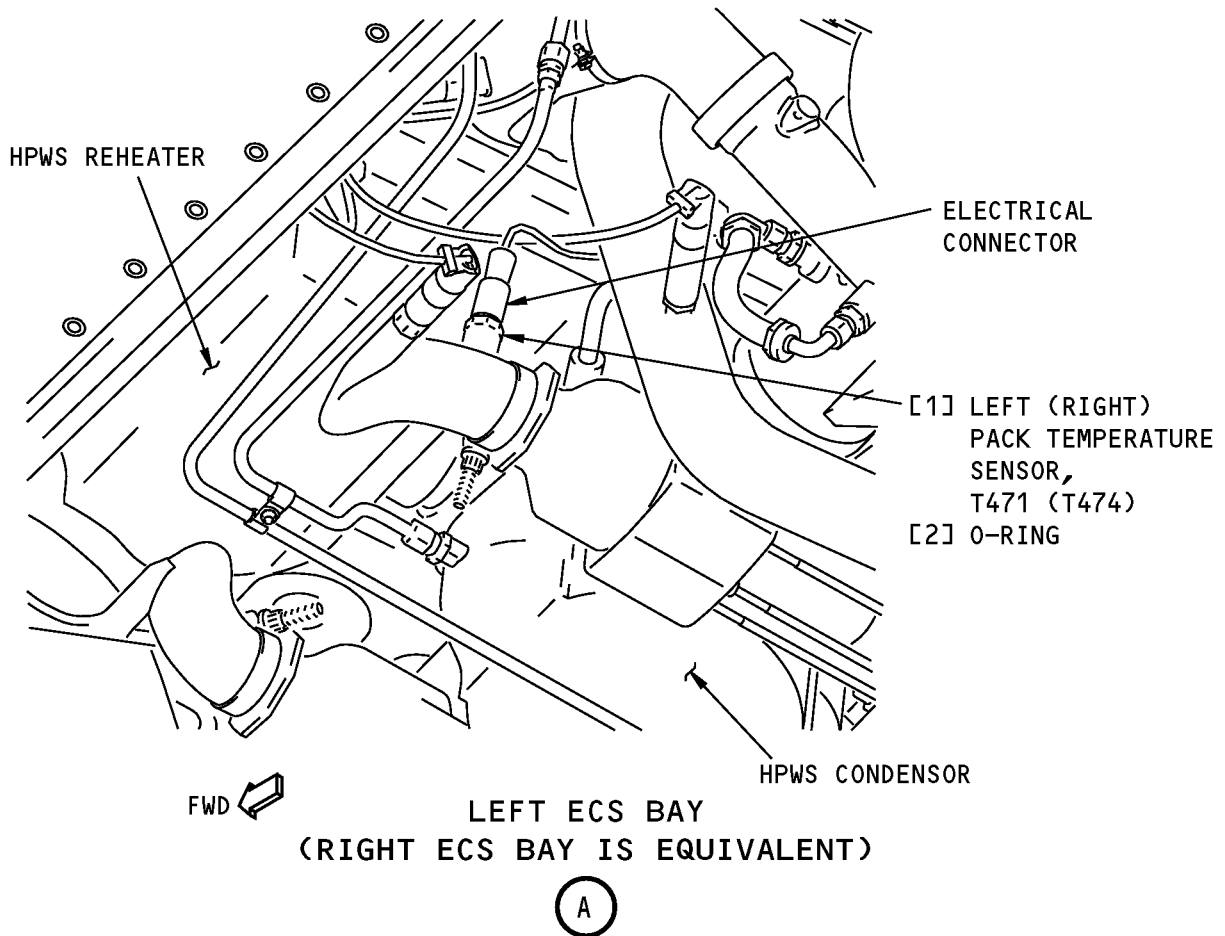
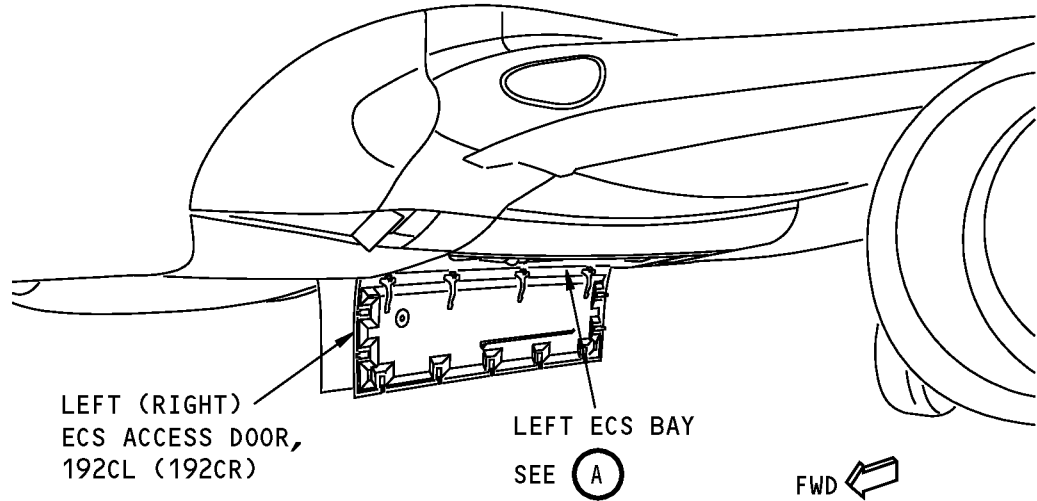
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**Pack Temperature Sensor Installation  
Figure 401/21-51-52-990-801**

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#### TASK 21-51-52-400-801

### 3. Pack Temperature Sensor Installation

(Figure 401)

#### A. References

Reference	Title
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-8N	MIL-PRF-907F
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~C32

#### 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	Air Conditioning Access Door
192CR	Air Conditioning 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-8N 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 lockwire, G01048 on the temperature sensor [1].

SUBTASK 21-51-52-420-004

(6) Connect the electrical connector to the temperature sensor [1].

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#### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-51-52-010-003

(1) When the temperature sensor on the left cooling pack was replaced, do this task:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC

(b) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-52-010-004

(2) When the temperature sensor on the right cooling pack was replaced, do this task:

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

F/O Electrical System Panel, P6-4

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

(b) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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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# AIRCRAFT MAINTENANCE MANUAL

## 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)
21-61-20-000-801	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-3945	Multimeter - Standard (Part #: 187, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: 87V, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: MODEL 21, Supplier: 89536, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: MODEL 27, Supplier: 89536, A/P Effectivity: 737-ALL)
COM-3955	Thermometer - Digital (Part #: 51 II, Supplier: 89536, A/P Effectivity: 737-600) (Opt Part #: 51-2, Supplier: 89536, A/P Effectivity: 737-600)
STD-4967	Multimeter

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.

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.

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.

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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 either the standard multimeter, COM-3945 (preferred) or multimeter, STD-4967 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: measure the resistance from pin A6 to B6 on connector D3860A for the right pack/zone temperature controller (WDM 21-51-22).
  - (a) Measure the resistance from pin D11 to D12 on connector D3858A for the left pack/zone temperature controller (WDM 21-51-13).
  - (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.

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.

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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.

————— **END OF TASK** —————

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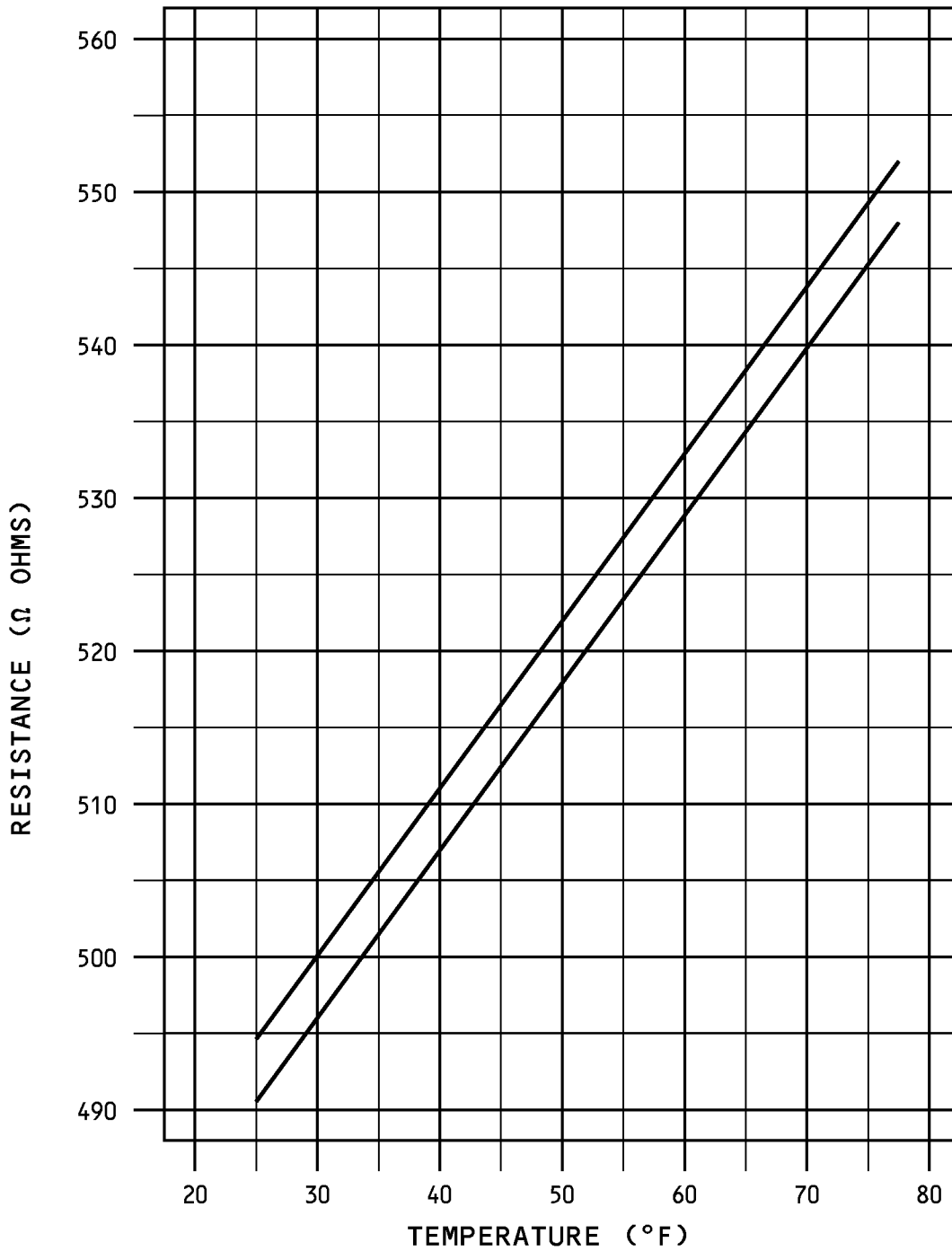
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PACK TEMPERATURE SENSOR RESISTANCE VS TEMPERATURE GRAPH

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Pack Temperature Sensor Test  
Figure 501/21-51-52-990-802

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# AIRCRAFT MAINTENANCE MANUAL

## 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 - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~ C32

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	Air Conditioning Access Door
192CR	Air Conditioning 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	Air Conditioning Access Door

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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:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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 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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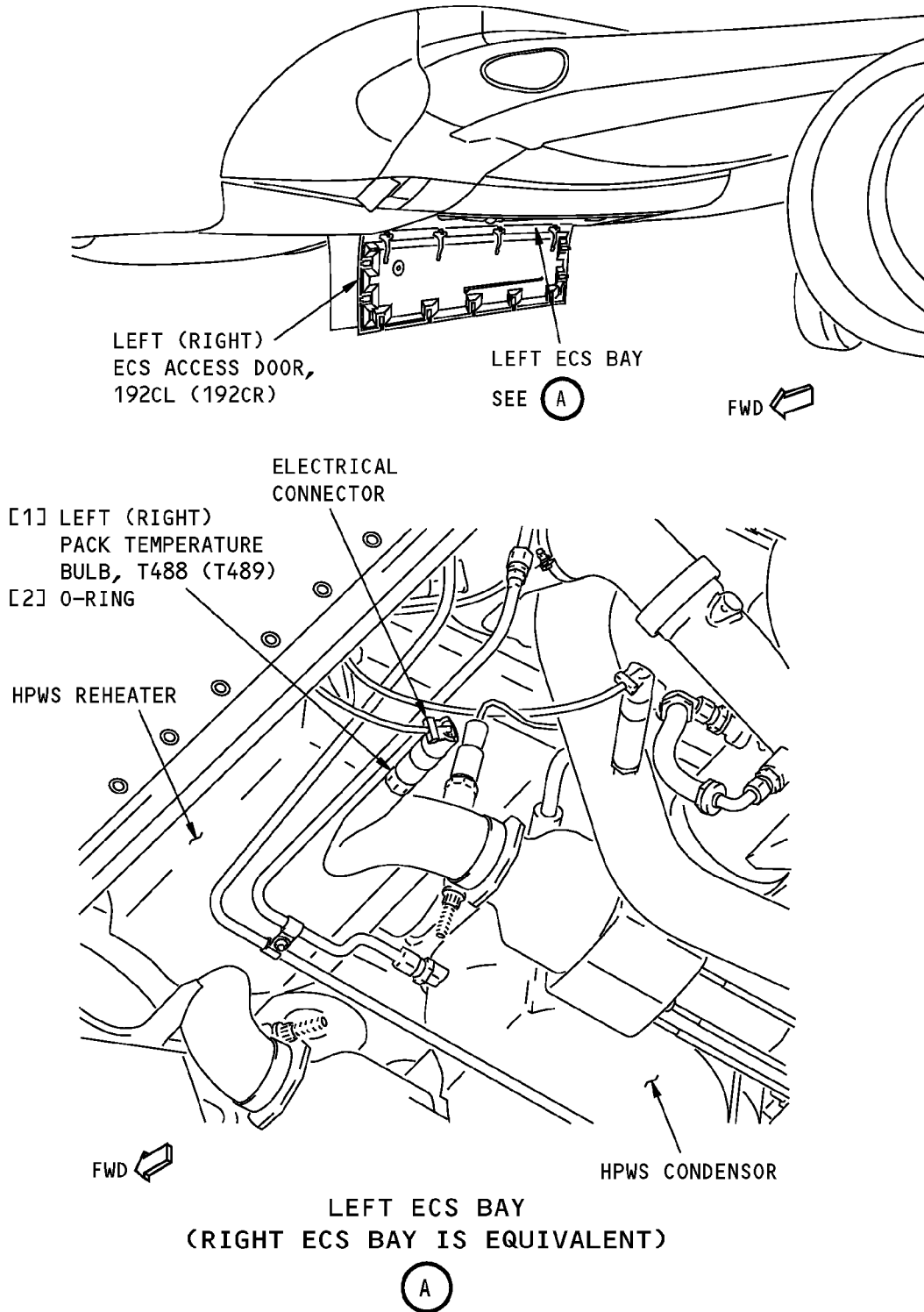
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**Pack Temperature Bulb Installation  
Figure 401/21-51-60-990-801**

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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-8N	MIL-PRF-907F
G01048	Lockwire - Corrosion Resistant Steel (0.032 In. Dia.)	NASM20995~C32

##### 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	Air Conditioning Access Door
192CR	Air Conditioning 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-8N 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 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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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## AIRCRAFT MAINTENANCE MANUAL

### 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

<u>Zone</u>	<u>Area</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

#### **HAP 023-026, 028-054; HAP 001-013, 015-022 POST SB 737-21-1133**

SUBTASK 21-51-65-860-013

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01613	AIR CONDITIONING PACK CONT VALVES L ALT
D	4	C01614	AIR CONDITIONING PACK CONT VALVES R ALT

#### **HAP ALL**

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.

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**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.
- (c) Remove the air conditioning module [1].

————— **END OF TASK** —————

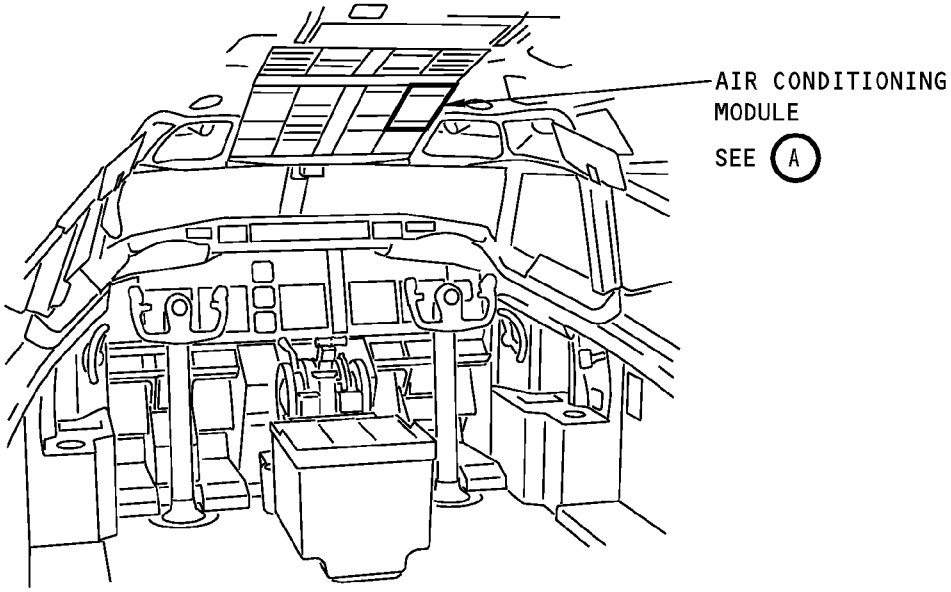
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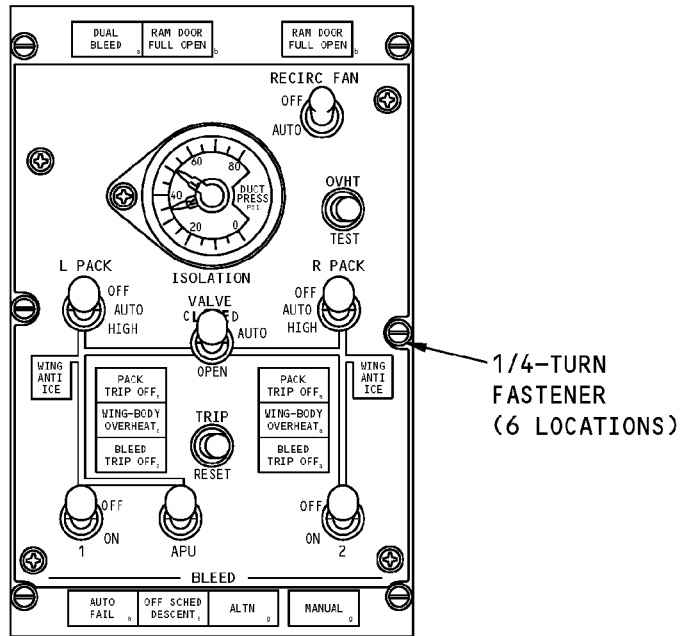
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**FLIGHT COMPARTMENT**



**(1) AIR CONDITIONING  
MODULE**

**(A)**

**Air Conditioning Module Installation  
Figure 401 (Sheet 1 of 2)/21-51-65-990-801**

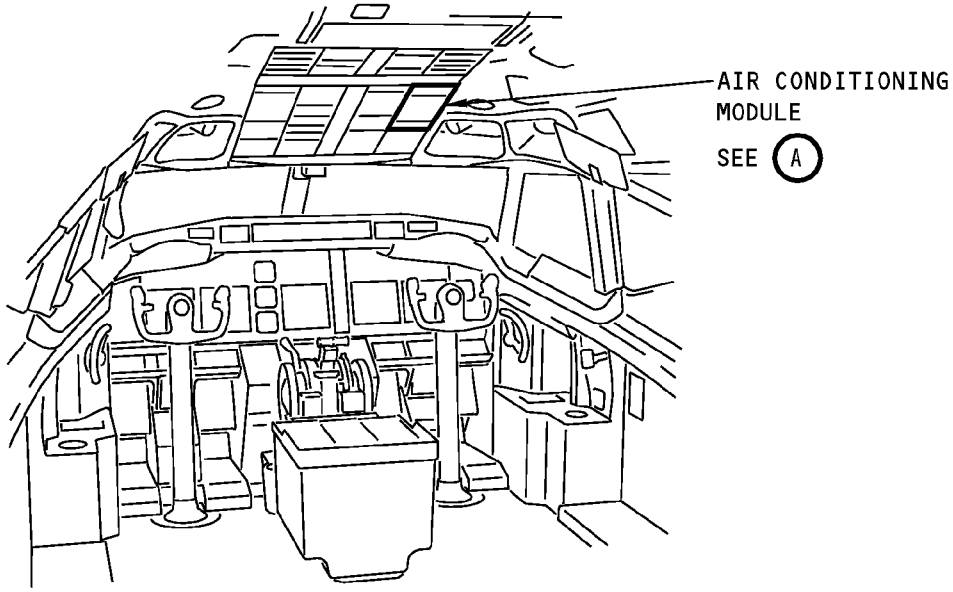
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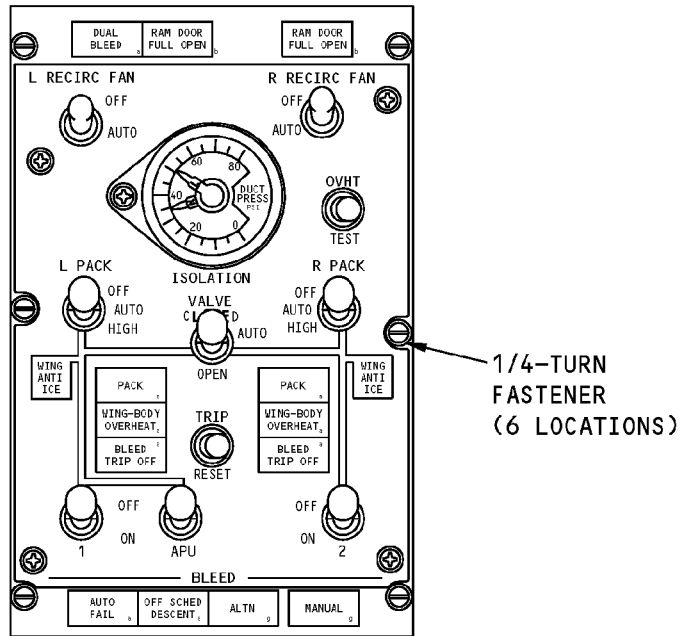
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**FLIGHT COMPARTMENT**



**(1) AIR CONDITIONING  
MODULE**

**(A)**

**Air Conditioning Module Installation  
Figure 401 (Sheet 2 of 2)/21-51-65-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

#### TASK 21-51-65-400-801

#### 3. Air Conditioning Module Installation

(Figure 401)

##### A. References

Reference	Title
21-25-00-710-801-001	Recirculation System - Operational Test (P/B 501)
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)
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	21-51-00-01-055	HAP 001-013, 015-026, 028
		21-51-65-01-005	HAP 101-999
		21-51-65-01A-005	HAP 029-054
		21-61-00-01-050	HAP 001-013, 015-026, 028

##### D. Location Zones

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

##### E. Access Panels

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

**HAP 023-026, 028-054; HAP 001-013, 015-022 POST SB 737-21-1133**

SUBTASK 21-51-65-860-014

(5) Close these circuit breakers:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01613	AIR CONDITIONING PACK CONT VALVES L ALT
D	4	C01614	AIR CONDITIONING PACK CONT VALVES R ALT

**HAP ALL**

**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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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
- (b) OFF SCHED DESCENT

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- (c) ALTN
- (d) MANUAL

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- (e) L and R PACK TRIP OFF

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- (f) PACK

### HAP ALL

- (g) L and R BLEED TRIP OFF
- (h) 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 21-25-00-710-801-001 or 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

- (b) Open the right access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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.

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- (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.

### 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-51-65-410-003

- (3) Close the right access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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:

- (1) Cabin Temperature Controller BITE Test.
- (2) Cabin Temperature Control Manual Mode Test.
- (3) Cabin Temperature Indication Test.

#### **TASK 21-61-00-700-808-001**

### 2. Cabin Temperature Controller BITE Test

(Figure 501)

A. General

- (1) This task does a BITE test of the cabin temperature controller.
- (2) The BITE test does the following checks:
  - (a) Cabin temperature controller self test.
  - (b) Cabin temperature sensor test.
  - (c) Cabin duct anticipator test.
  - (d) Cabin duct limit sensor test.
  - (e) Cabin temperature selector 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

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Procedure

SUBTASK 21-61-00-860-001-001

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

SUBTASK 21-61-00-860-002-001

- (2) Put the BLEED 1 and BLEED 2 switches on the air conditioning module of the P5 overhead panel to the OFF positions

SUBTASK 21-61-00-860-003-001

- (3) Put the APU BLEED switch on the air conditioning module to the OFF position.

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SUBTASK 21-61-00-860-004-001

- (4) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00257	AIR CONDITIONING OVERHEAT

SUBTASK 21-61-00-860-005-001

- (5) Put the CONT CABIN and PASS CABIN temperature selectors on the temperature control module on the P5 overhead panel to the AUTO (12 o'clock) position.

SUBTASK 21-61-00-860-006-001

- (6) Put the L PACK and R PACK switches on the temperature control module to AUTO.

SUBTASK 21-61-00-010-001-001

- (7) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-61-00-860-007-001

- (8) Get access to the cabin temperature controller installed on the top shelf of the E4 rack in the Electronics Equipment compartment.

SUBTASK 21-61-00-860-008-001

- (9) Put the BITE switch on the controller to the START position.

SUBTASK 21-61-00-710-001-001

- (10) Push the left and the right pack GO and NO GO lights on the controller.  
(a) Make sure the lights come on when you push them.

SUBTASK 21-61-00-710-002-001

- (11) Push and turn the BITE switch to each of the TEMP CONTROL BOX positions.

NOTE: Make sure you push the BITE switch.

- (a) Make sure the green GO light comes on for each pack.

NOTE: The left pack light is for the control cabin sensor and the right pack is for the passenger cabin sensor.

SUBTASK 21-61-00-710-003-001

- (12) Push and turn the BITE switch to the CABIN SENSOR position.

- (a) Make sure the green GO light comes on for each pack.

SUBTASK 21-61-00-710-004-001

- (13) Push and turn the BITE switch to the ANTICIPATOR SENSOR position.

- (a) Make sure the green GO light comes on for each pack.

SUBTASK 21-61-00-710-005-001

- (14) Push and turn the BITE switch to the DUCT LIMIT SENSOR position.

- (a) Make sure the green GO light comes on for each pack.

SUBTASK 21-61-00-710-006-001

- (15) Push and turn the BITE switch to the TEMP SELECTOR position.

- (a) Make sure the green GO light comes on for each pack.

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SUBTASK 21-61-00-860-009-001

(16) But the BITE switch to the START position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-00-860-010-001

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00257	AIR CONDITIONING OVERHEAT

SUBTASK 21-61-00-010-002-001

(2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-61-00-860-011-001

(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.

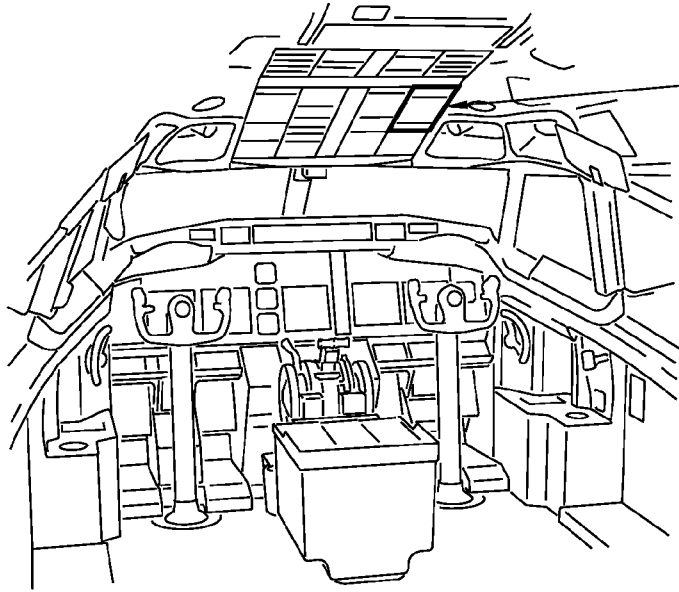
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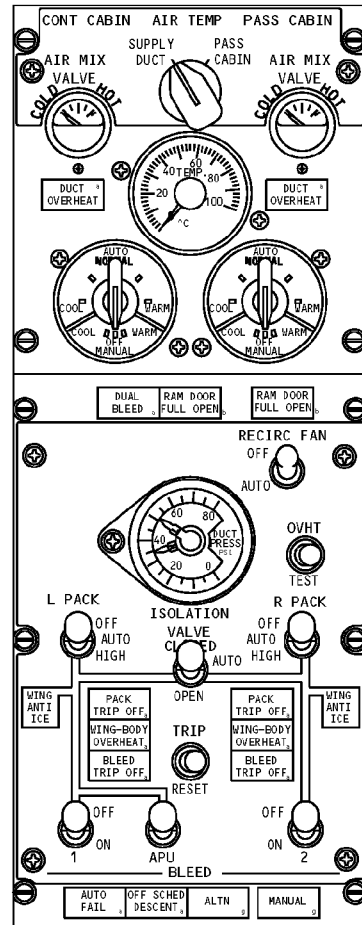
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AIR CONDITIONING  
MODULE

SEE (A)

**FLIGHT COMPARTMENT**



**AIR CONDITIONING  
MODULE**

(A)

**Zone Temperature Control and Indication Adjustment/Test  
Figure 501 (Sheet 1 of 2)/21-61-00-990-801-001**

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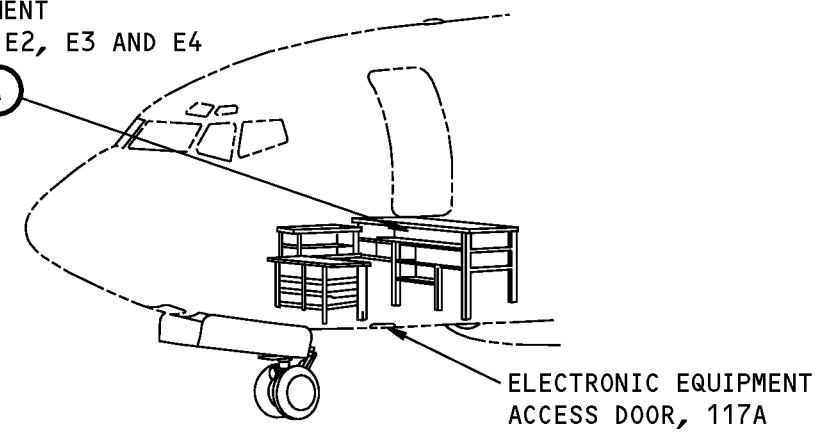
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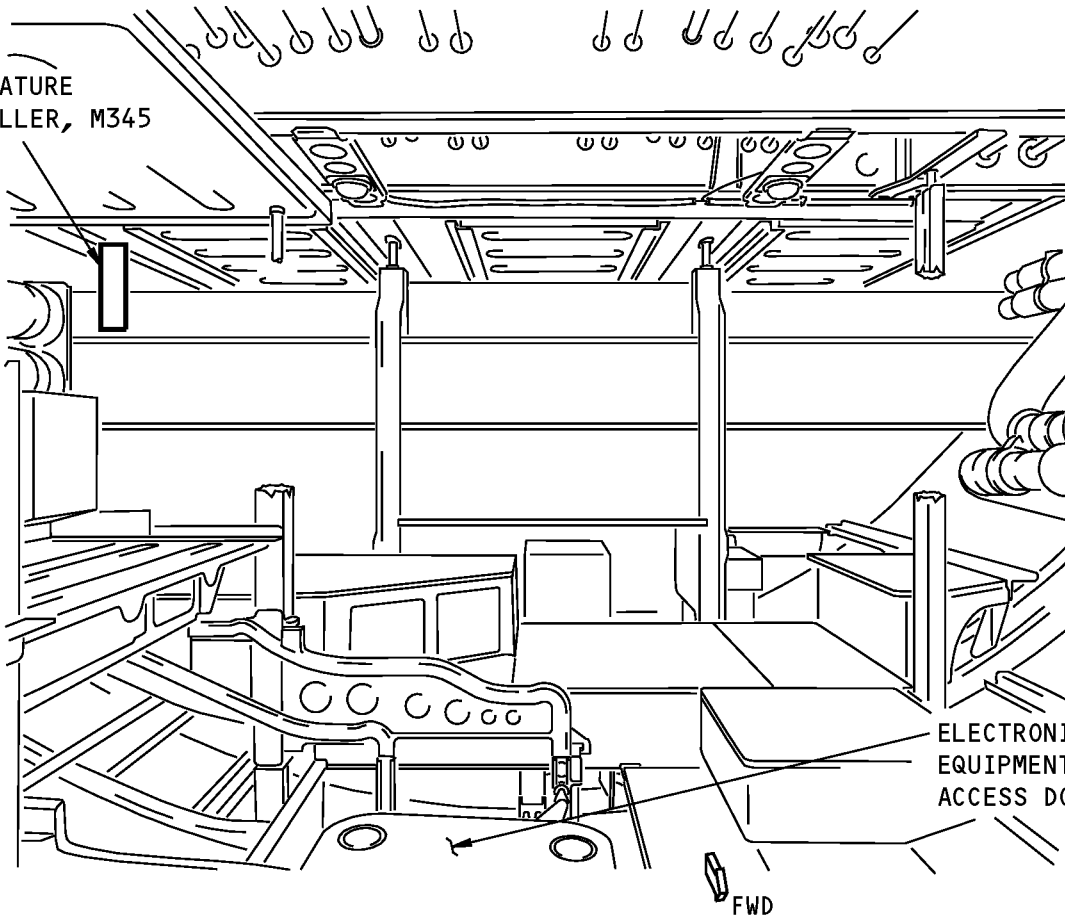
ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

SEE



ELECTRONIC EQUIPMENT  
ACCESS DOOR, 117A

CABIN  
TEMPERATURE  
CONTROLLER, M345



ELECTRONIC  
EQUIPMENT  
ACCESS DOOR, 117A

FWD

**ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4**



**Zone Temperature Control and Indication Adjustment/Test  
Figure 501 (Sheet 2 of 2)/21-61-00-990-801-001**

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**TASK 21-61-00-700-809-001**

## 3. Cabin Temperature Control Manual Mode - Operational Test

(Figure 501)

### A. General

- (1) This task does a check of the manual temperature control mode.

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

### D. Access Panels

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door

### E. Procedure

SUBTASK 21-61-00-860-012-001

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

SUBTASK 21-61-00-860-013-001

- (2) Put the CONT CABIN and PASS CABIN temperature selectors on the temperature control module on the P5 overhead panel to the OFF (6 o'clock) position.

SUBTASK 21-61-00-860-014-001

- (3) Put the L PACK and R PACK switches on the temperature control module to AUTO.

SUBTASK 21-61-00-010-003-001

- (4) Open this access panel:

Number	Name/Location
192CL	Air Conditioning Access Door

SUBTASK 21-61-00-010-004-001

- (5) Open this access panel:

Number	Name/Location
192CR	Air Conditioning Access Door

### **HAP 101-999; AIRPLANES WITH CONNECTORS D40844 AND D40846**

SUBTASK 21-61-00-020-009-001

- (6) Remove connector D40844 from the left flow control and shutoff valve.

SUBTASK 21-61-00-020-010-001

- (7) Remove connector D40846 from the right flow control and shutoff valve.

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SUBTASK 21-61-00-710-007-001

- (8) Put the CONT CABIN temperature selector to the MANUAL WARM position.
  - (a) Make sure the air mix valve for the left pack goes to the HOT position.
    - NOTE: Look at the position indicator on the mix valve to see its position.
  - (b) Make sure the CONT CABIN AIR MIX VALVE position indicator on the temperature control module goes to the HOT position.

SUBTASK 21-61-00-710-008-001

- (9) Put the CONT CABIN temperature selector to the MANUAL COOL position.
  - (a) Make sure the air mix valve for the left pack goes to the COLD position.
  - (b) Make sure the CONT CABIN AIR MIX VALVE position indicator on the temperature control module goes to the COLD position.

SUBTASK 21-61-00-710-009-001

- (10) Put the PASS CABIN temperature selector to the MANUAL WARM position.
  - (a) Make sure the air mix valve for the right pack goes to the HOT position.
  - (b) Make sure the PASS CABIN AIR MIX VALVE position indicator on the temperature control module goes to the HOT position.

SUBTASK 21-61-00-710-010-001

- (11) Put the PASS CABIN temperature selector to the MANUAL COOL position.
  - (a) Make sure the air mix valve for the right pack goes to the COLD position.
  - (b) Make sure the PASS CABIN AIR MIX VALVE position indicator on the temperature control module goes to the COLD position.

## F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-00-860-015-001

- (1) Put the CONT CABIN and PASS CABIN temperature selectors on the temperature control module on the P5 overhead panel to the AUTO (12 o'clock) position.

### HAP 101-999; AIRPLANES WITH CONNECTORS D40844 AND D40846

SUBTASK 21-61-00-410-013-001

- (2) Install connector D40844 on the left flow control and shutoff valve.

SUBTASK 21-61-00-410-014-001

- (3) Install connector D40846 on the right flow control and shutoff valve.

### HAP 101-999

SUBTASK 21-61-00-410-003-001

- (4) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-61-00-410-004-001

- (5) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

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SUBTASK 21-61-00-860-016-001

- (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 21-61-00-700-810-001**

**4. Cabin Temperature Indication - Operational Test**

(Figure 501)

**A. General**

- (1) This task does a check of the passenger cabin temperature indication.

**B. References**

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
21-00-00-800-802	Remove Conditioned Air from the Airplane (P/B 201)
24-22-00-860-811	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, Ambient Temperature

**D. Location Zones**

Zone	Area
212	Flight Compartment - Right

**E. Procedure**

SUBTASK 21-61-00-860-017-001

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

SUBTASK 21-61-00-710-039-001

- (2) Supply conditioned air to the passenger and control cabins. To supply conditioned air, do this task: Supply Conditioned Air to the Airplane, TASK 21-00-00-800-801.

SUBTASK 21-61-00-710-040-001

- (3) Let the packs operate for two minutes to permit the output temperature to become stable.

SUBTASK 21-61-00-710-041-001

- (4) Use a thermometer, STD-1122 to determine the ambient temperature in the passenger cabin.

SUBTASK 21-61-00-710-011-001

- (5) Put the AIR TEMP selector on the temperature control module on the overhead P-5 panel to the PASS CABIN position.

- (a) Make sure the temperature gage just below the AIR TEMP selector shows a temperature that is approximately the same as the ambient temperature in the passenger cabin.

SUBTASK 21-61-00-710-042-001

- (6) Use a thermometer, STD-1122 to determine the ambient temperature in the control cabin.

SUBTASK 21-61-00-710-012-001

- (7) Put the AIR TEMP selector on the temperature control module to the SUPPLY DUCT position.

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- (a) Make sure the temperature gage just below the AIR TEMP selector shows a temperature that is approximately the same as the ambient temperature in the control cabin.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-00-860-061-001

- (1) Remove conditioned air 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 21-61-00-860-018-001

- (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

TASK 21-61-00-710-801-001

5. Duct Overheat Switch - Operational Test

A. References

Table with 2 columns: Reference, Title. Rows include 24-22-00-860-811, 24-22-00-860-812, 36-00-00-860-801, 36-00-00-860-806.

B. Location Zones

Table with 2 columns: Zone, Area. Rows include 211, 212.

C. Preparation for the Operational Test

SUBTASK 21-61-00-860-066-001

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

SUBTASK 21-61-00-860-067-001

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

D. Operational Test of Control Cabin Duct Overheat Switch

SUBTASK 21-61-00-010-013-001

- (1) Put the AIR TEMP switch on the P5-17 air conditioning module to the SUPPLY DUCT position.:

SUBTASK 21-61-00-860-068-001

- (2) Set the L PACK switch on the P5-10 panel to AUTO or HIGH.

SUBTASK 21-61-00-860-069-001

- (3) Move the CONT CABIN temperature selector switch on the P5-17 panel to MANUAL OFF.

SUBTASK 21-61-00-860-070-001

- (4) Move the CONT CABIN temperature selector switch intermittently to MANUAL WARM.

NOTE: The air mix valve for the control cabin will move slowly toward the hot position.

SUBTASK 21-61-00-860-071-001

- (5) Monitor these indicators and lights as you move the CONT CABIN temperature selector switch to MANUAL WARM:

- (a) The TEMP indicator on the P5-17 panel

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- (b) The CONT CABIN AIR MIX VALVE indicator on the P5-17 panel
- (c) The CONT CABIN DUCT OVERHEAT light on the P5-17 panel
- (d) The PACK TRIP OFF light on the P5-10 panel for the left pack
- (e) The MASTER CAUTION lights on the P1 panel

SUBTASK 21-61-00-710-043-001

- (6) Toggle the CONT CABIN temperature selector until the DUCT OVERHEAT light for the control cabin comes on.

SUBTASK 21-61-00-710-044-001

- (7) Make sure that the MASTER CAUTION and AIR COND lights on the pilots' glareshield come on.

SUBTASK 21-61-00-710-045-001

- (8) Make sure that the left PACK TRIP OFF light does not come on.

SUBTASK 21-61-00-710-046-001

- (9) Make sure that the CONT CABIN AIR MIX VALVE indicator moves to the fully COLD position.

SUBTASK 21-61-00-710-047-001

- (10) Allow the temperature control system to operate until the temperature indication on the TEMP indicator is below 77 degrees F (25 degrees C).

SUBTASK 21-61-00-710-048-001

- (11) Push the TRIP RESET button on the P5-10 panel.

SUBTASK 21-61-00-710-049-001

- (12) Make sure that the MASTER CAUTION and AIR COND lights on the pilots' glareshield go off.

SUBTASK 21-61-00-860-072-001

- (13) Put the L PACK switch to the OFF position.

### E. Operational Test of the Passenger Cabin Duct Overheat Switch

SUBTASK 21-61-00-860-073-001

- (1) Make sure the AIR TEMP switch on the P5-17 panel is set to the SUPPLY DUCT position.

SUBTASK 21-61-00-860-074-001

- (2) Set the R PACK switch on the P5-10 panel to AUTO or HIGH.

SUBTASK 21-61-00-860-075-001

- (3) Move the PASS CABIN temperature selector switch on the P5-17 panel to MANUAL OFF.

SUBTASK 21-61-00-860-076-001

- (4) Move the PASS CABIN temperature selector switch intermittently to MANUAL WARM.

**NOTE:** The air mix valve for the passenger cabin will move slowly toward the hot position.

SUBTASK 21-61-00-860-077-001

- (5) Monitor these indicators and lights as you move the PASS CABIN temperature selector switch to MANUAL WARM:

- (a) The TEMP indicator on the P5-17 panel
- (b) The PASS CABIN AIR MIX VALVE indicator on the P5-17 panel
- (c) The PASS CABIN DUCT OVERHEAT light on the P5-17 panel
- (d) The PACK TRIP OFF light on the P5-10 panel for the right pack
- (e) The MASTER CAUTION lights on the pilots' glareshield

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SUBTASK 21-61-00-710-050-001

- (6) Toggle the PASS CABIN temperature selector until the DUCT OVERHEAT light for the passenger cabin comes on.

SUBTASK 21-61-00-710-051-001

- (7) Make sure that the MASTER CAUTION and AIR COND lights on the pilots' glareshield come on.

SUBTASK 21-61-00-710-052-001

- (8) Make sure that the right PACK TRIP OFF light does not come on.

SUBTASK 21-61-00-710-053-001

- (9) Make sure that the PASS CABIN AIR MIX VALVE indicator moves to the fully COLD position.

SUBTASK 21-61-00-710-054-001

- (10) Allow the temperature control system to operate until the temperature indication on the TEMP indicator is below 170 degrees F (76.5 degrees C).

SUBTASK 21-61-00-710-055-001

- (11) Push the TRIP RESET button on the P5-10 panel.

SUBTASK 21-61-00-710-056-001

- (12) Make sure that the MASTER CAUTION and AIR COND lights on the pilots' glareshield go off.

SUBTASK 21-61-00-860-078-001

- (13) Put the R PACK switch to the OFF position.

### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-00-860-079-001

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

SUBTASK 21-61-00-860-080-001

- (2) 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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## ZONE TEMPERATURE CONTROL AND INDICATION - ADJUSTMENT/TEST

### 1. General

A. This procedure has these tasks:

- (1) Pack/Zone Temperature Controller BITE Test.
- (2) Cabin Temperature Control and Indication Test.

#### **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) Pack temperature sensor test.
  - (i) Temperature control valve test.
  - (j) Standby temperature control valve test.
  - (k) 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

#### 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.

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SUBTASK 21-61-00-860-029-002

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C01157	AIR CONDITIONING TEMP CONT VALVE CLOSE LEFT
A	3	C01170	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT AFT PASS
A	4	C00399	AIR CONDITIONING RAM AIR MOD LEFT
A	8	C00555	AIR CONDITIONING RAM AIR MOD CONT LEFT
A	9	C01158	AIR CONDITIONING PACK CONTROL LEFT DC
A	11	C01159	AIR CONDITIONING PACK CONTROL LEFT AC
B	1	C01160	AIR CONDITIONING TEMP CONT VALVE CLOSE RIGHT
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS
B	3	C01163	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT FLT DK
B	4	C00400	AIR CONDITIONING RAM AIR MOD RIGHT
B	8	C01178	AIR CONDITIONING RAM AIR MOD CONT RIGHT
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 RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT
C	7	C01177	A/C PACK/ENGINE BLEED AIR OVHT RIGHT
C	8	C01176	A/C PACK/ENGINE BLEED AIR OVHT LEFT

**HAP 023-026, 028-054; HAP 001-013, 015-022 POST SB 737-21-1133**

SUBTASK 21-61-00-860-064-002

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01613	AIR CONDITIONING PACK CONT VALVES L ALT
D	4	C01614	AIR CONDITIONING PACK CONT VALVES R ALT

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-00-860-030-002

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES LEFT
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES RIGHT
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) Put the L PACK and R PACK switches to the AUTO position.
  - (c) Put the L RECIRC FAN and R RECIRC FAN switches to the AUTO position.
  - (d) 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:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

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 all the lights on the controller come on and then go off.
  - (b) 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.

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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- 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. 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.

- (d) 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.
- (e) 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.

#### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-00-010-006-002

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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** —————

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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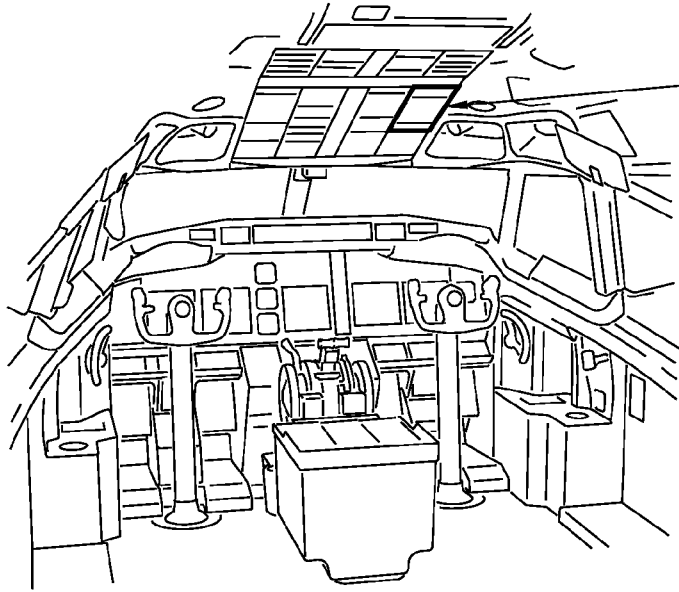
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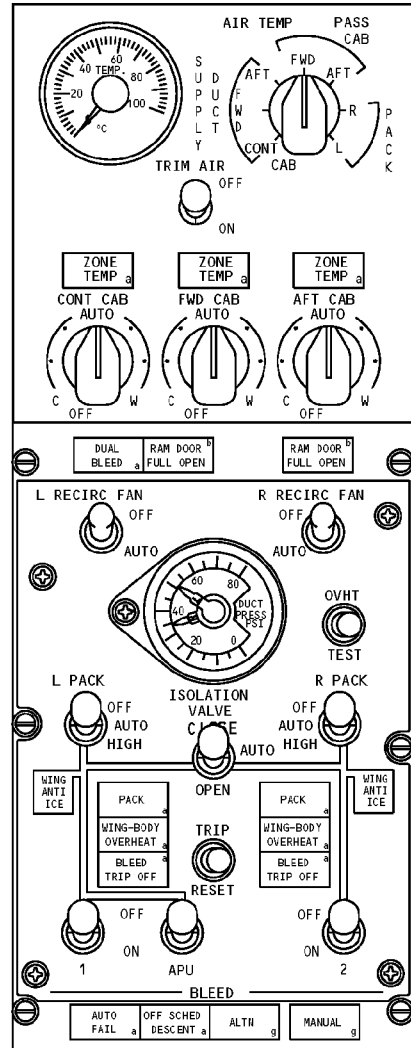
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**FLIGHT COMPARTMENT**

AIR CONDITIONING  
MODULE

SEE (A)



**AIR CONDITIONING  
MODULE**

(A)

**Zone Temperature Control and Indication Test  
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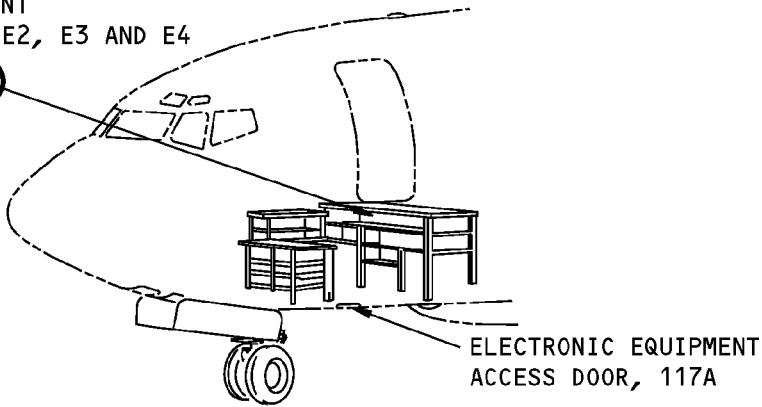
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ELECTRONIC  
EQUIPMENT  
RACKS, E2, E3 AND E4

SEE (B)



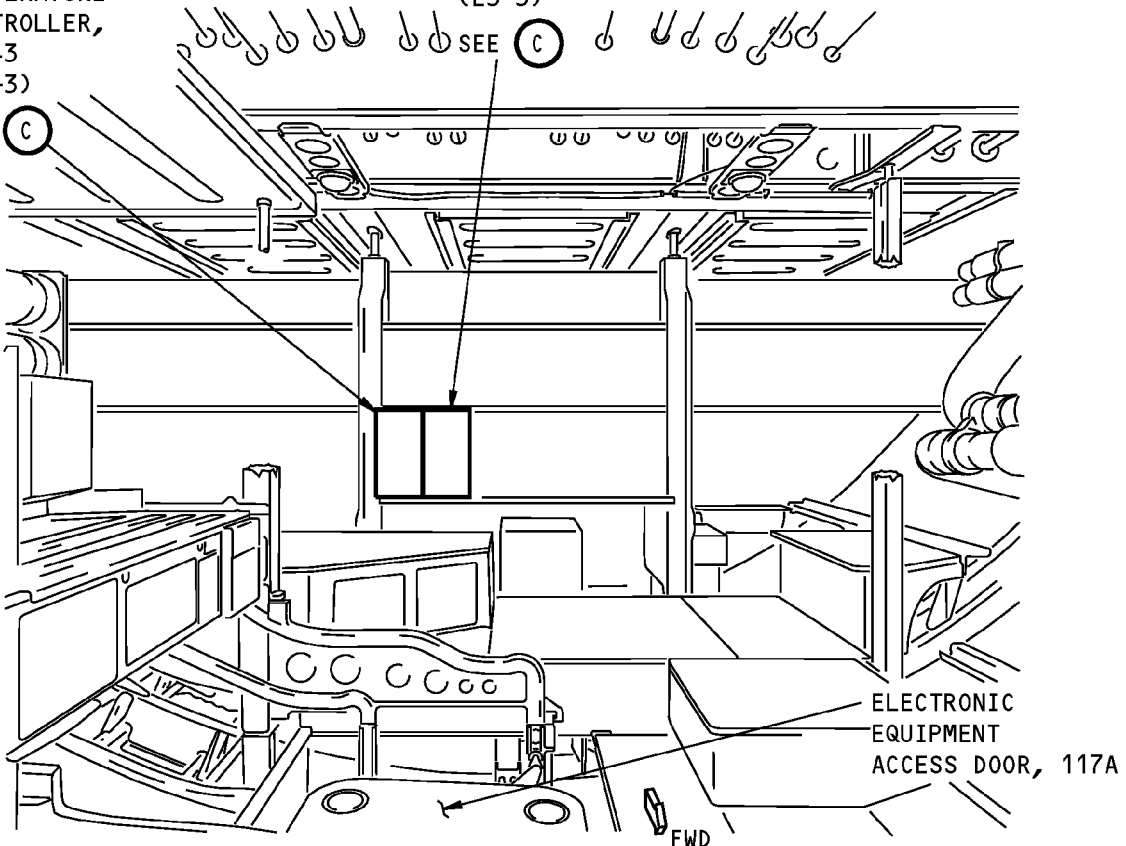
ELECTRONIC EQUIPMENT  
ACCESS DOOR, 117A

[1] PACK/ZONE  
TEMPERATURE  
CONTROLLER,  
M1443  
(E3-3)

SEE (C)

[1] PACK/ZONE TEMPERATURE  
CONTROLLER, M1442  
(E3-3)

SEE (C)



ELECTRONIC  
EQUIPMENT  
ACCESS DOOR, 117A

ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

(B)

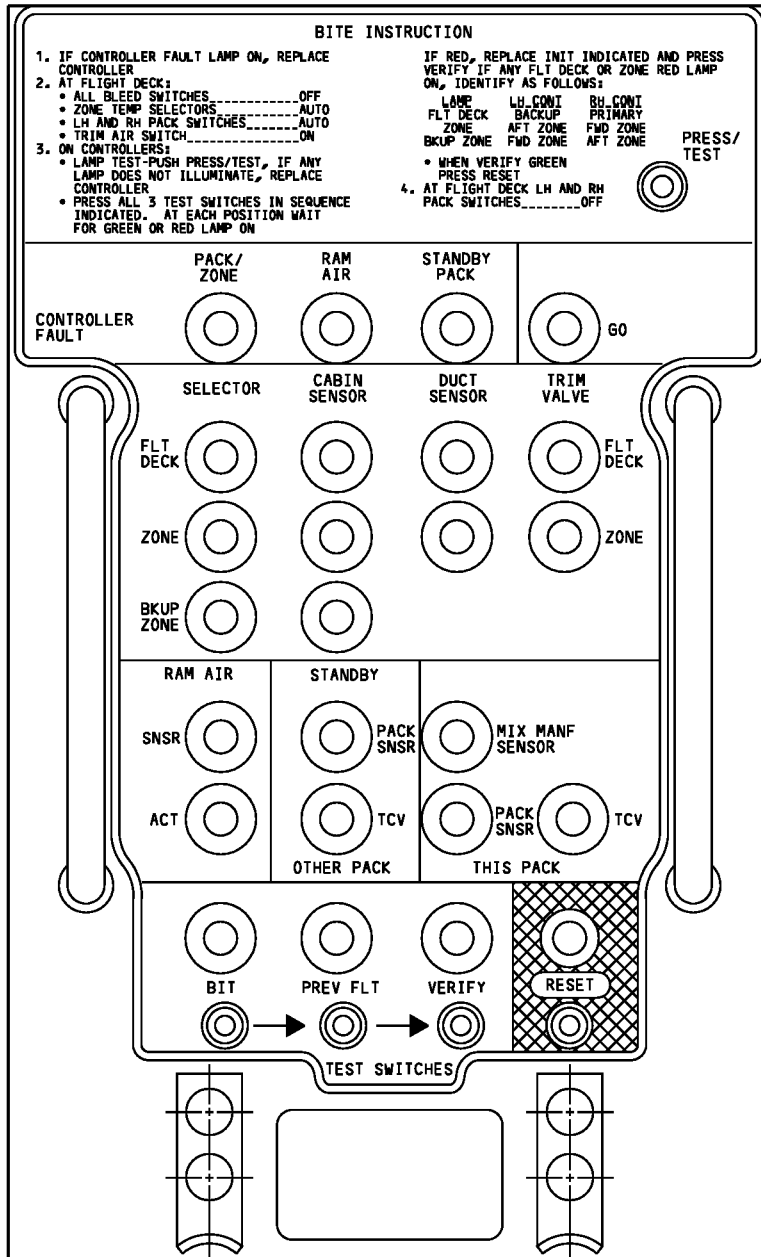
**Zone Temperature Control and Indication Test  
Figure 501 (Sheet 2 of 3)/21-61-00-990-802-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**PACK/ZONE CABIN TEMPERATURE CONTROLLER, M1442, M1443**



**Zone Temperature Control and Indication Test  
Figure 501 (Sheet 3 of 3)/21-61-00-990-802-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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# AIRCRAFT MAINTENANCE MANUAL

TASK 21-61-00-700-807-002

## 3. 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, Ambient Temperature

### 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.

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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# AIRCRAFT MAINTENANCE MANUAL

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

### 4. 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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### AIRCRAFT MAINTENANCE MANUAL

Reference	Description
COM-1552	Kit - Heater Probes, TEMPCAL (Part #: BH24944-7, Supplier: 98869, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800)
COM-3924	Tester - Thermo Switch, K-Type Thermocouple Switches (Part #: H294, Supplier: 98869, A/P Effectivity: 737-ALL) (Part #: H394 SERIES, Supplier: 98869, A/P Effectivity: 737-ALL)

#### 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 21-61-00-861-002

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

SUBTASK 21-61-00-010-016

(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

(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 Control Cabin Duct Overheat Switch

SUBTASK 21-61-00-020-013

(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

(2) Prepare the K-Type thermocouple switch tester, COM-3924 and the TEMPCAL heater probe kit, COM-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

**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

(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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## AIRCRAFT MAINTENANCE MANUAL

- (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

- (5) Remove the heat from the overheat switch probe.

SUBTASK 21-61-00-710-061

- (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

- (7) Push the TRIP RESET button on the P5-10 panel.

SUBTASK 21-61-00-710-063

- (8) Push the MASTER CAUTION reset button on the P7 glareshield panel.

SUBTASK 21-61-00-710-064

- (9) Make sure that the ZONE TEMP, MASTER CAUTION and AIR COND lights go off.

SUBTASK 21-61-00-420-003

- (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 Passenger Cabin Duct Overheat Switch

SUBTASK 21-61-00-020-014

- (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

- (2) Prepare the K-Type thermocouple switch tester, COM-3924 and the TEMPCAL heater probe kit, COM-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

**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

- (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

- (5) Remove the heat from the overheat switch probe.

SUBTASK 21-61-00-710-068

- (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

- (7) Push the TRIP RESET button on the P5-10 panel.

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SUBTASK 21-61-00-710-070

(8) Push the MASTER CAUTION reset button on the P7 glareshield panel.

SUBTASK 21-61-00-710-071

(9) Make sure that the ZONE TEMP, MASTER CAUTION and AIR COND lights go off.

SUBTASK 21-61-00-420-004

(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

(11) Repeat the test for the aft passenger cabin duct overheat switch.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-00-410-017

(1) Install the ceiling panels that you removed to do the test.

SUBTASK 21-61-00-410-018

(2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-61-00-862-002

(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** —————

EFFECTIVITY  
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# AIRCRAFT MAINTENANCE MANUAL

## CABIN TEMPERATURE CONTROLLER (CTC) - REMOVAL/INSTALLATION

### 1. General

A. This procedure has these tasks:

- (1) A removal of the cabin temperature controller (CTC)
- (2) An installation of the cabin temperature controller (CTC).

#### **TASK 21-61-01-000-801**

### 2. Cabin Temperature Controller (CTC) Removal

(Figure 401)

A. References

Reference	Title
20-10-07-400-802	Printed Circuit Card Installation (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. Procedure

SUBTASK 21-61-01-860-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

SUBTASK 21-61-01-010-001

- (2) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-01-010-002

- (3) Remove the cabin temperature controller [1]. To remove the cabin temperature controller [1], do this task: Printed Circuit Card Installation, TASK 20-10-07-400-802.

**END OF TASK**

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HAP 101-999

# 21-61-01

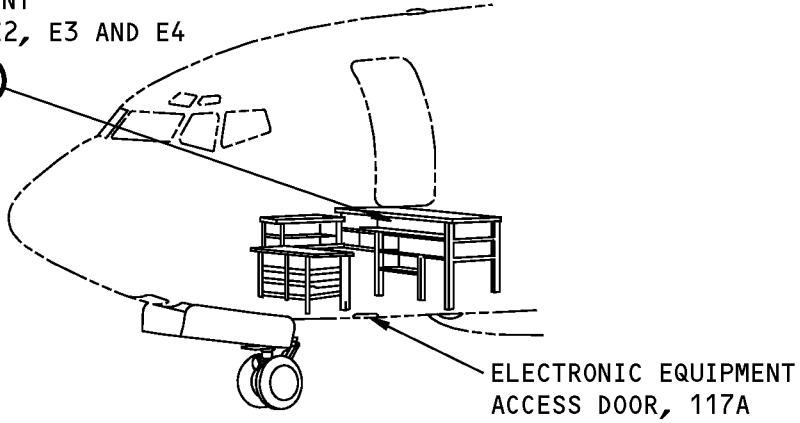
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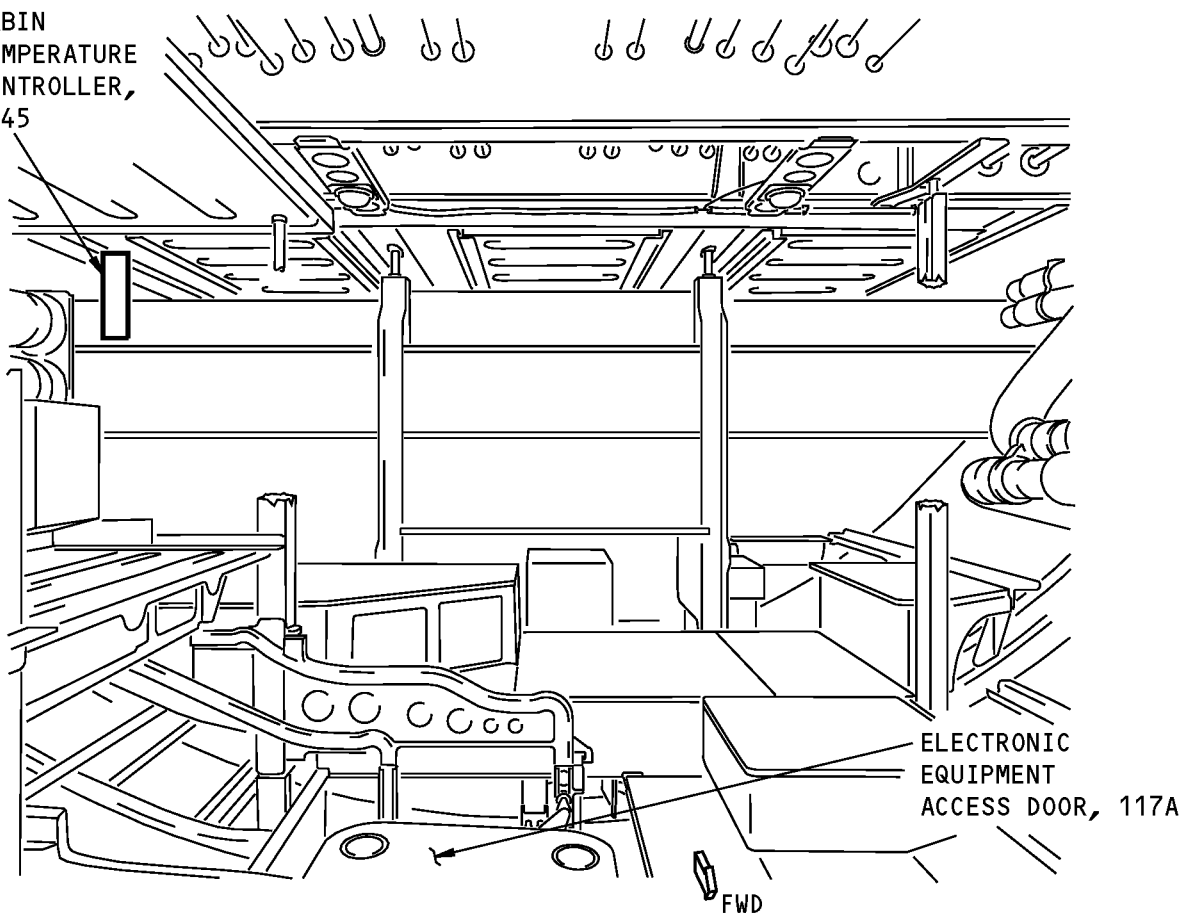
**AIRCRAFT MAINTENANCE MANUAL**

ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

SEE (A)



[1] CABIN  
TEMPERATURE  
CONTROLLER,  
M345



ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4

(A)

**Cabin Temperature Controller Installation**  
**Figure 401/21-61-01-990-801**

EFFECTIVITY  
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TASK 21-61-01-400-801

3. Cabin Temperature Controller (CTC) Installation

(Figure 401)

A. References

Reference	Title
20-10-07-000-801	E/E Box Removal (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	21-61-11-01-005	HAP 101-999

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Cabin Temperature Controller (CTC) Installation

SUBTASK 21-61-01-420-001

- (1) Install the cabin temperature controller [1]. To install the cabin temperature controller, do this task: E/E Box Removal, TASK 20-10-07-000-801.

SUBTASK 21-61-01-860-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

F. Cabin Temperature Controller (CTC) Installation Test

SUBTASK 21-61-01-860-003

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

SUBTASK 21-61-01-740-001

- (2) Do the test instructions that are on the front of the controller.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-01-010-003

- (1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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# AIRCRAFT MAINTENANCE MANUAL

## AIR MIX VALVE - REMOVAL/INSTALLATION

### 1. General

A. This procedure has these tasks:

- (1) A removal of the air mix valve
- (2) An installation of the air mix valve.

B. There are two air mix valves, one for each cooling pack. The valves are installed in the aft area of each air conditioning bay, inboard of the heat exchanger.

#### **TASK 21-61-02-000-801**

### 2. Air Mix 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

D. Prepare for the Removal

SUBTASK 21-61-02-860-010

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

SUBTASK 21-61-02-860-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	3	C00267	AIR CONDITIONING TEMP CONTROL MANUAL
D	7	C00124	AIR CONDITIONING MIX VALVE POS IND

SUBTASK 21-61-02-860-002

(3) For the left air mix valve, do these steps:

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT

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(b) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-61-02-010-001

(4) For the right air mix valve, do these steps:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

(b) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

then do this step:

Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

## E. Air Mix Valve Removal

SUBTASK 21-61-02-020-001

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

(1) Disconnect the electrical connector [4] from the valve position transmitter.

SUBTASK 21-61-02-020-002

(2) Disconnect the electrical connector [6] from the valve actuator.

SUBTASK 21-61-02-020-029

(3) Hold the strap [18] while you remove the screws [14], washers [15], and nuts [16].

SUBTASK 21-61-02-020-030

(4) Remove the strap [18] and the bracket [17].

SUBTASK 21-61-02-020-003

(5) Remove the v-clamp [2] that holds the aft end of the duct [3] to the mix valve [1].

SUBTASK 21-61-02-020-004

**CAUTION:** HOLD THE DUCT WHEN YOU REMOVE THE CLAMP. THE DUCT CAN FALL WHEN THE CLAMP IS REMOVED. THE DUCT CAN BE DAMAGED IF IT FALLS.

(6) Remove the v-clamp [2] that holds the forward end of the duct [3].

SUBTASK 21-61-02-020-005

(7) Remove the duct [3] to get access to the mix valve [1].

SUBTASK 21-61-02-020-006

(8) Remove the nut [10] and washer [9] from the screw [8].

SUBTASK 21-61-02-020-007

(9) Remove the bonding jumper [5] from the screw [8] and bend it away from the mix valve [1].

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SUBTASK 21-61-02-020-008

(10) Remove the screw [8] and washer [9] from the mix valve [1].

SUBTASK 21-61-02-020-009

(11) Loosen the band clamps [7] from the mix valve [1] and move them to the adjacent ducts.

SUBTASK 21-61-02-020-010

(12) Move the sleeve [11] away from the mix valve [1] to the adjacent ducts.

SUBTASK 21-61-02-020-011

(13) Move the rings [12] away from the mix valve [1] to the adjacent ducts.

SUBTASK 21-61-02-020-012

(14) Loosen the retainers [13] from the mix valve [1] and move them to the adjacent ducts.

SUBTASK 21-61-02-020-013

**CAUTION:** HOLD THE VALVE WHEN YOU REMOVE THE CLAMP. THE VALVE CAN FALL WHEN THE CLAMP IS REMOVED. THE VALVE CAN BE DAMAGED IF IT FALLS.

(15) Remove the v-clamp [2] from the mix valve [1] duct connection.

SUBTASK 21-61-02-160-001

(16) Carefully remove the mix valve [1] from its position between the air ducts.

————— **END OF TASK** —————

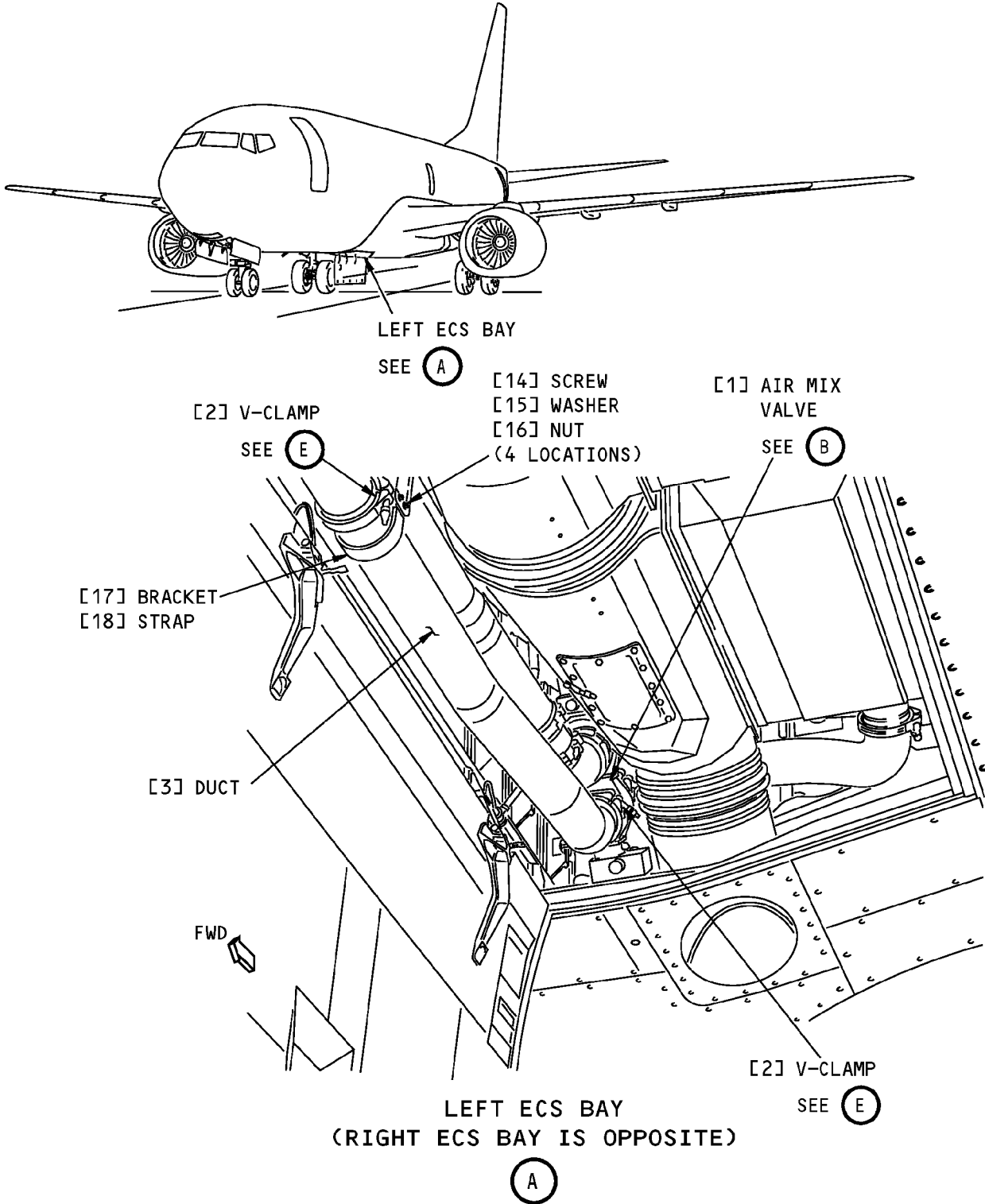
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**Air Mix Valve Installation  
Figure 401 (Sheet 1 of 3)/21-61-02-990-801**

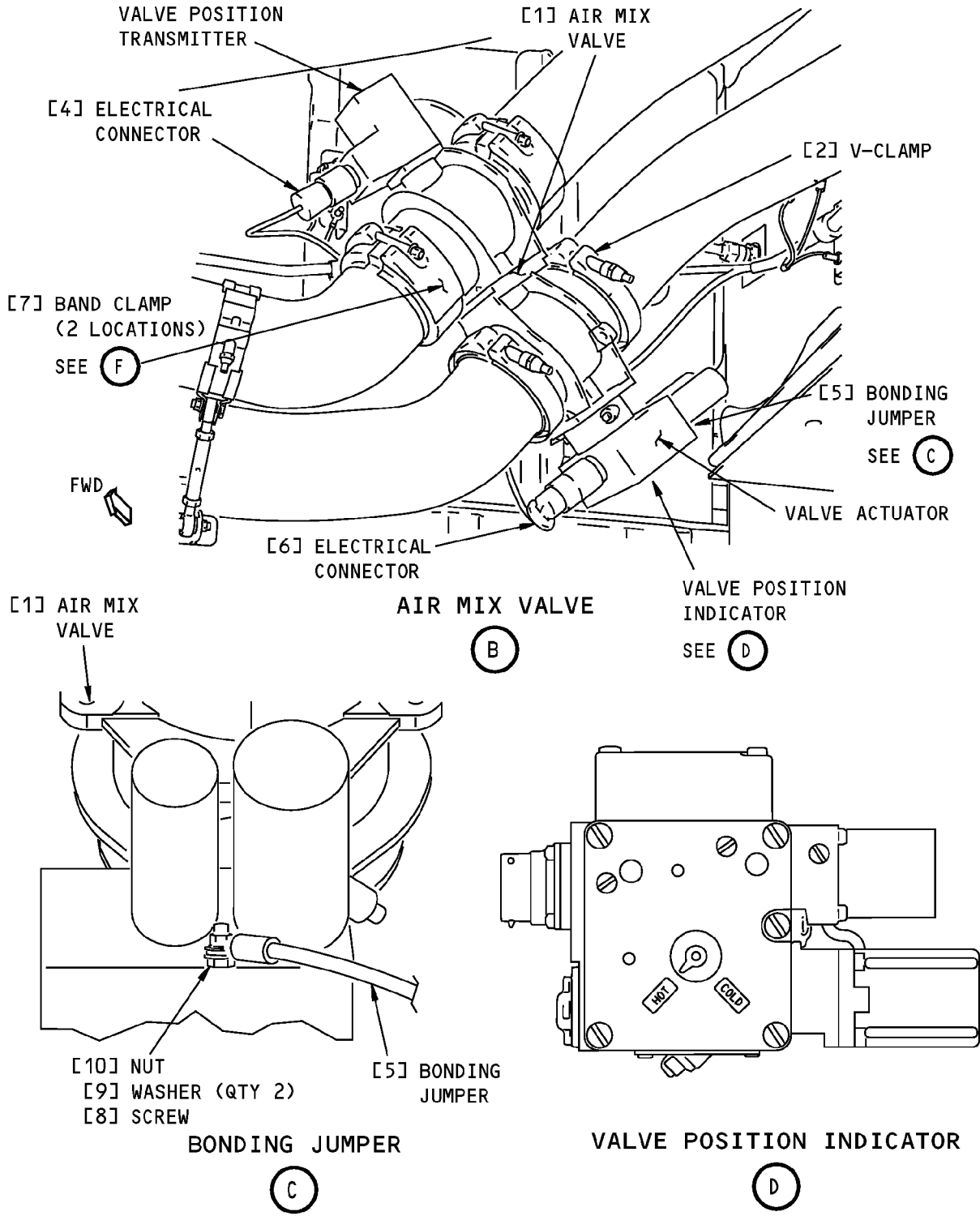
EFFECTIVITY  
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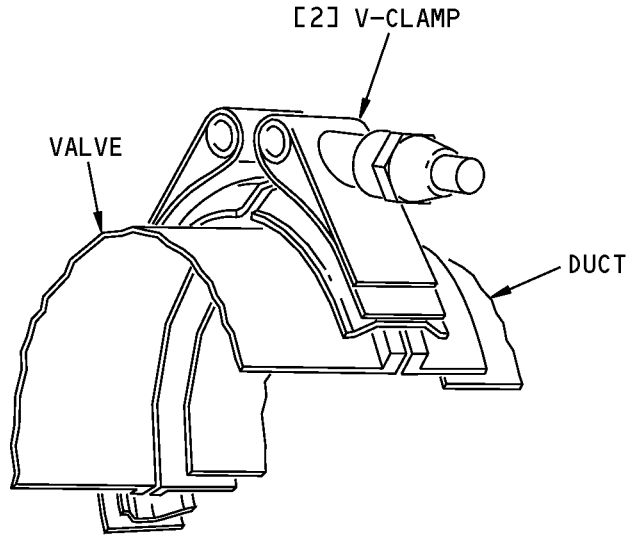
**Air Mix Valve Installation  
Figure 401 (Sheet 2 of 3)/21-61-02-990-801**

EFFECTIVITY  
HAP 101-999

**21-61-02**

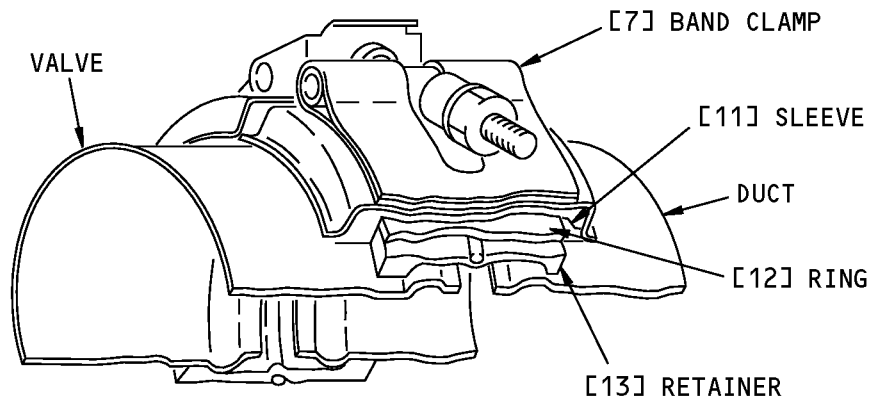


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**V-CLAMP INSTALLATION  
(EXAMPLE)**

**E**



**BAND CLAMP INSTALLATION  
(EXAMPLE)**

**F**

**Air Mix Valve Installation  
Figure 401 (Sheet 3 of 3)/21-61-02-990-801**

EFFECTIVITY  
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### AIRCRAFT MAINTENANCE MANUAL

#### TASK 21-61-02-400-801

#### 3. Air Mix Valve 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)
21-61-34-820-801	Air Mix Valve Position Transmitter Adjustment (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	Valve	21-61-02-03-415	HAP 101-999
		21-61-02-04-410	HAP 101-999

##### 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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

##### E. Air Mix Valve Installation

SUBTASK 21-61-02-420-001

(1) Inspect the sleeves [11] for damage or deterioration.

(a) If there is damage or deterioration, then install a new sleeve [11].

SUBTASK 21-61-02-160-002

(2) Carefully put the mix valve [1] into its position between the air ducts.

SUBTASK 21-61-02-020-014

(3) Install the v-clamp [2] onto the mix valve [1] duct connection.

**NOTE:** Do not fully tighten the v-clamp.

SUBTASK 21-61-02-020-015

(4) Turn the mix valve [1] until the band clamp [7] duct connections are aligned.

SUBTASK 21-61-02-020-016

(5) Install the retainers [13] onto the mix valve [1] duct connections.

**NOTE:** Hold the valve [1] in position while the retainers are installed. The duct connections are not self aligning.

SUBTASK 21-61-02-020-017

(6) Move the rings [12] toward the mix valve [1] until they are centered on the retainers [13].

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SUBTASK 21-61-02-020-018

(7) Move the sleeves [11] toward the mix valve [1] and over the rings [12] and retainers [13].

SUBTASK 21-61-02-020-019

(8) Install the band clamps [7] onto the mix valve [1] duct connections.

NOTE: Do not fully tighten the band clamps [7].

SUBTASK 21-61-02-020-020

(9) Put the duct [3] back into its position.

SUBTASK 21-61-02-020-021

(10) Install the v-clamp [2] that holds the forward end of the duct [3].

NOTE: Do not fully tighten the v-clamp [2].

SUBTASK 21-61-02-020-022

(11) Install the v-clamp [2] that holds the aft end of the duct [3] to the mix valve [1].

NOTE: Do not fully tighten the v-clamp [2].

SUBTASK 21-61-02-020-031

(12) Put the strap [18] and the bracket [17] in their position on the duct [3].

SUBTASK 21-61-02-020-032

(13) Loosely install the screws [14], washers [15] and nuts [16], at four locations.

NOTE: Make sure the heads of the screws are on the inside of the bracket [17].

SUBTASK 21-61-02-020-023

(14) Make sure that all of the duct connections are aligned correctly.

SUBTASK 21-61-02-020-024

(15) Tighten the two band clamps [7] to 90 to 95 pound-inches (10.2 to 10.7 newton-meters).

NOTE: Hold the mix valve [1] in position while you tighten the band clamps [7]. The duct connections are not self aligning.

SUBTASK 21-61-02-020-025

(16) Tighten the three v-clamps [2] to 60 pound-inches (6.8 newton-meters).

NOTE: Hold the duct [3] and mix valve [1] in position while you tighten the v-clamps [2]. The duct connections are not self aligning.

SUBTASK 21-61-02-020-033

(17) Tighten the screws [14], washers [15] and nuts [16], at four locations.

SUBTASK 21-61-02-020-026

(18) Install the screw [8] and washer [9] on the mix valve [1].

SUBTASK 21-61-02-020-027

(19) Install the bonding jumper [5] on the screw [8].

SUBTASK 21-61-02-020-028

(20) Install the nut [10] and washer [9] on the screw [8].

SUBTASK 21-61-02-420-002

(21) Connect the electrical connector [6] to the valve actuator.

SUBTASK 21-61-02-420-003

(22) Connect the electrical connector [4] to the valve position transmitter.

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SUBTASK 21-61-02-860-011

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C00267	AIR CONDITIONING TEMP CONTROL MANUAL
D	7	C00124	AIR CONDITIONING MIX VALVE POS IND

SUBTASK 21-61-02-860-003

(24) If the left air mix valve was replaced, do this step:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT

SUBTASK 21-61-02-860-004

(25) If the right air mix valve was replaced, do this step:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

## F. Air Mix Valve Installation Test

SUBTASK 21-61-02-860-005

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

SUBTASK 21-61-02-860-006

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

SUBTASK 21-61-02-860-007

(3) Put the L PACK and R PACK switches on the P5-10 panel in the AUTO position.

SUBTASK 21-61-02-740-001

(4) To do a test of the left air mix valve, do these steps:

- (a) Turn the control cabin temperature selector on the P5-17 panel to the AUTO COOL position.
- (b) Make sure that the control cabin AIR MIX VALVE indicator on the P5-17 panel shows COLD.
- (c) Make sure that the position indicator on the left air mix valve is in the COLD position.  
NOTE: Use an inspection mirror to see the mix valve position indicator.
- (d) Turn the control cabin temperature selector on the P5-17 panel to the AUTO WARM position.
- (e) Make sure that the control cabin AIR MIX VALVE indicator on the P5-17 panel shows HOT.
- (f) Make sure that the position indicator on the left air mix valve is in the HOT position.

NOTE: Use an inspection mirror to see the mix valve position indicator.

SUBTASK 21-61-02-740-002

(5) To do a test of the right air mix valve, do these steps:

- (a) Turn the passenger cabin temperature selector on the P5-17 panel to the AUTO COOL position.

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- (b) Make sure that the passenger cabin AIR MIX VALVE indicator on the P5-17 panel shows COLD.
- (c) Make sure that the position indicator on the right air mix valve is in the COLD position.  
NOTE: Use an inspection mirror to see the mix valve position indicator.
- (d) Turn the passenger cabin temperature selector on the P5-17 panel to the AUTO WARM position.
- (e) Make sure that the passenger cabin AIR MIX VALVE indicator on the P5-17 panel shows HOT.
- (f) Make sure that the position indicator on the right air mix valve is in the HOT position.  
NOTE: Use an inspection mirror to see the mix valve position indicator.

SUBTASK 21-61-02-810-001

- (6) If the AIR MIX VALVE indicator pointer on the P5-17 panel does not agree with the position indicator on the mix valve, then, do this task: Air Mix Valve Position Transmitter Adjustment, TASK 21-61-34-820-801.

#### G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-02-410-001

- (1) If the left air mix valve was replaced, then do these steps:
  - (a) Put the control cabin temperature selector in the AUTO NORMAL position.
  - (b) Close this access panel:
 

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-61-02-410-002

- (2) If the right air mix valve was replaced, then do these steps:
  - (a) Put the passenger cabin temperature selector in the AUTO NORMAL position.
  - (b) Close this access panel:
 

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

then do this step:

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

SUBTASK 21-61-02-860-008

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

SUBTASK 21-61-02-860-009

- (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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HOT AIR CHECK VALVE - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
  - (1) A removal of the hot air check valve.
  - (2) An installation of the hot air check valve.
- B. There is a hot air check valve for each pack. The valves are installed in the mix bay at the aft end of the forward cargo compartment.
- C. The hot air check valves let the flow of hot pneumatic air from the mix valve to flow into the distribution mix manifold. The valves would stop the flow of air from the pressurized compartments in the case of a leak in the hot air duct in the air conditioning pack bay.

**TASK 21-61-03-000-801**

2. Hot Air Check Valve Removal

(Figure 401)

A. References

Reference	Title
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)
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
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 21-61-03-860-001

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

SUBTASK 21-61-03-860-002

**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 21-61-03-860-003

- (3) 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 OFF and attach DO-NOT-OPERATE tags.
- (b) Set the BLEED 1 and 2 switches to OFF and attach DO-NOT-OPERATE tags.
- (c) Set the BLEED APU switch to OFF and attach a DO-NOT-OPERATE tag.

SUBTASK 21-61-03-010-001

- (4) Open the forward cargo compartment door.

SUBTASK 21-61-03-010-002

- (5) Remove the 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.

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### D. Hot Air Check Valve Removal

SUBTASK 21-61-03-020-001

(1) Remove the hot air check valve [2] as follows:

- (a) Loosen the clamps [1] that attach the hot air check valve [2] to the ducts.
- (b) Move the clamps [1] away from the joints.
- (c) Remove the hot air check valve [2].

SUBTASK 21-61-03-620-001

(2) Put covers on the duct openings to prevent the entry of unwanted materials.

————— **END OF TASK** —————

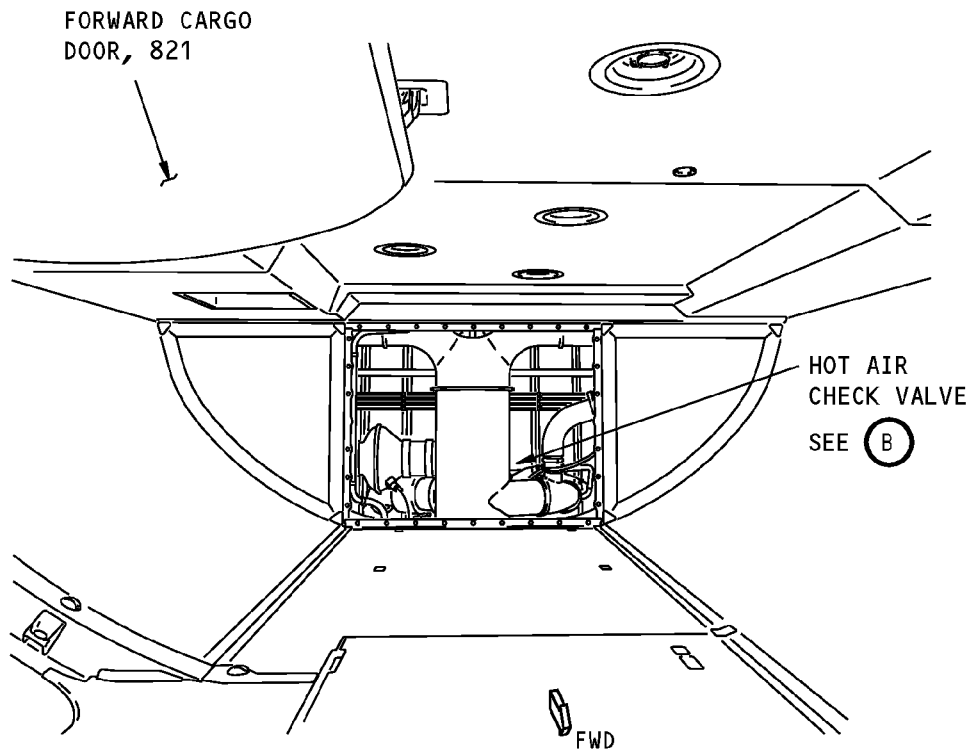
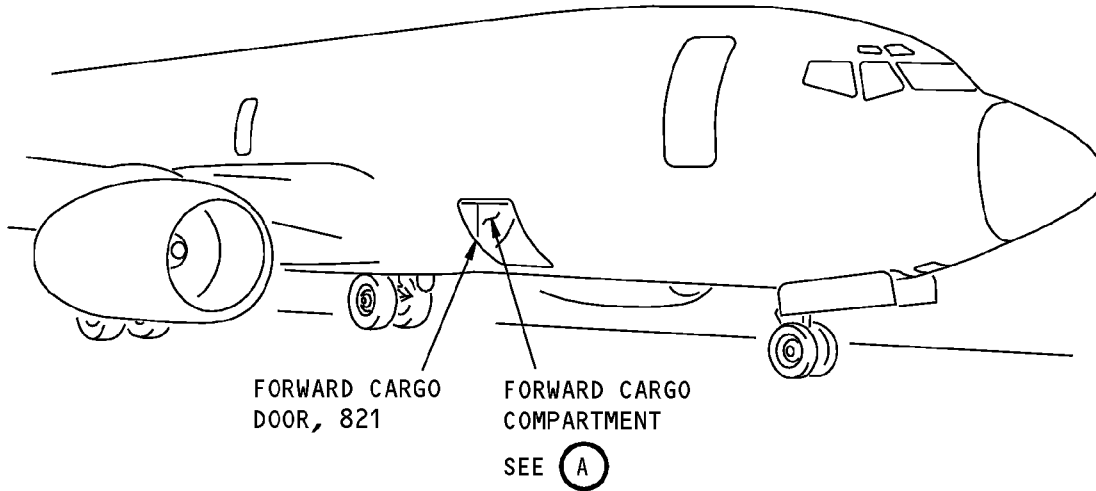
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**FORWARD CARGO COMPARTMENT**

(A)

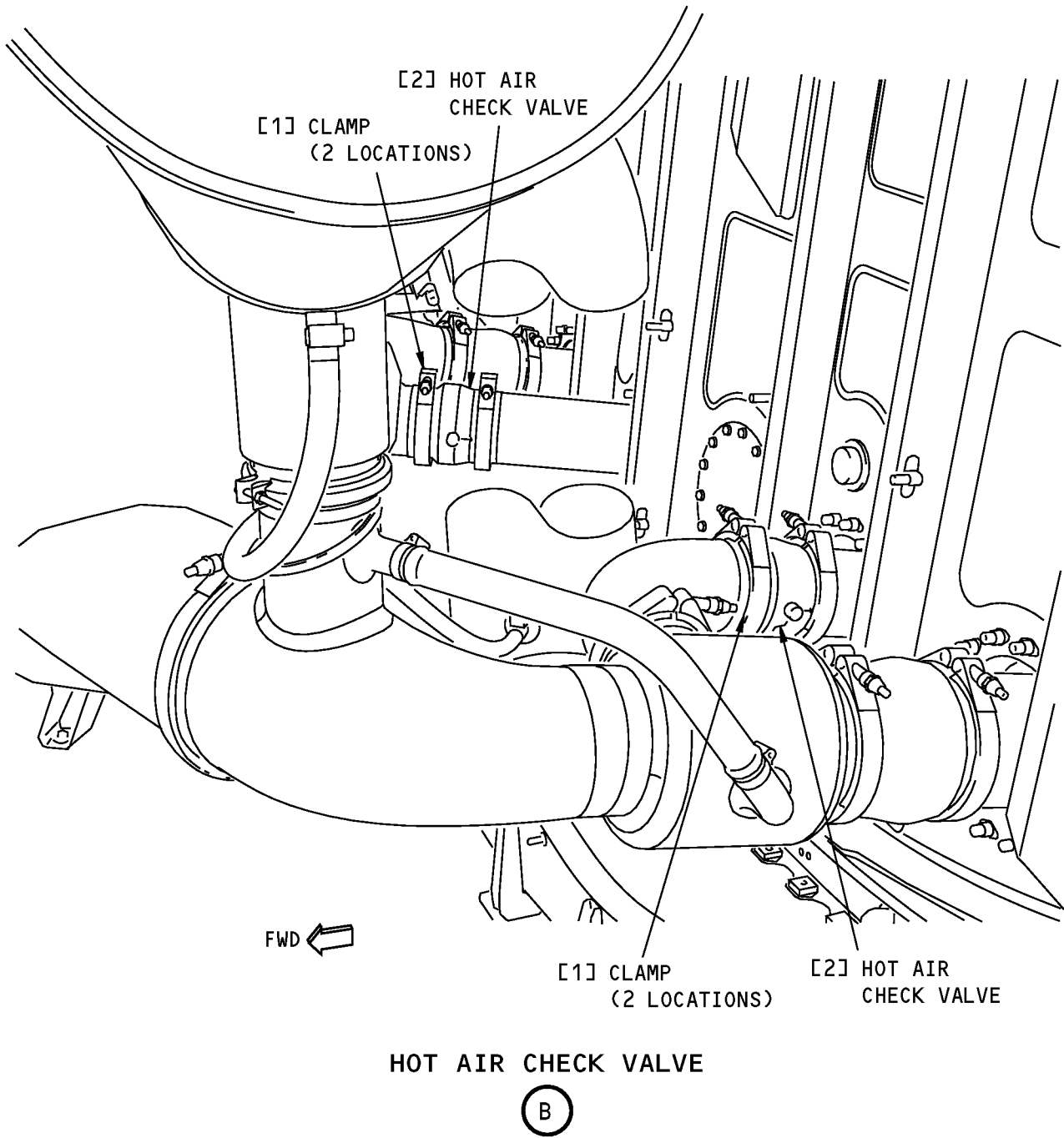
**Hot Air Check Valve Installation  
Figure 401 (Sheet 1 of 2)/21-61-03-990-801**

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**HOT AIR CHECK VALVE**

**B**

**Hot Air Check Valve Installation  
Figure 401 (Sheet 2 of 2)/21-61-03-990-801**

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## TASK 21-61-03-400-801

### 3. Hot Air Check Valve 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)
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
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
212	Flight Compartment - Right

#### C. Hot Air Check Valve Installation

SUBTASK 21-61-03-630-001

(1) Remove the duct covers.

SUBTASK 21-61-03-420-001

(2) Install the hot air check valve [2] as follows:

(a) Put the hot air check valve [2] in its position.

**NOTE:** The flow arrow on the valve must point forward.

(b) Put the clamps [1] over the joints.

(c) Tighten the clamps [1].

#### D. Hot Air Check Valve Installation Test

SUBTASK 21-61-03-860-004

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

SUBTASK 21-61-03-860-005

(2) Put these switches on the P5-10 air conditioning panel (installed on the forward overhead panel) to the AUTO position:

(a) L PACK

(b) R PACK

SUBTASK 21-61-03-710-001

(3) Do a soap bubble test of the joints at the ends of the hot air check valve [2].

**NOTE:** No leakage is permitted.

(a) If there is leakage, tighten the clamps 5 to 10 pound-inches (0.56 to 1.13 newton-meters).

(b) If there is still leakage, do these steps:

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

2) Loosen the clamps [1].

3) Make sure the hot air check valve [2] is aligned with the ducts.

4) Tighten the clamps [1].

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- 5) Do this task: Supply Pressure to the Pneumatic System (Selection), TASK 36-00-00-860-801.
- 6) Make sure the leak has been repaired.

**E. Put the Airplane Back to Its Usual Condition**

SUBTASK 21-61-03-410-001

- (1) Do this task: Forward Cargo Compartment Aft Bulkhead Liner Installation, TASK 25-52-17-400-801.

SUBTASK 21-61-03-860-006

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

SUBTASK 21-61-03-860-007

- (3) Put these switches on the P5-10 air conditioning panel (installed on the P5 forward overhead panel) to the OFF position:
  - (a) L PACK
  - (b) R PACK

SUBTASK 21-61-03-860-008

- (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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# AIRCRAFT MAINTENANCE MANUAL

## DUCT TEMPERATURE LIMIT SENSOR - REMOVAL/INSTALLATION

### 1. General

A. This procedure has these tasks:

- (1) A removal of the control cabin duct temperature limit sensor
- (2) A removal of the passenger cabin duct temperature limit sensor
- (3) An installation of the control cabin duct temperature limit sensor
- (4) An installation of the passenger cabin duct temperature limit sensor.

### **TASK 21-61-04-000-802-001**

### 2. Duct Temperature Limit Sensor Removal

(Figure 401, Figure 402)

A. References

Reference	Title
25-21-45-000-801	Sculptured 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 21-61-04-860-018-001

- (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 21-61-04-010-009-001

- (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 21-61-04-010-010-001

- (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.

NOTE: To remove the panel, do this task: Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

E. Passenger Cabin Duct Temperature Limit Sensor Removal

SUBTASK 21-61-04-020-008-001

- (1) Disconnect the electrical connector [2] from the duct temperature limit sensor [1].

SUBTASK 21-61-04-020-009-001

- (2) Remove the screws [3] from the duct temperature limit sensor [1].

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SUBTASK 21-61-04-020-010-001

(3) Remove the duct temperature limit sensor [1].

### F. Control Cabin Duct Temperature Limit Sensor Removal

SUBTASK 21-61-04-020-011-001

(1) Disconnect the electrical connector [22] from the duct temperature limit sensor [21].

SUBTASK 21-61-04-020-012-001

(2) Remove the screws [23] from the duct temperature limit sensor [21].

SUBTASK 21-61-04-020-013-001

(3) Remove the duct temperature limit sensor [21].

————— **END OF TASK** —————

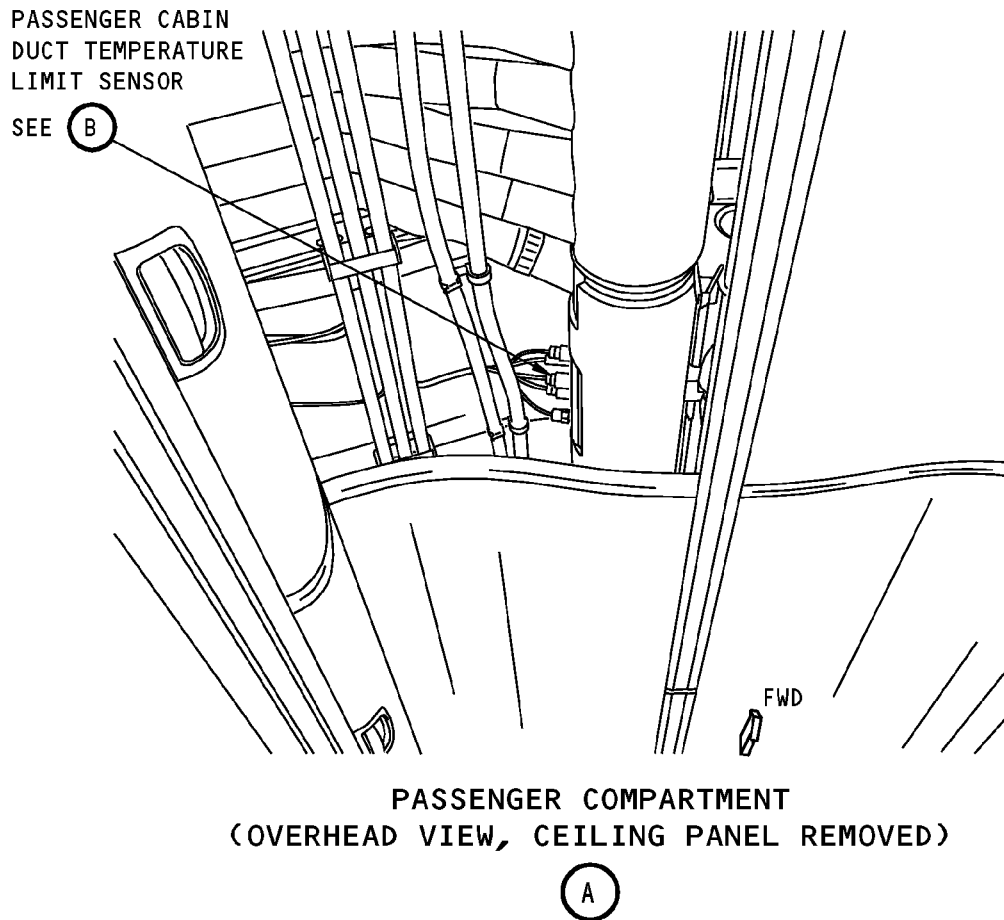
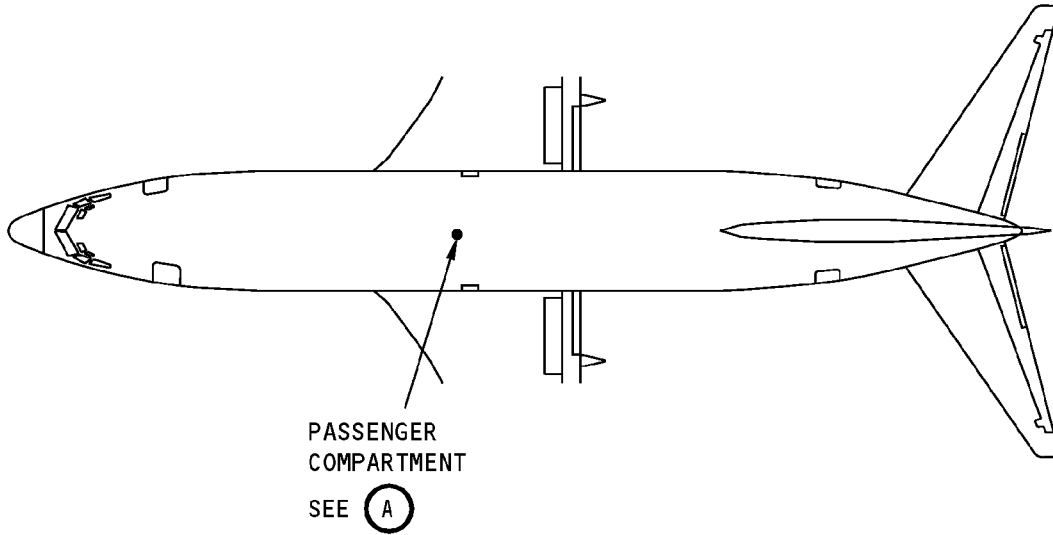
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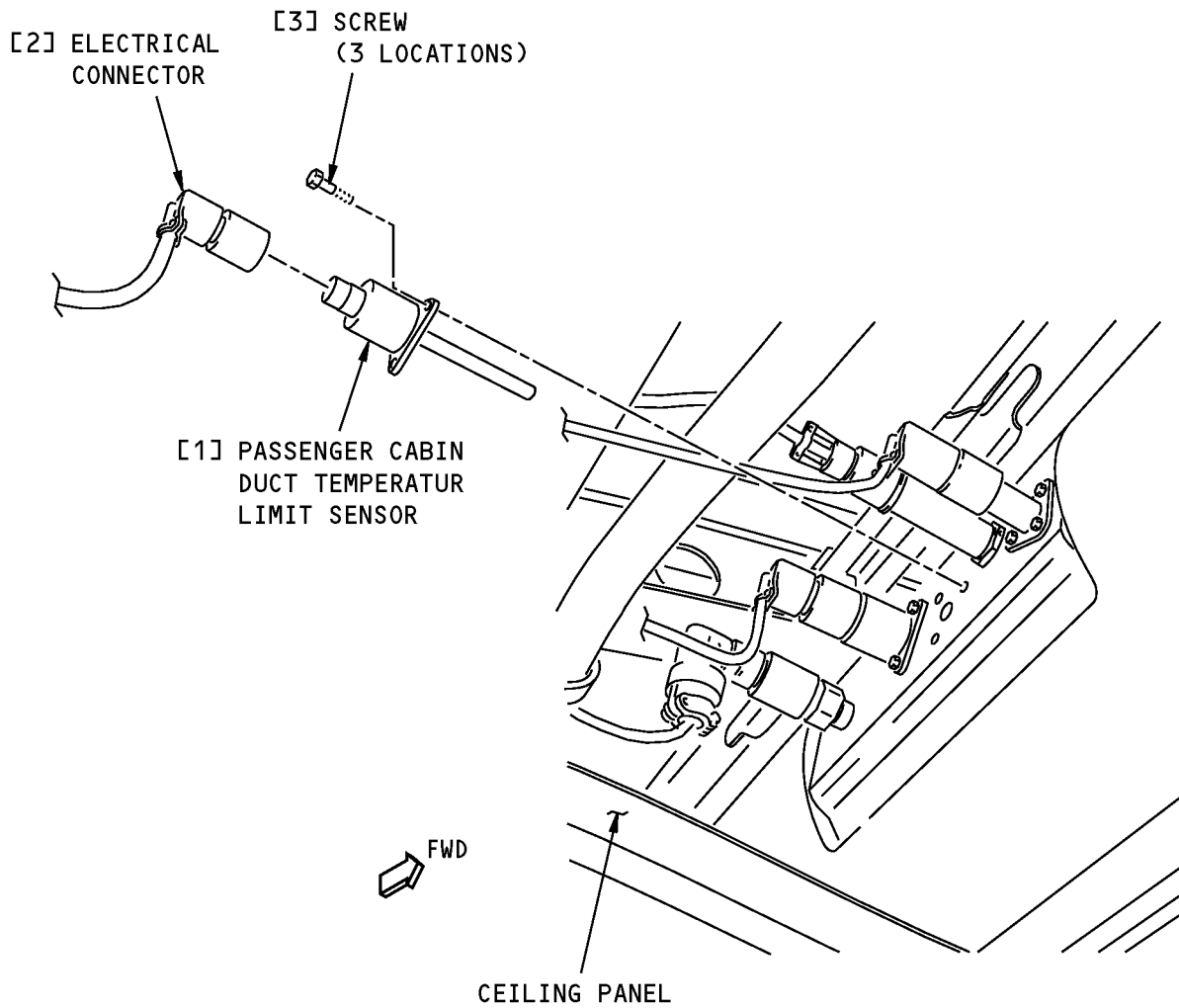
**Passenger Cabin Duct Temperature Limit Sensor Installation**  
**Figure 401 (Sheet 1 of 2)/21-61-04-990-803-001**

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**PASSENGER CABIN DUCT TEMPERATURE LIMIT SENSOR**

**B**

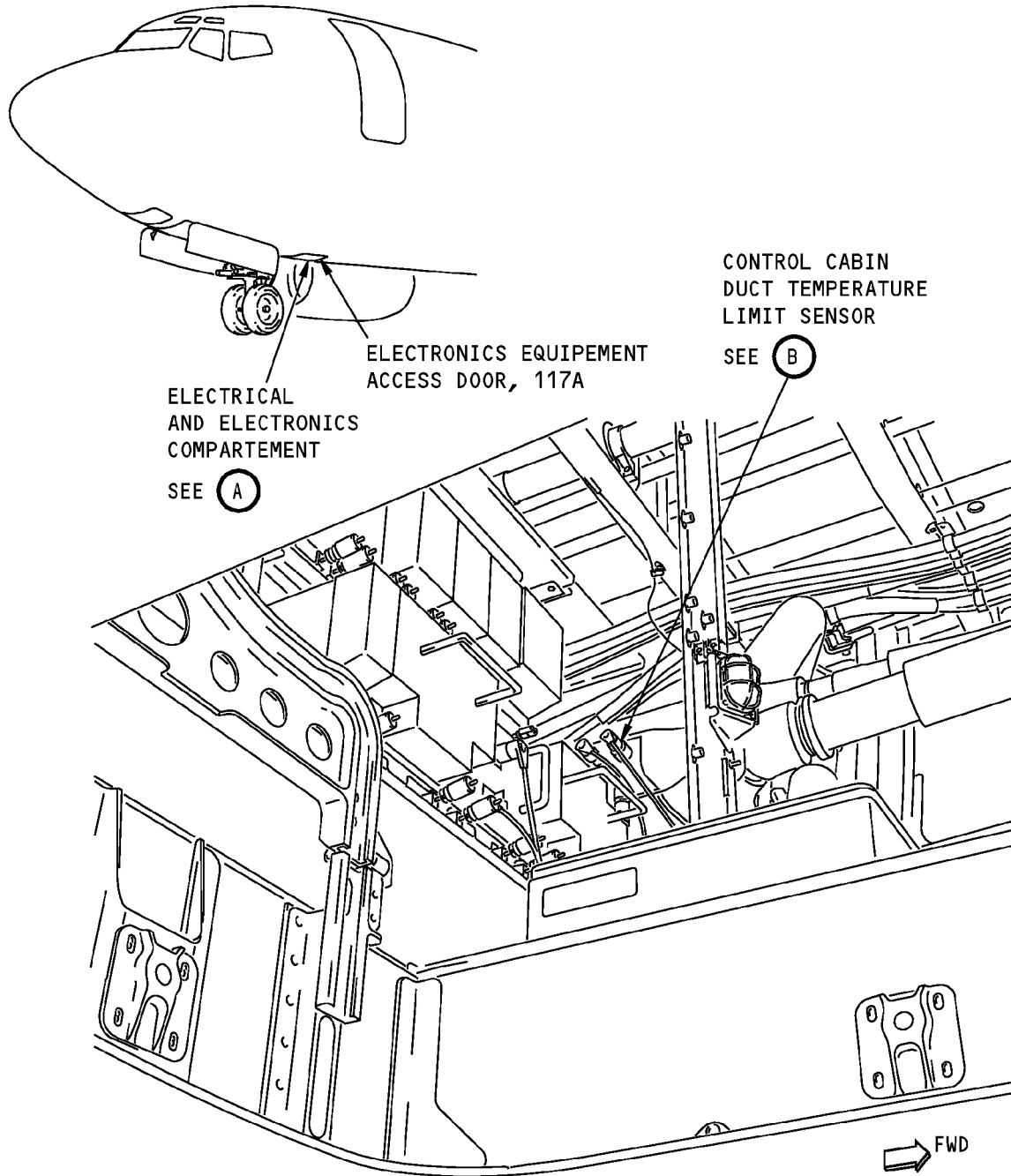
**Passenger Cabin Duct Temperature Limit Sensor Installation  
Figure 401 (Sheet 2 of 2)/21-61-04-990-803-001**

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**ELECTRICAL AND ELECTRONICS COMPARTEMENT  
(VIEW THROUGH ACCESS DOOR, 117A)**

(A)

**Control Cabin Duct Temperature Limit Sensor Installation  
Figure 402 (Sheet 1 of 2)/21-61-04-990-804-001**

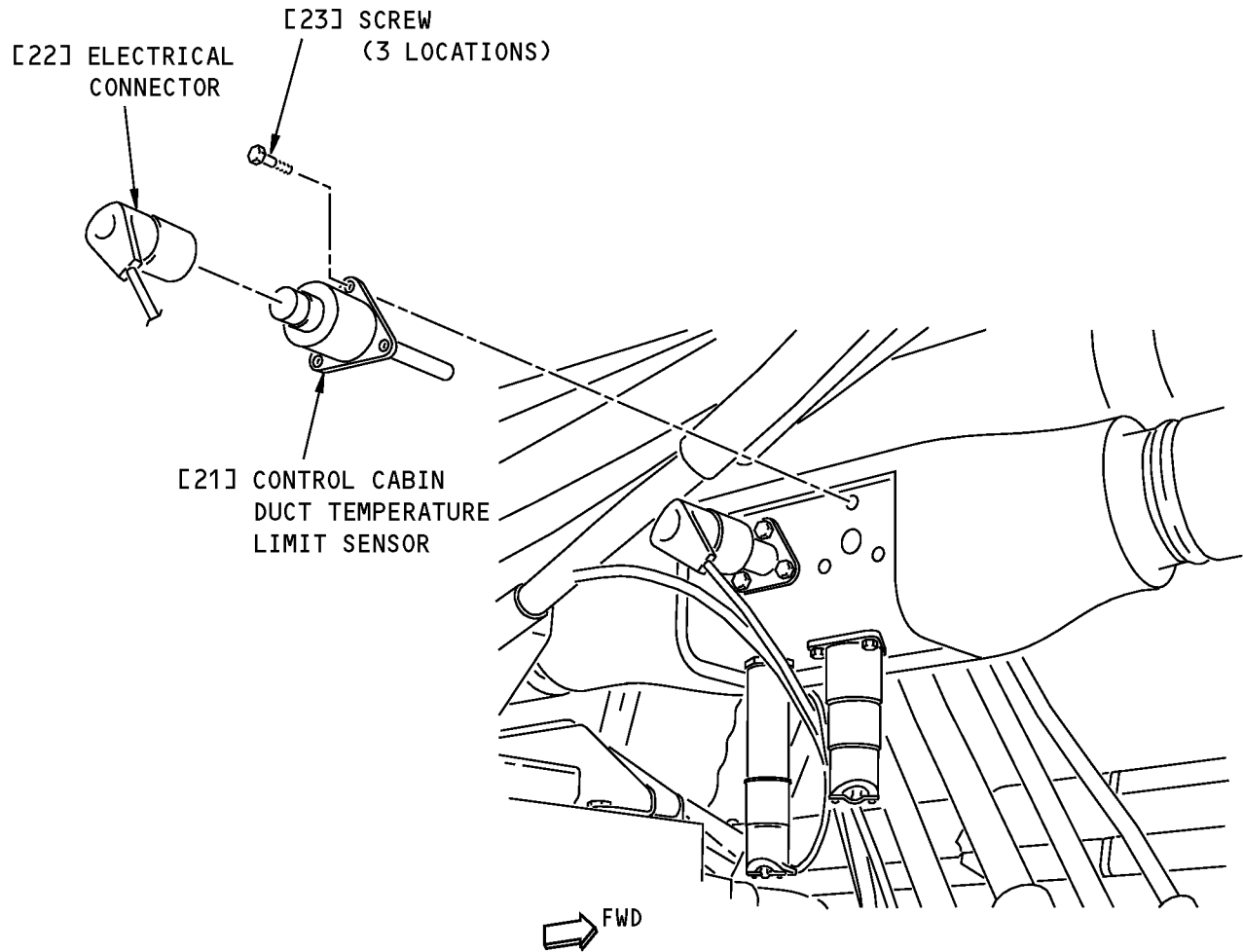
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**CONTROL CABIN DUCT TEMPERATURE LIMIT SENSOR**

**B**

**Control Cabin Duct Temperature Limit Sensor Installation  
Figure 402 (Sheet 2 of 2)/21-61-04-990-804-001**

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### AIRCRAFT MAINTENANCE MANUAL

TASK 21-61-04-400-802-001

#### 3. Duct Temperature Limit Sensor Installation

(Figure 401, Figure 402)

##### 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)
25-21-45-400-801	Sculptured Ceiling Panel Installation (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. Passenger Cabin Duct Temperature Limit Sensor Installation

SUBTASK 21-61-04-420-008-001

(1) Put the duct temperature limit sensor [1] in its position on the duct.

SUBTASK 21-61-04-420-009-001

(2) Install the screws [3].

SUBTASK 21-61-04-420-010-001

(3) Connect the electrical connector [2] to the duct temperature limit sensor [1].

##### E. Control Cabin Duct Temperature Limit Sensor Installation

SUBTASK 21-61-04-420-011-001

(1) Put the duct temperature limit sensor [21] in its position on the duct.

SUBTASK 21-61-04-420-012-001

(2) Install the screws [23].

SUBTASK 21-61-04-420-013-001

(3) Connect the electrical connector [22] to the duct temperature limit sensor [21].

##### F. Do an Installation Test of the Duct Temperature Limit Sensor.

SUBTASK 21-61-04-860-019-001

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

SUBTASK 21-61-04-010-011-001

(2) If you replaced the duct temperature limit sensor [1]

For the passenger cabin, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-04-860-020-001

(3) Get access to the cabin temperature controller located on the top shelf of the E4 rack in the Electronics Equipment compartment.

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SUBTASK 21-61-04-860-021-001

- (4) Put the BLEED 1 and BLEED 2 switches on the air conditioning module of the P5 overhead panel to the OFF positions.

SUBTASK 21-61-04-860-022-001

- (5) Put the APU BLEED switch on the air conditioning module to the OFF position.

SUBTASK 21-61-04-860-023-001

- (6) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Row C, Col 4, Number C00257, Name AIR CONDITIONING OVERHEAT

SUBTASK 21-61-04-860-024-001

- (7) Put the CONT CABIN and PASS CABIN temperature selectors on the temperature control module on the P5 overhead panel to the AUTO (12 o'clock) position.

SUBTASK 21-61-04-860-025-001

- (8) Put the L PACK and R PACK switches on the temperature control module to AUTO.

SUBTASK 21-61-04-860-026-001

- (9) Put the BITE switch on the controller to the START position.

SUBTASK 21-61-04-710-003-001

- (10) Push the GO and NO GO lights on the controller. (a) Make sure the lights come on when you push them.

SUBTASK 21-61-04-710-004-001

- (11) Push and Rotate the BITE switch to the eighth position (DUCT LIMIT SENSOR).

NOTE: Make sure you push the BITE switch.

- (a) Make sure the green GO light comes on.

NOTE: The left pack light is for the control cabin sensor and the right pack is for the passenger cabin sensor.

SUBTASK 21-61-04-860-027-001

- (12) Put the BITE switch to the START position.

SUBTASK 21-61-04-860-028-001

- (13) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Table with 4 columns: Row, Col, Number, Name. Row C, Col 4, Number C00257, Name AIR CONDITIONING OVERHEAT

G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-04-010-012-001

- (1) Close this access panel:

Table with 2 columns: Number, Name/Location. Row 117A, Name/Location Electronic Equipment Access Door

EFFECTIVITY HAP 101-999 D633A101-HAP



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**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 21-61-04-010-013-001

- (2) If you replaced a temperature sensor for the passenger cabin, install the applicable ceiling panel.

NOTE: To install the panel, do this task: Sculptured Ceiling Panel Installation, TASK 25-21-45-400-801.

SUBTASK 21-61-04-860-029-001

- (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** —————

EFFECTIVITY  
HAP 101-999

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**21-61-04**

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# AIRCRAFT MAINTENANCE MANUAL

## 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
25-21-45-000-801	Sculptured 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: Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

EFFECTIVITY
HAP 001-013, 015-026, 028-054

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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 —————

EFFECTIVITY

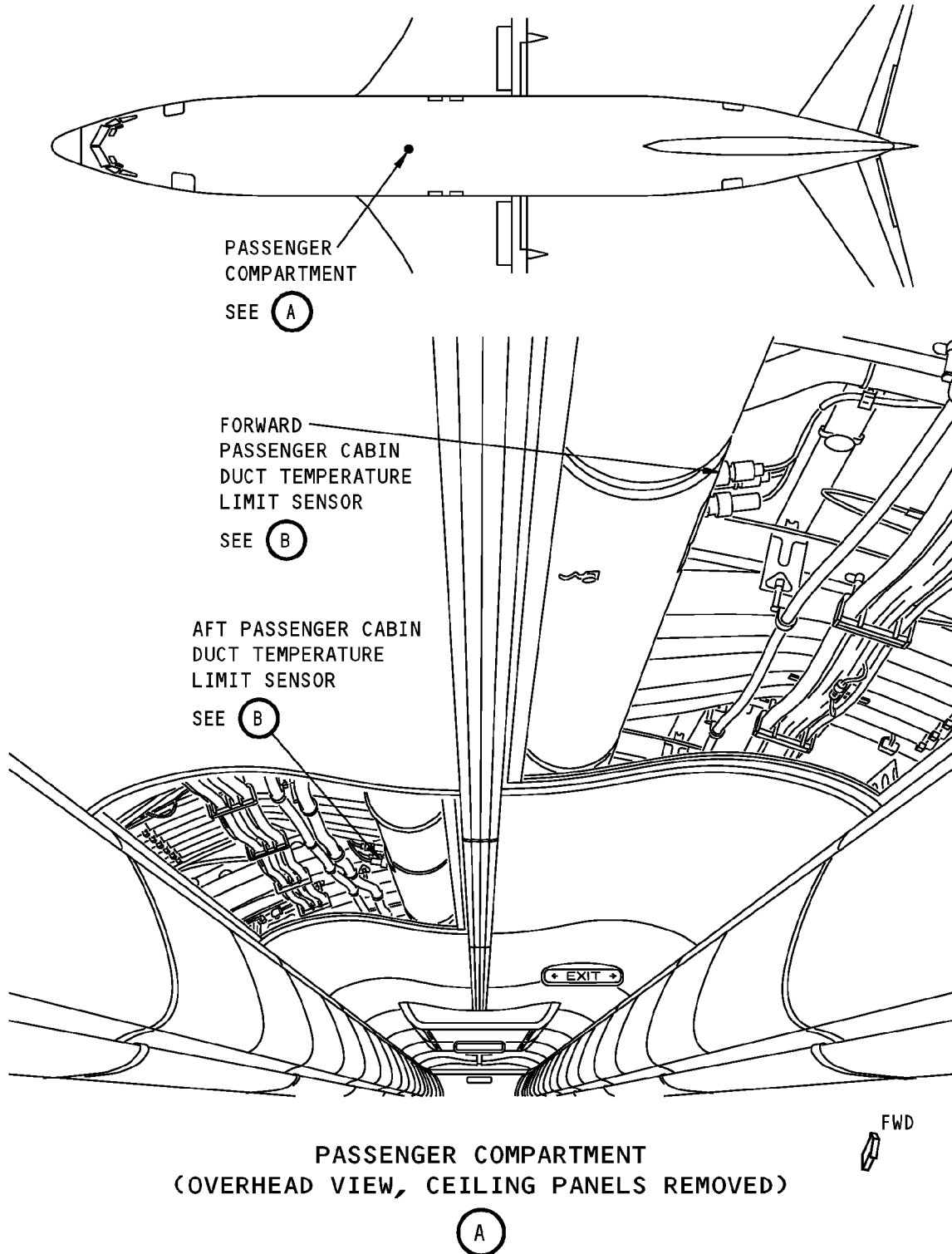
HAP 001-013, 015-026, 028-054

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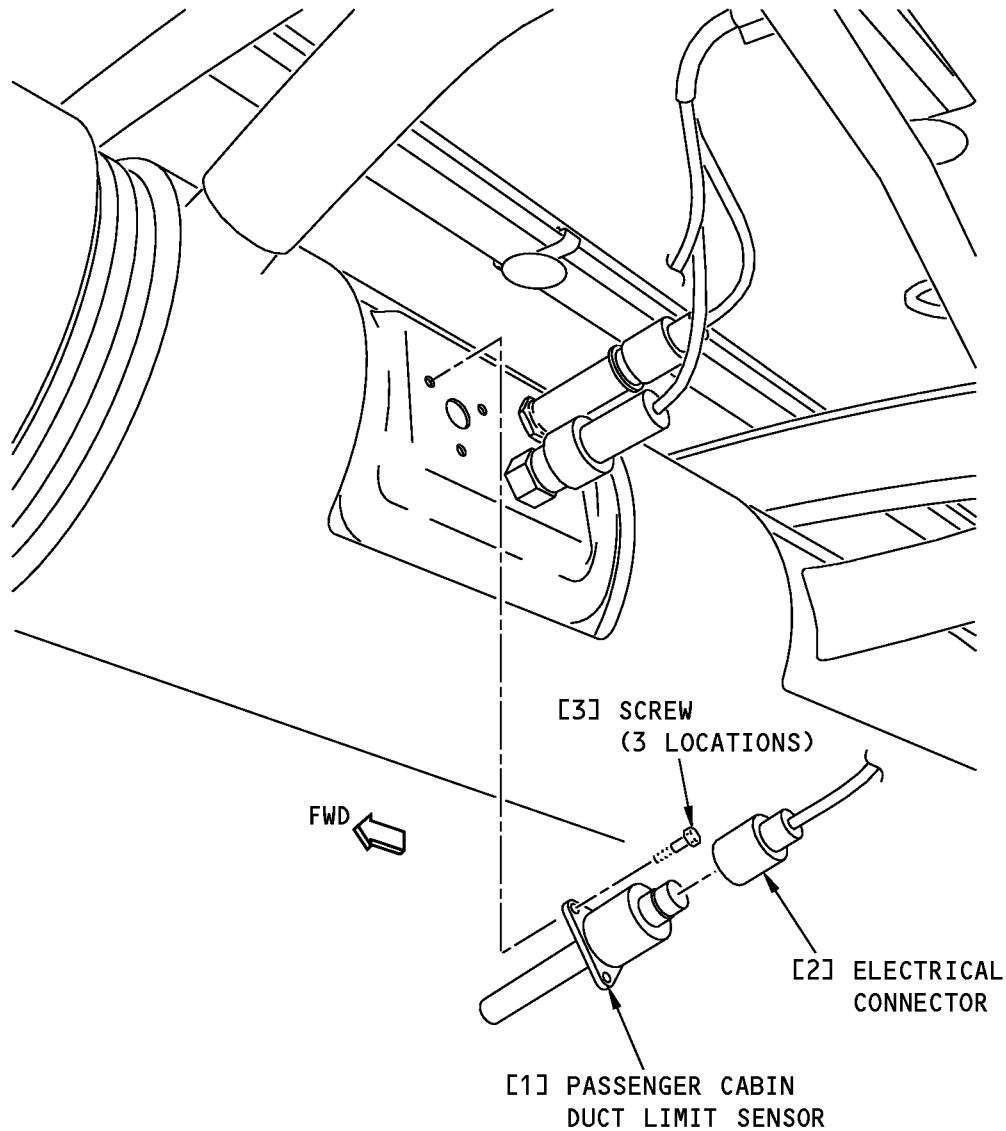


**Passenger Cabin Duct Temperature Limit Sensor Installation**  
**Figure 401 (Sheet 1 of 2)/21-61-04-990-805-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**PASSENGER CABIN DUCT TEMPERATURE LIMIT SENSOR  
(FORWARD CABIN SENSOR IS SHOWN, AFT CABIN SENSOR IS OPPOSITE)**

**B**

H16287 S0006563376\_V2

**Passenger Cabin Duct Temperature Limit Sensor Installation  
Figure 401 (Sheet 2 of 2)/21-61-04-990-805-002**

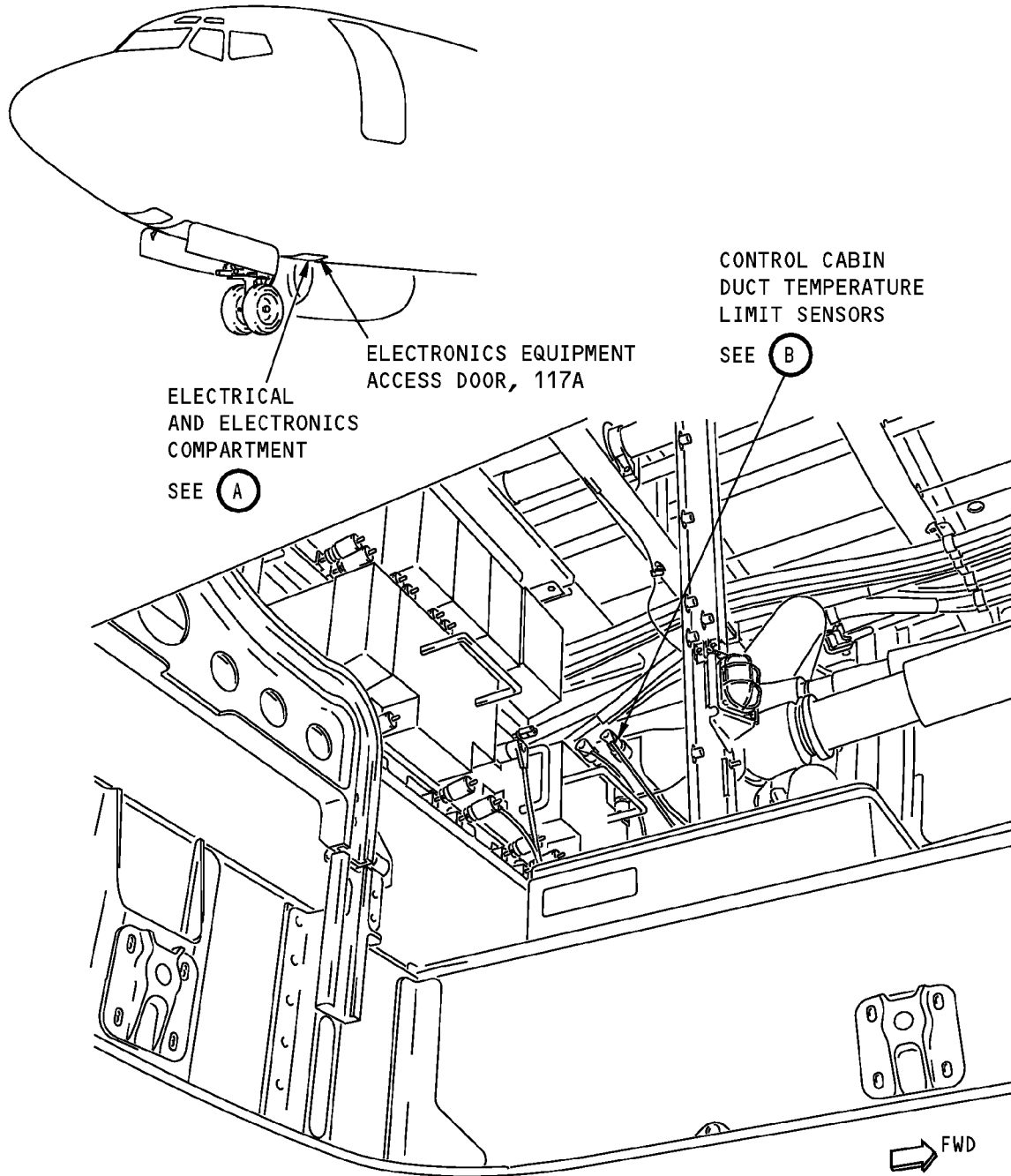
**EFFECTIVITY**  
**HAP 001-013, 015-026, 028-054**

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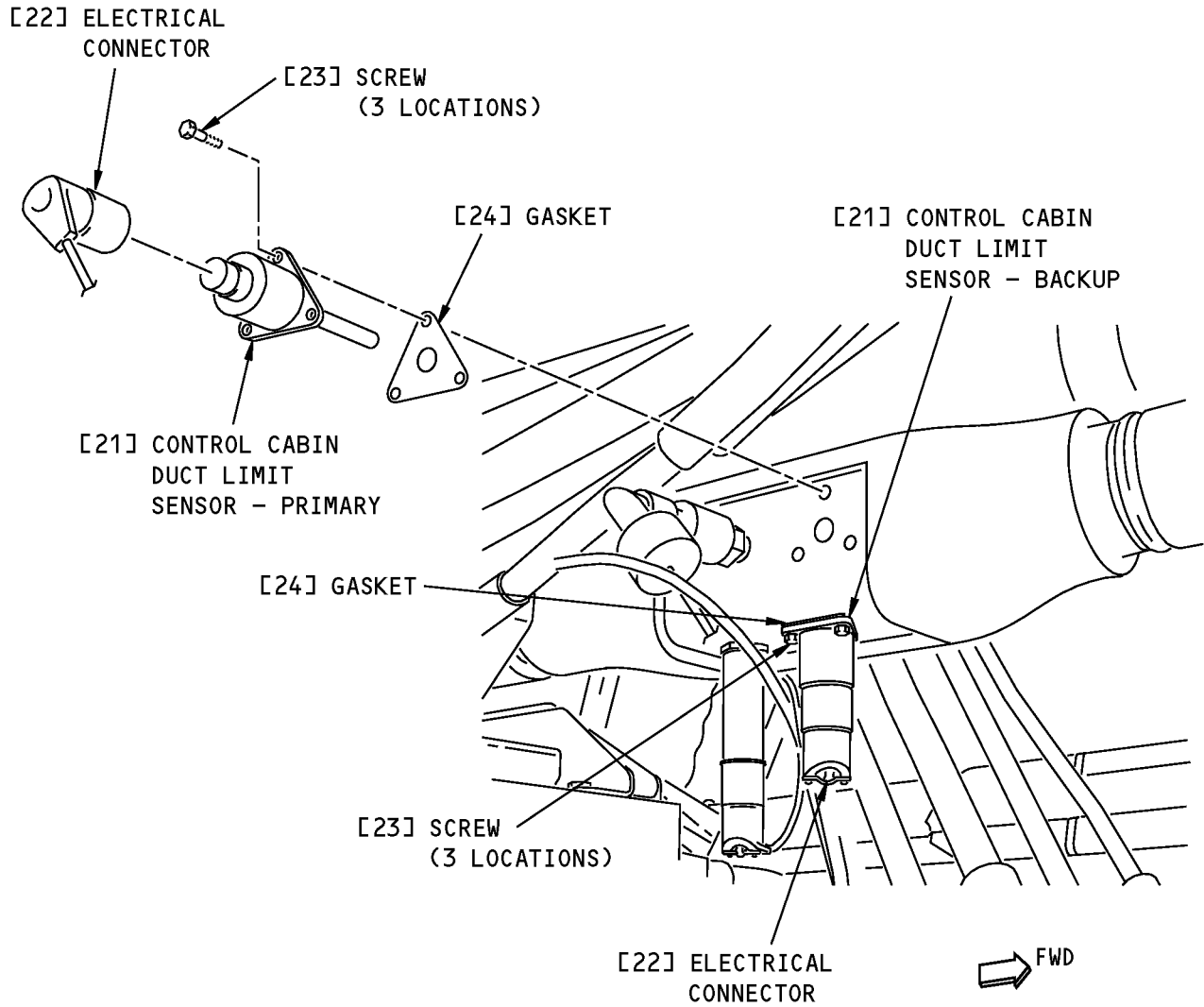
**ELECTRICAL AND ELECTRONICS COMPARTMENT  
(VIEW THROUGH ACCESS DOOR, 117A)**

**A**

**Control Cabin Duct Temperature Limit Sensor Installation  
Figure 402 (Sheet 1 of 2)/21-61-04-990-806-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**CONTROL CABIN DUCT TEMPERATURE LIMIT SENSORS**

**B**

**Control Cabin Duct Temperature Limit Sensor Installation  
Figure 402 (Sheet 2 of 2)/21-61-04-990-806-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

TASK 21-61-04-400-803-002

#### 3. Duct Temperature Limit Sensor Installation

(Figure 401, Figure 402)

##### 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)
25-21-45-400-801	Sculptured Ceiling Panel Installation (P/B 401)

##### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-61-04-22-010	HAP 012, 013, 015-026, 028-054
21	Sensor	21-22-00-05-340	HAP 012, 013, 015-026, 028-054
24	Gasket	21-22-00-05-065	HAP 012, 013, 015-026, 028-030

##### 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.

EFFECTIVITY HAP 001-013, 015-026, 028-054
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## AIRCRAFT MAINTENANCE MANUAL

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:

<u>Number</u>	<u>Name/Location</u>
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 21-61-04-860-035-002

- (6) Do the BITE test on the M1443 right pack/zone temperature controller when you replaced one of these duct temperature limit sensors:
- (a) The primary control cabin sensor.
  - (b) The forward passenger cabin sensor.

SUBTASK 21-61-04-860-036-002

- (7) Do the BITE test on the M1442 left pack/zone temperature controller when you replaced one of these duct temperature limit sensors:
- (a) The backup control cabin sensor.
  - (b) The aft passenger cabin sensor.

### H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-04-010-017-002

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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: Sculptured Ceiling Panel Installation, TASK 25-21-45-400-801.

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** —————

EFFECTIVITY

HAP 001-013, 015-026, 028-054

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# AIRCRAFT MAINTENANCE MANUAL

## DUCT TEMPERATURE LIMIT SENSOR - ADJUSTMENT/TEST

### 1. General

- A. This procedure performs an electrical resistance check of the duct temperature limit sensors (control cabin and passenger compartment).
- B. This procedure checks the calibration of the sensor while it is installed in the duct. The temperature of the sensor cannot be measured accurately while installed so use this procedure for system troubleshooting only.

### **TASK 21-61-04-000-805-001**

### 2. Duct Temperature Limit Sensor Test

(Figure 501, Figure 502, Figure 503, Figure 504)

#### A. General

- (1) This procedure does a temperature versus electrical resistance check of the control cabin and passenger compartment duct temperature limit sensors to check for sensor drift.

#### B. References

Reference	Title
21-61-01-000-801	Cabin Temperature Controller (CTC) Removal (P/B 401)
21-61-01-400-801	Cabin Temperature Controller (CTC) Installation (P/B 401)
21-61-04-000-802-001	Duct Temperature Limit Sensor Removal (P/B 401)
21-61-04-400-802-001	Duct Temperature Limit Sensor Installation (P/B 401)
25-21-45-000-801	Sculptured Ceiling Panel Removal (P/B 401)
25-21-45-400-801	Sculptured Ceiling Panel Installation (P/B 401)

#### C. Tools/Equipment

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

Reference	Description
COM-3945	Multimeter - Standard (Part #: 187, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: 87V, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: MODEL 21, Supplier: 89536, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: MODEL 27, Supplier: 89536, A/P Effectivity: 737-ALL)
COM-3955	Thermometer - Digital (Part #: 51 II, Supplier: 89536, A/P Effectivity: 737-600) (Opt Part #: 51-2, Supplier: 89536, A/P Effectivity: 737-600)

#### 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

EFFECTIVITY
HAP 101-999

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## AIRCRAFT MAINTENANCE MANUAL

### F. Prepare for the Resistance Check

SUBTASK 21-61-04-010-031-001

- (1) To get access to the duct temperature limit sensor for the control cabin, open the

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-61-04-010-032-001

- (2) To get access to the temperature limit sensor for the passenger compartment, remove the ceiling liner that is just forward of the right overwing escape hatch.

NOTE: To remove the liner, do this task: Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

SUBTASK 21-61-04-010-033-001

- (3) Make sure the pack has been off for 20 minutes or long enough to reach ambient temperature.

### G. Sensor Resistance Check

SUBTASK 21-61-04-970-001-001

- (1) Use a digital thermometer, COM-3955 or equivalent to measure the ambient temperature near the temperature limit sensor.

SUBTASK 21-61-04-010-034-001

- (2) Get access to the cabin temperature controller (M345) on the E4 rack (Figure 503).

SUBTASK 21-61-04-020-028-001

- (3) Do this task: Cabin Temperature Controller (CTC) Removal, TASK 21-61-01-000-801.

SUBTASK 21-61-04-760-003-001

- (4) Use a standard multimeter, COM-3945 or equivalent to measure the electrical resistance of the temperature limit sensor at the electrical connector for the cabin temperature controller:

- (a) For the control cabin temperature limit sensor (T419), measure these resistances:

- 1) Measure the resistance from pin 21 to pin 22 on connector D454 (WDM 21-61-21).

- (b) For the passenger compartment temperature limit sensor (T416), measure these resistances:

- 1) Measure the resistance from pin 21 to pin 22 on connector D456 (WDM 21-61-22).

SUBTASK 21-61-04-760-004-001

- (5) Compare the measured resistance to the resistance given in (Figure 504) for the ambient temperature measured near the temperature limit sensor.

- (a) If the measured resistance is out of range of the electrical resistance given in (Figure 504), replace the sensor.

- 1) To replace the temperature limit sensor,

These are the tasks:

Duct Temperature Limit Sensor Removal, TASK 21-61-04-000-802-001,

Duct Temperature Limit Sensor Installation, TASK 21-61-04-400-802-001.

SUBTASK 21-61-04-420-030-001

- (6) Do this task: Cabin Temperature Controller (CTC) Installation, TASK 21-61-01-400-801.

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SUBTASK 21-61-04-410-008-001

(7) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-61-04-010-035-001

(8) Install the ceiling liner.

NOTE: To install the liner, do this task: Sculptured Ceiling Panel Installation,  
TASK 25-21-45-400-801.

————— **END OF TASK** —————

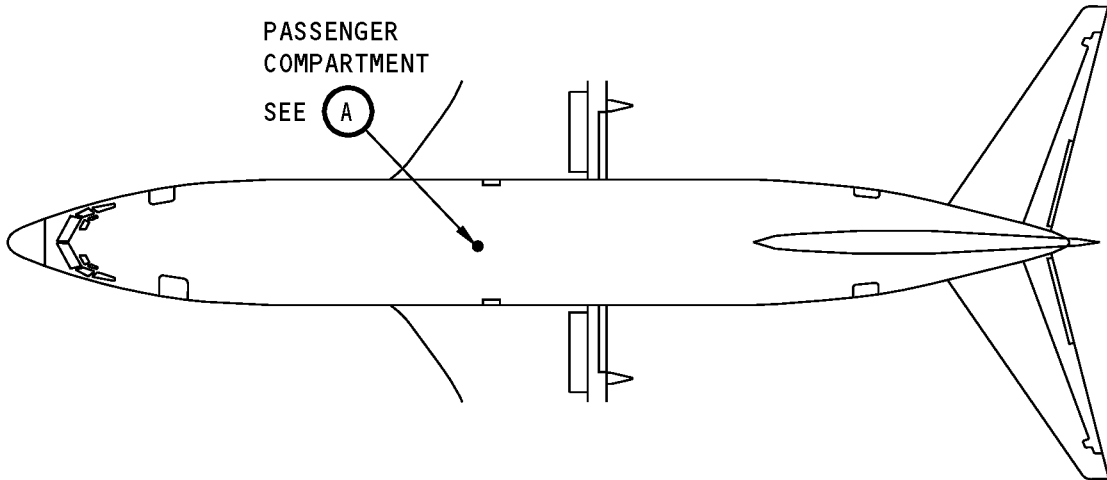
EFFECTIVITY  
HAP 101-999

D633A101-HAP

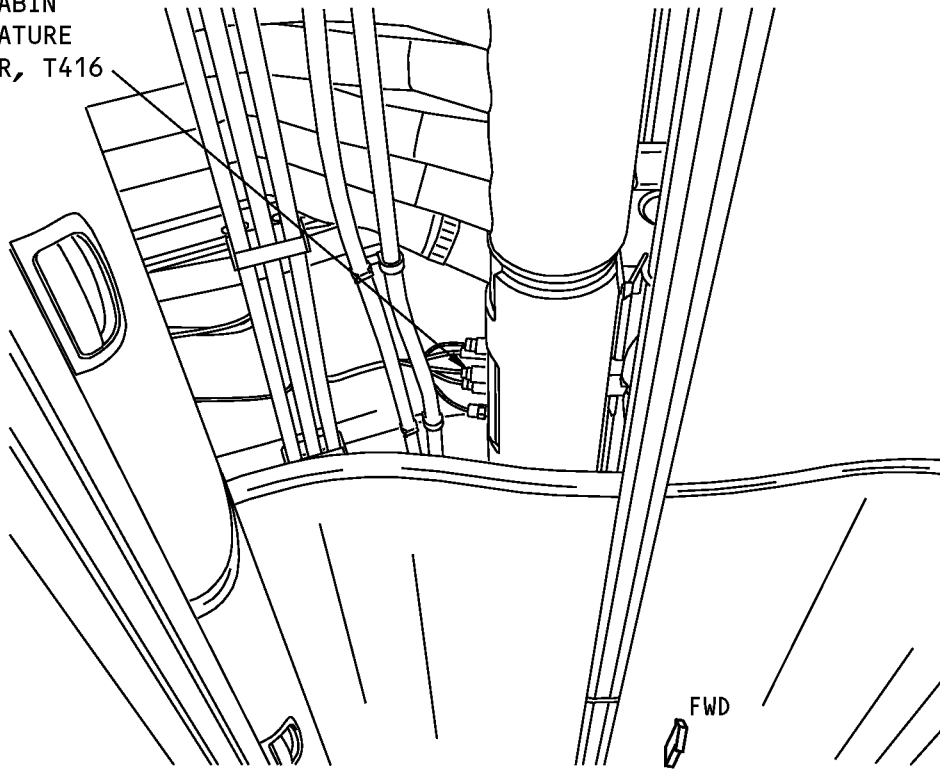
**21-61-04**

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**AIRCRAFT MAINTENANCE MANUAL**



PASSENGER CABIN  
DUCT TEMPERATURE  
LIMIT SENSOR, T416



**PASSENGER COMPARTMENT  
(OVERHEAD VIEW, CEILING PANEL REMOVED)**

(A)

**Passenger Cabin Duct Temperature Limit Sensor Location  
Figure 501/21-61-04-990-814-001**

EFFECTIVITY  
HAP 101-999

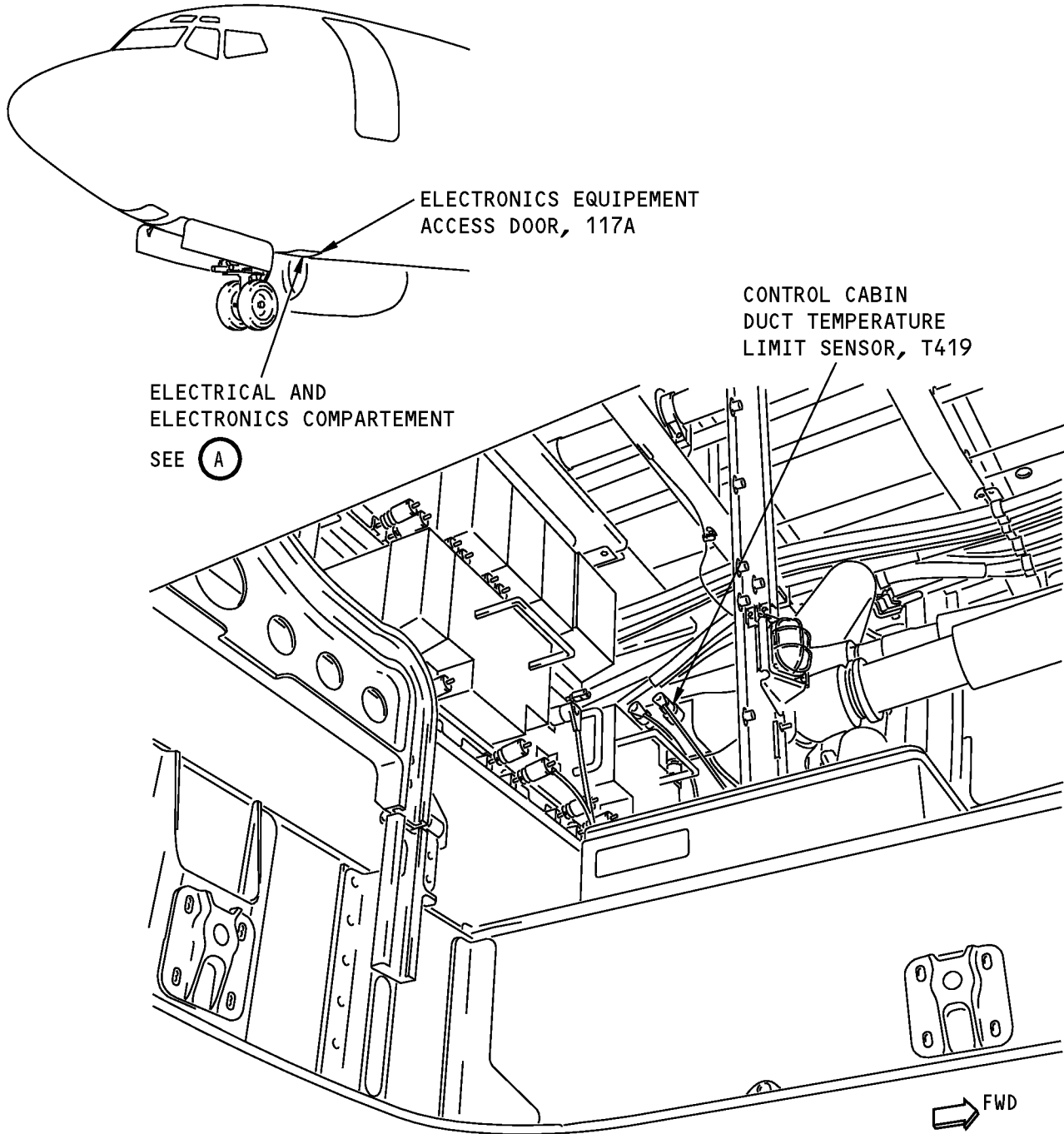
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**ELECTRICAL AND ELECTRONICS COMPARTEMENT  
(VIEW THROUGH ACCESS DOOR, 117A)**

**(A)**

**Control Cabin Duct Temperature Limit Sensor Location  
Figure 502/21-61-04-990-815-001**

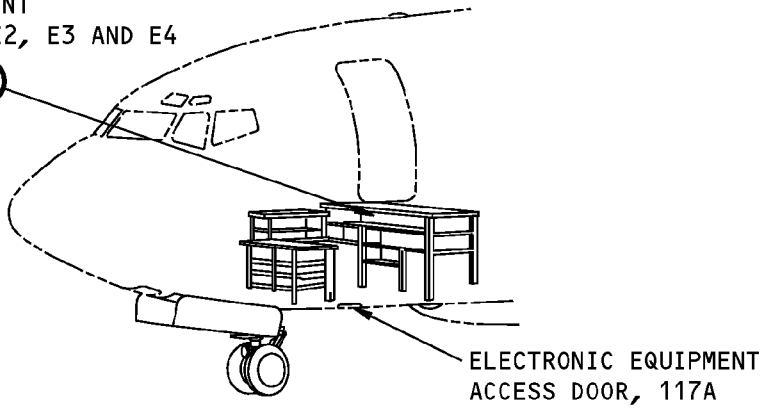
EFFECTIVITY  
HAP 101-999

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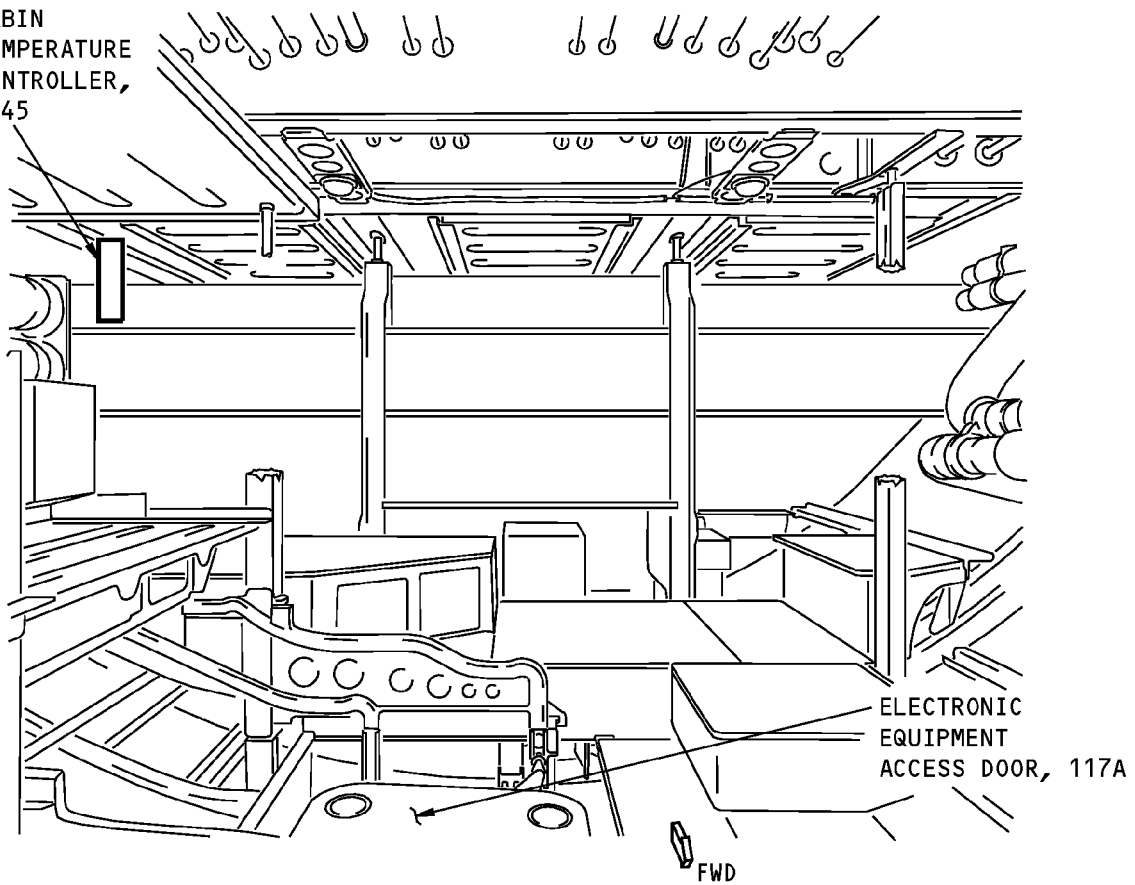
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ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

SEE (A)



CABIN  
TEMPERATURE  
CONTROLLER,  
M345



**ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4**

(A)

**Cabin Temperature Controller Location**  
**Figure 503/21-61-04-990-816-001**

EFFECTIVITY  
HAP 101-999

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TEMPERATURE °F (°C)	RESISTANCE (OHMS)	TEMPERATURE °F (°C)	RESISTANCE (OHMS)
-40 (-40)	151,380-259,440	85 (29.4)	5,690-6,970
-35 (-37.2)	128,850-216,150	90 (32.2)	5,150-6,200
-30 (-34.4)	109,520-181,450	95 (35)	4,660-5,540
-25 (-31.6)	93,600-152,600	100 (37.7)	4,220-4,950
-20 (-28.8)	80,260-128,670	105 (40.5)	3,650-4,050
-15 (-26.1)	68,990-109,060	110 (43.3)	3,300-3,650
-10 (-23.3)	59,520-92,620	115 (46.1)	2,950-3,350
-5 (-20.5)	51,450-78,980	120 (48.8)	2,700-3,050
0 (-17.7)	44,630-67,510	125 (51.6)	2,450-2,750
5 (-15)	38,820-57,880	130 (54.4)	2,275-2,525
10 (-12.2)	33,860-49,760	135 (57.2)	2,100-2,325
15 (-9.4)	29,580-42,930	140 (60)	1,900-2,125
20 (-6.6)	25,940-37,110	145 (62.7)	1,750-1,950
25 (-3.8)	22,800-32,150	150 (65.5)	1,650-1,775
30 (-1.1)	20,070-27,960	155 (68.3)	1,475-1,625
35 (1.6)	17,710-24,370	160 (71.1)	1,350-1,475
40 (4.4)	15,650-21,310	165 (73.9)	1,250-1,350
45 (7.2)	13,870-18,660	170 (76.7)	1,150-1,250
50 (10)	12,320-16,380	175 (79.4)	1,050-1,150
55 (12.7)	10,980-14,390	180 (82.2)	965-1,130
60 (15.5)	9,800-12,690	185 (85)	887-1,050
65 (18.3)	8,760-11,210	190 (87.8)	815-969
70 (21.1)	7,850-9,920	195 (90.6)	750-900
75 (23.8)	7,030-8,810	200 (93.3)	691-837
80 (26.6)	6,300-7,840		

**DUCT TEMPERATURE SENSOR  
P/N 548388-1 (10-60498-7)  
RESISTANCE VS TEMPERATURE TABLE**

**Duct Temperature Sensor - Temperature and Resistance Data  
Figure 504 (Sheet 1 of 2)/21-61-04-990-817-001**

EFFECTIVITY  
HAP 101-999

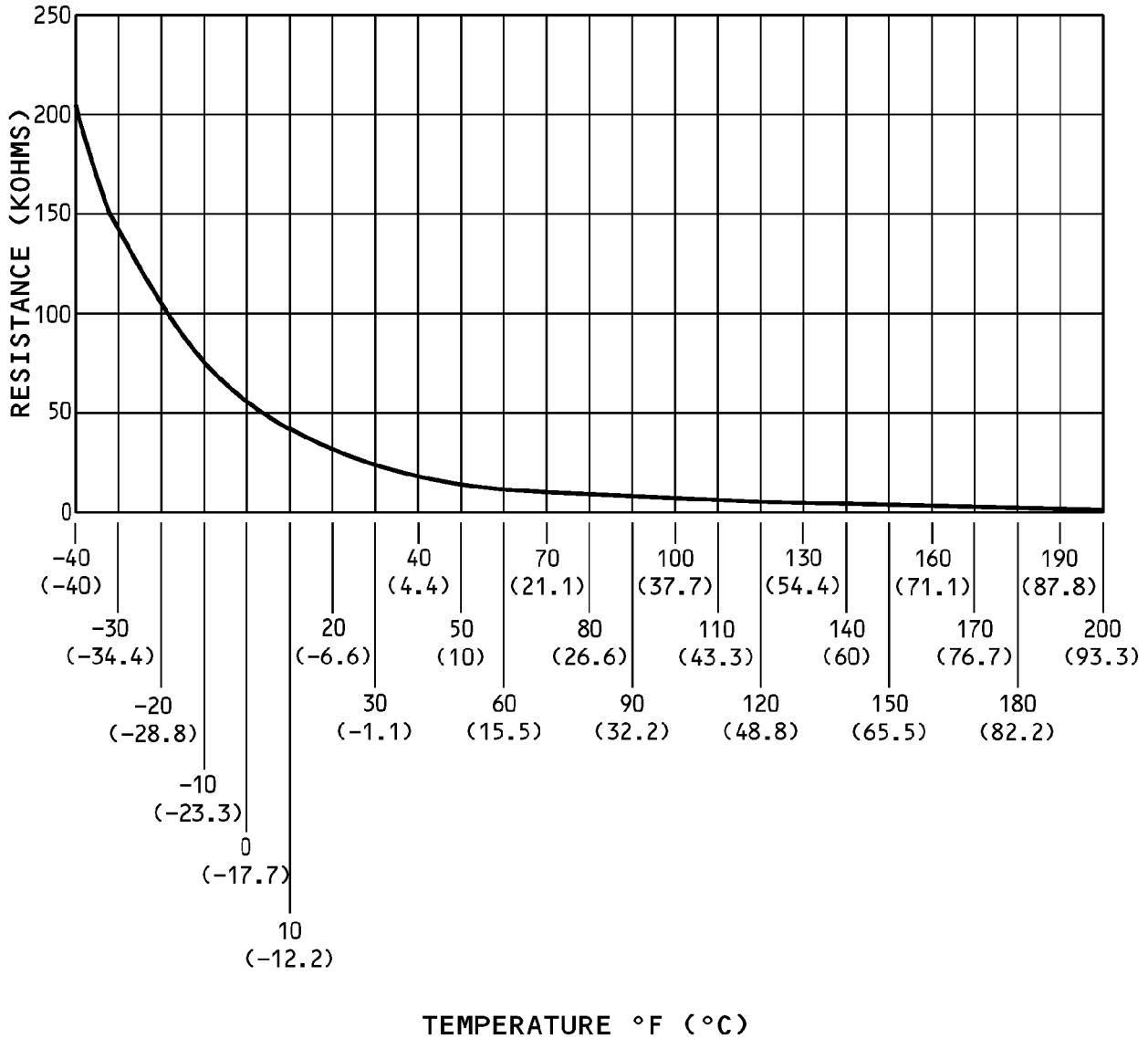
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DUCT TEMPERATURE SENSOR  
P/N 548388-1 (10-60498-7)  
RESISTANCE VS TEMPERATURE GRAPH

Duct Temperature Sensor - Temperature and Resistance Data  
Figure 504 (Sheet 2 of 2)/21-61-04-990-817-001

EFFECTIVITY  
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# AIRCRAFT MAINTENANCE MANUAL

## 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)
21-61-20-000-801	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-3945	Multimeter - Standard (Part #: 187, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: 87V, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: MODEL 21, Supplier: 89536, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: MODEL 27, Supplier: 89536, A/P Effectivity: 737-ALL)
COM-3955	Thermometer - Digital (Part #: 51 II, Supplier: 89536, A/P Effectivity: 737-600) (Opt Part #: 51-2, Supplier: 89536, A/P Effectivity: 737-600)

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

EFFECTIVITY HAP 001-013, 015-026, 028-054
--

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## AIRCRAFT MAINTENANCE MANUAL

### 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:

<u>Number</u>	<u>Name/Location</u>
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).

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).

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 standard multimeter, COM-3945 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).

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.

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**AIRCRAFT MAINTENANCE MANUAL**

- (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).

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:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

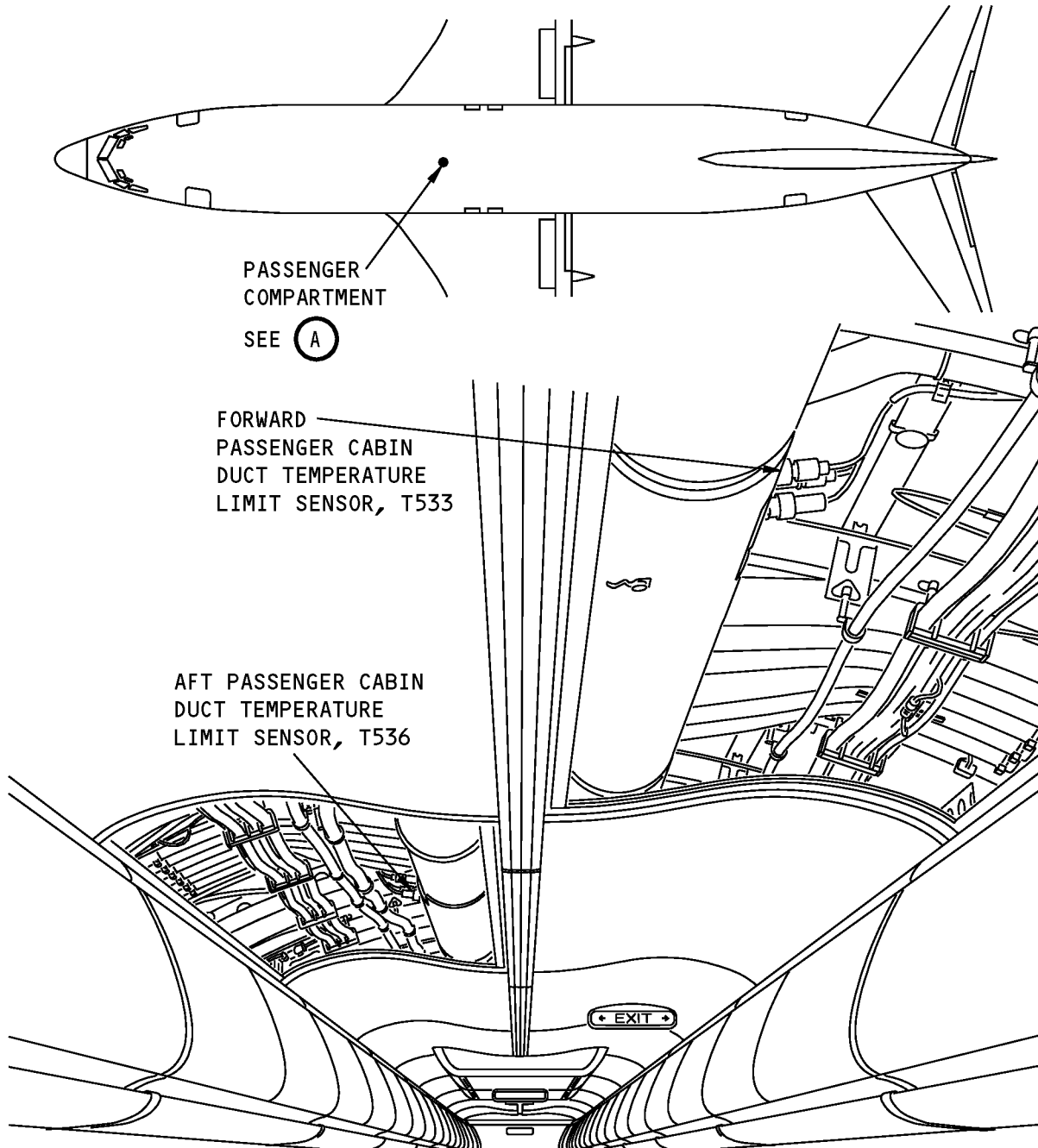
————— **END OF TASK** —————

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
---

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**PASSENGER COMPARTMENT  
(OVERHEAD VIEW, CEILING PANELS REMOVED)**

(A)

**Passenger Cabin Duct Temperature Limit Sensor Location  
Figure 501/21-61-04-990-810-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

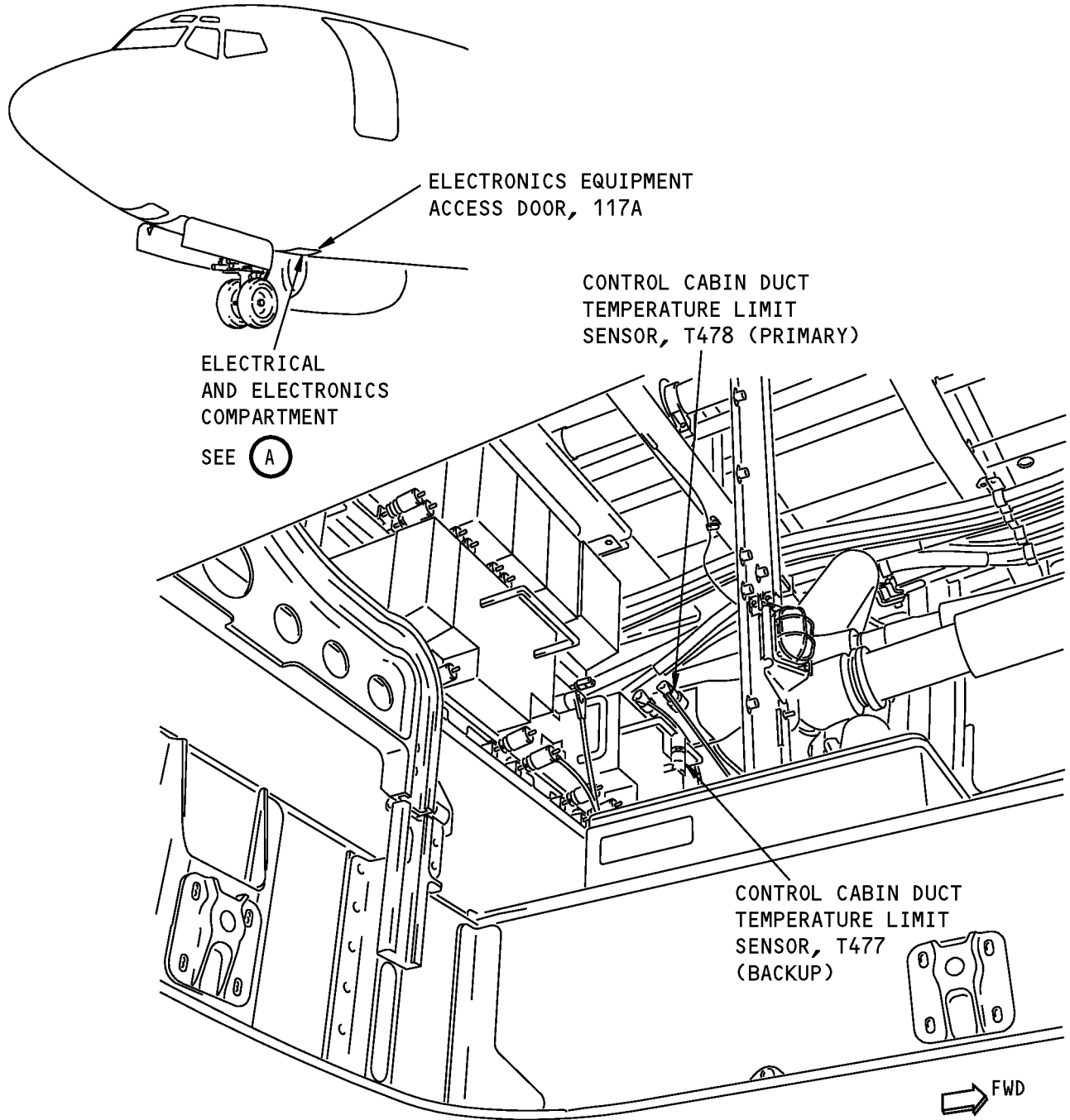
**21-61-04**

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ELECTRICAL  
AND ELECTRONICS  
COMPARTMENT  
SEE (A)

**ELECTRICAL AND ELECTRONICS COMPARTMENT  
(VIEW THROUGH ACCESS DOOR, 117A)**

(A)

**Control Cabin Duct Temperature Limit Sensor Location  
Figure 502/21-61-04-990-811-002**

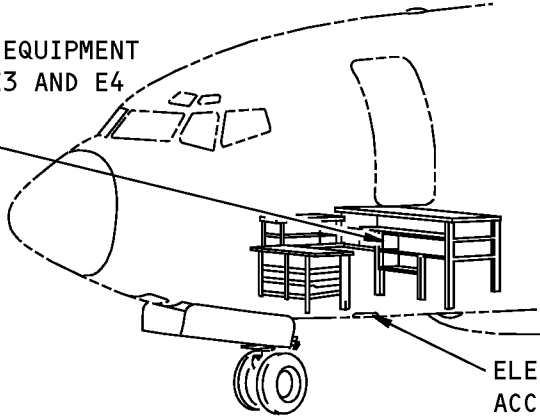
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4

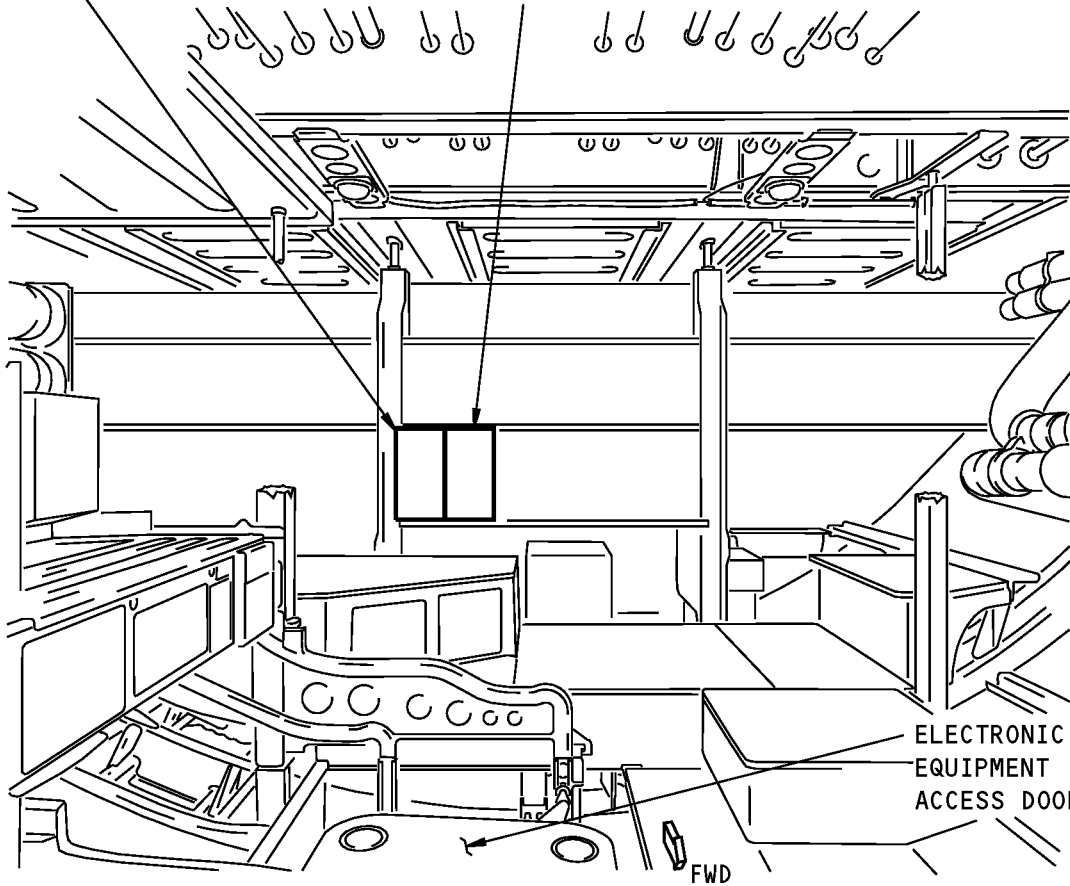
SEE



ELECTRONIC EQUIPMENT ACCESS DOOR, 117A

PACK/ZONE TEMPERATURE CONTROLLER, M1443 (E3-3)

PACK/ZONE TEMPERATURE CONTROLLER, M1442 (E3-3)



ELECTRONIC EQUIPMENT ACCESS DOOR, 117A

ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4



**Pack/Zone Temperature Controller Location**  
**Figure 503/21-61-04-990-812-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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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**

**Duct Temperature Sensor - Temperature and Resistance Data  
Figure 504 (Sheet 1 of 2)/21-61-04-990-813-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

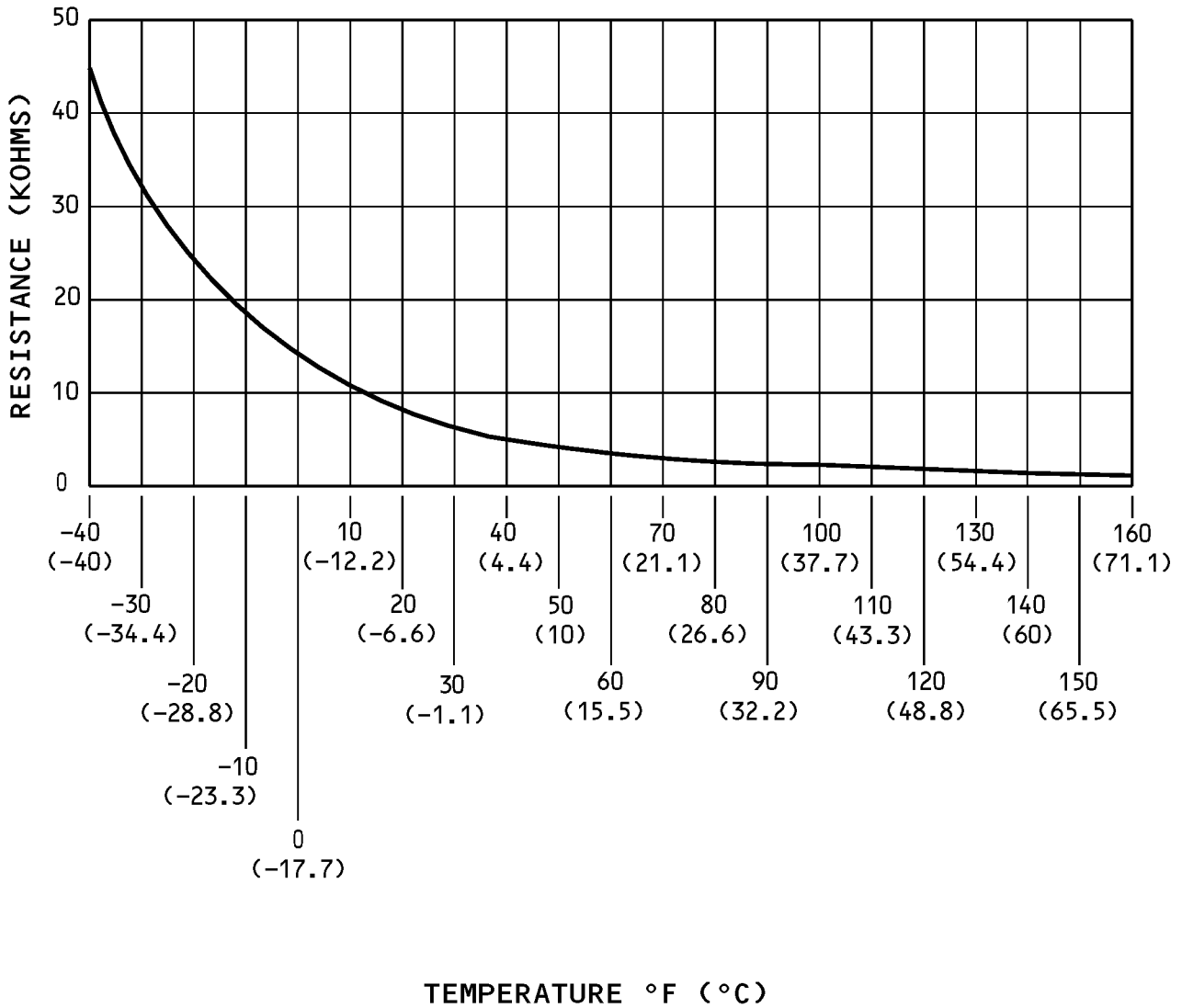
D633A101-HAP

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AIRCRAFT MAINTENANCE MANUAL



DUCT TEMPERATURE SENSOR  
RESISTANCE VS TEMPERATURE GRAPH

Duct Temperature Sensor - Temperature and Resistance Data  
Figure 504 (Sheet 2 of 2)/21-61-04-990-813-002

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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# AIRCRAFT MAINTENANCE MANUAL

## 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

#### HAP 101-999

(b) Passenger Cabin.

#### HAP 001-013, 015-026, 028-054

(c) Forward Passenger Cabin

(d) Aft Passenger Cabin.

#### HAP ALL

(2) An installation of the duct overheat switches for these zones:

(a) Control Cabin

#### HAP 101-999

(b) Passenger Cabin.

#### HAP 001-013, 015-026, 028-054

(c) Forward Passenger Cabin

(d) Aft Passenger Cabin.

#### HAP ALL

#### TASK 21-61-05-000-801

### 2. Duct Overheat Switch Removal

(Figure 401 or Figure 402 or Figure 403, Figure 404 or Figure 405)

A. References

Reference	Title
25-21-45-000-801	Sculptured 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 21-61-05-010-001

(1) To get access to the duct overheat switch for the control cabin, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

EFFECTIVITY	
HAP ALL	

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SUBTASK 21-61-05-010-005

- (2) 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: Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

**E. Passenger Cabin Duct Overheat Switch Removal**

(Figure 401 or Figure 402 or Figure 403)

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 404 or Figure 405)

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** —————

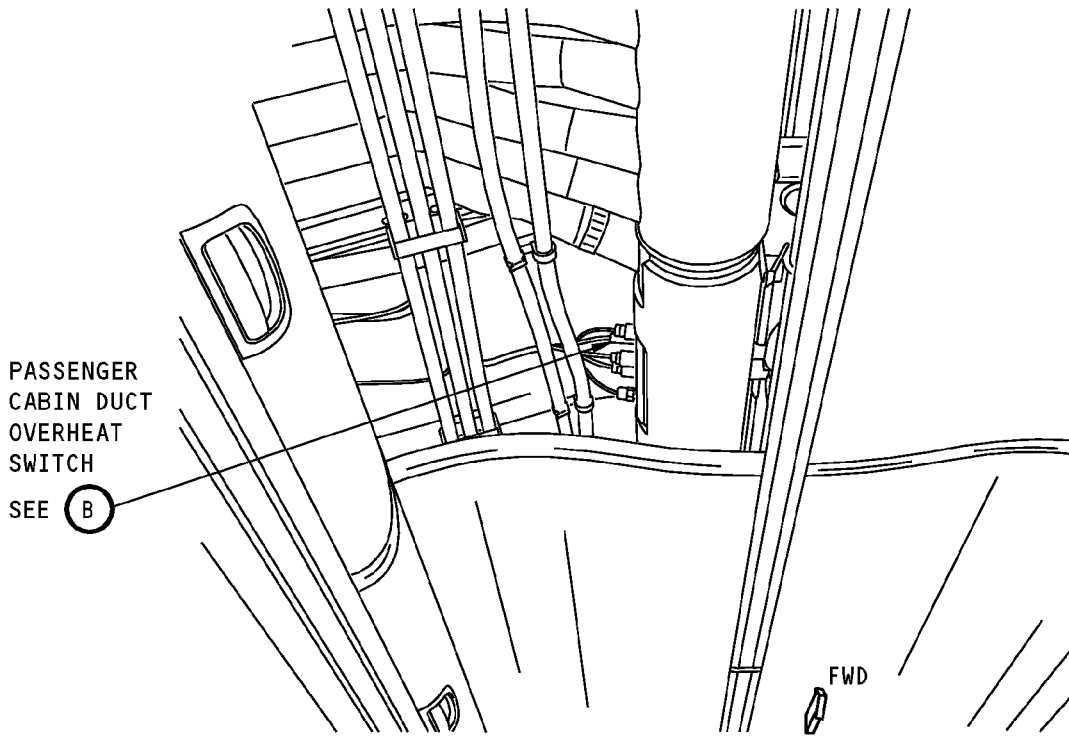
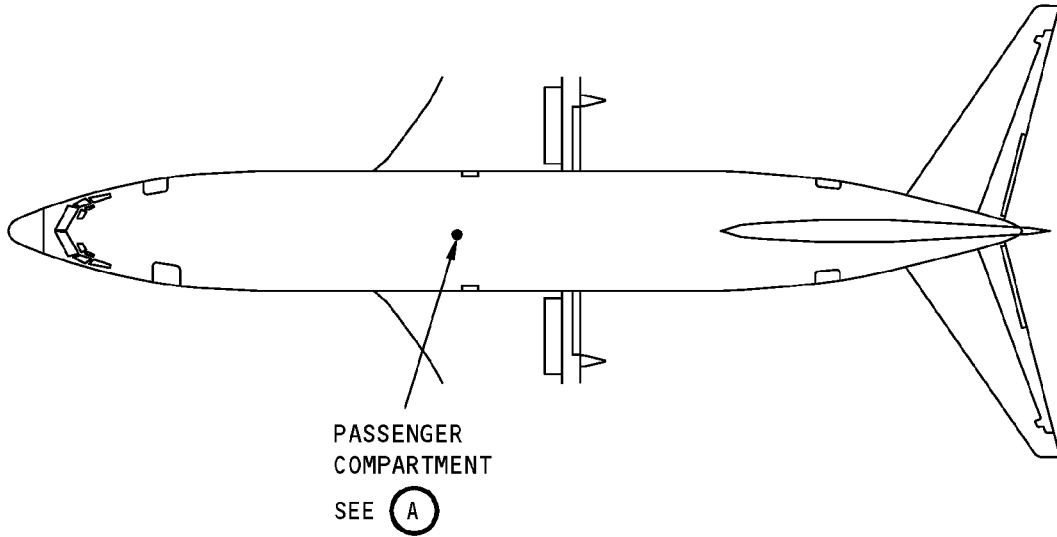
EFFECTIVITY  
HAP ALL

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**PASSENGER COMPARTMENT  
(OVERHEAD VIEW, CEILING PANEL REMOVED)**

(A)

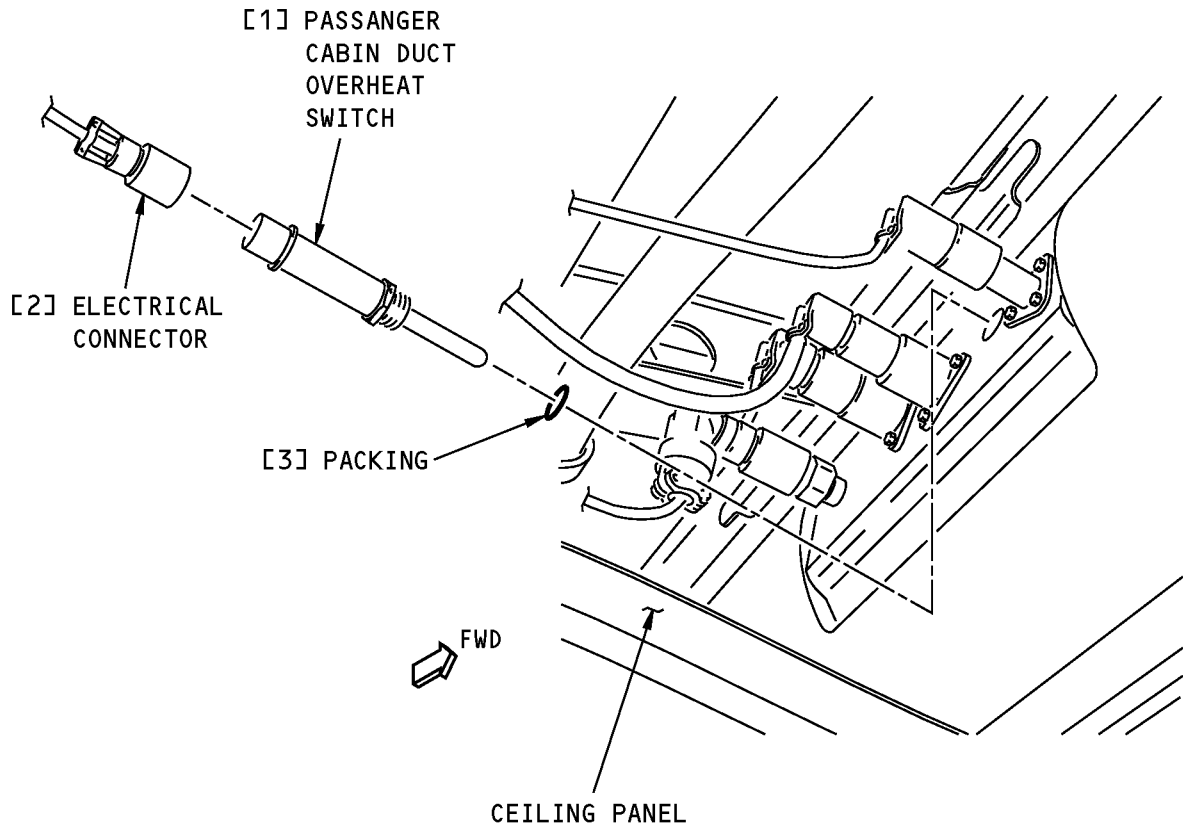
**Passenger Cabin Duct Overheat Switch Installation  
Figure 401 (Sheet 1 of 2)/21-61-05-990-801**

EFFECTIVITY  
HAP 101-999

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**PASSANGER CABIN DUCT OVERHEAT SWITCH**

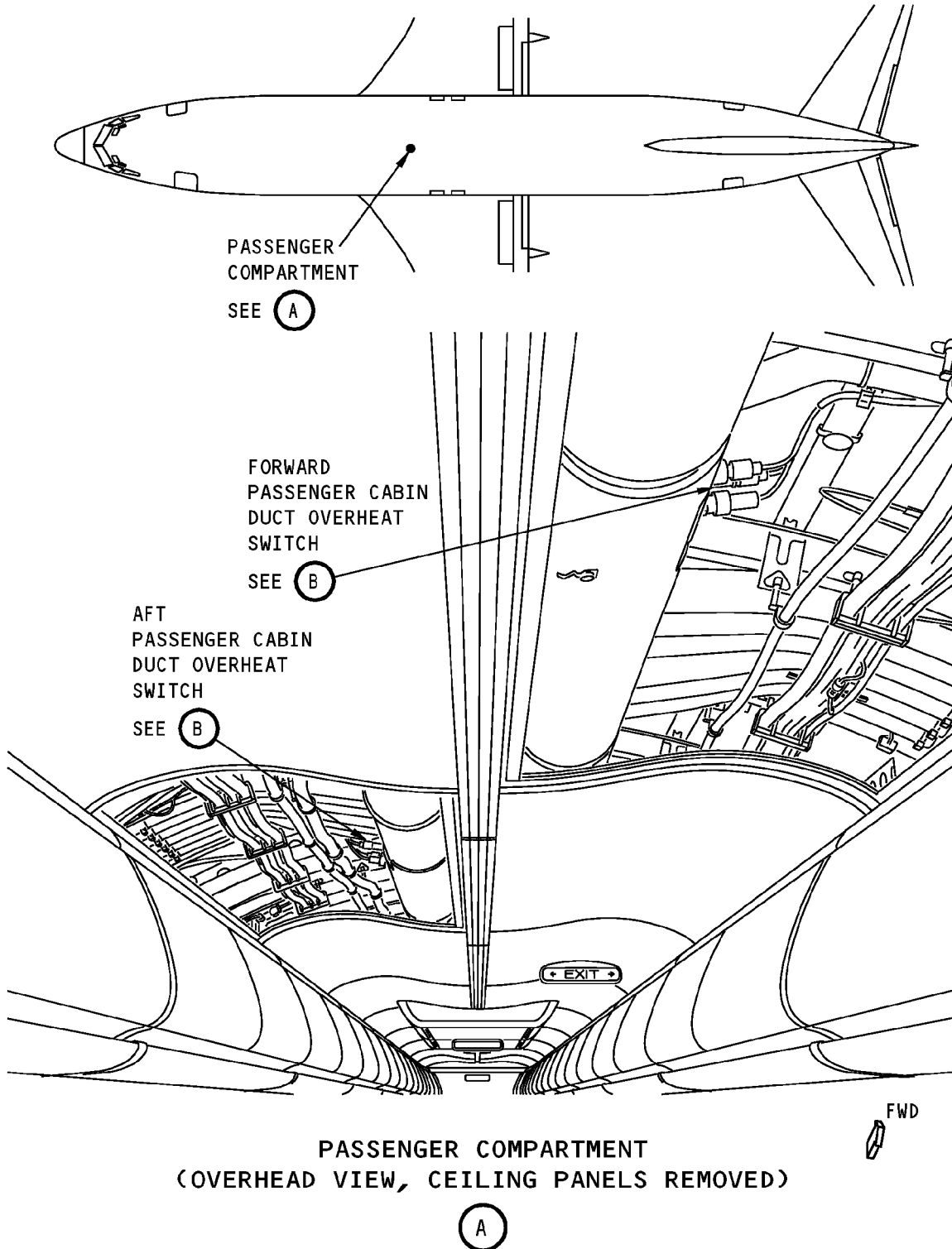
(B)

**Passenger Cabin Duct Overheat Switch Installation  
Figure 401 (Sheet 2 of 2)/21-61-05-990-801**

EFFECTIVITY  
HAP 101-999

D633A101-HAP

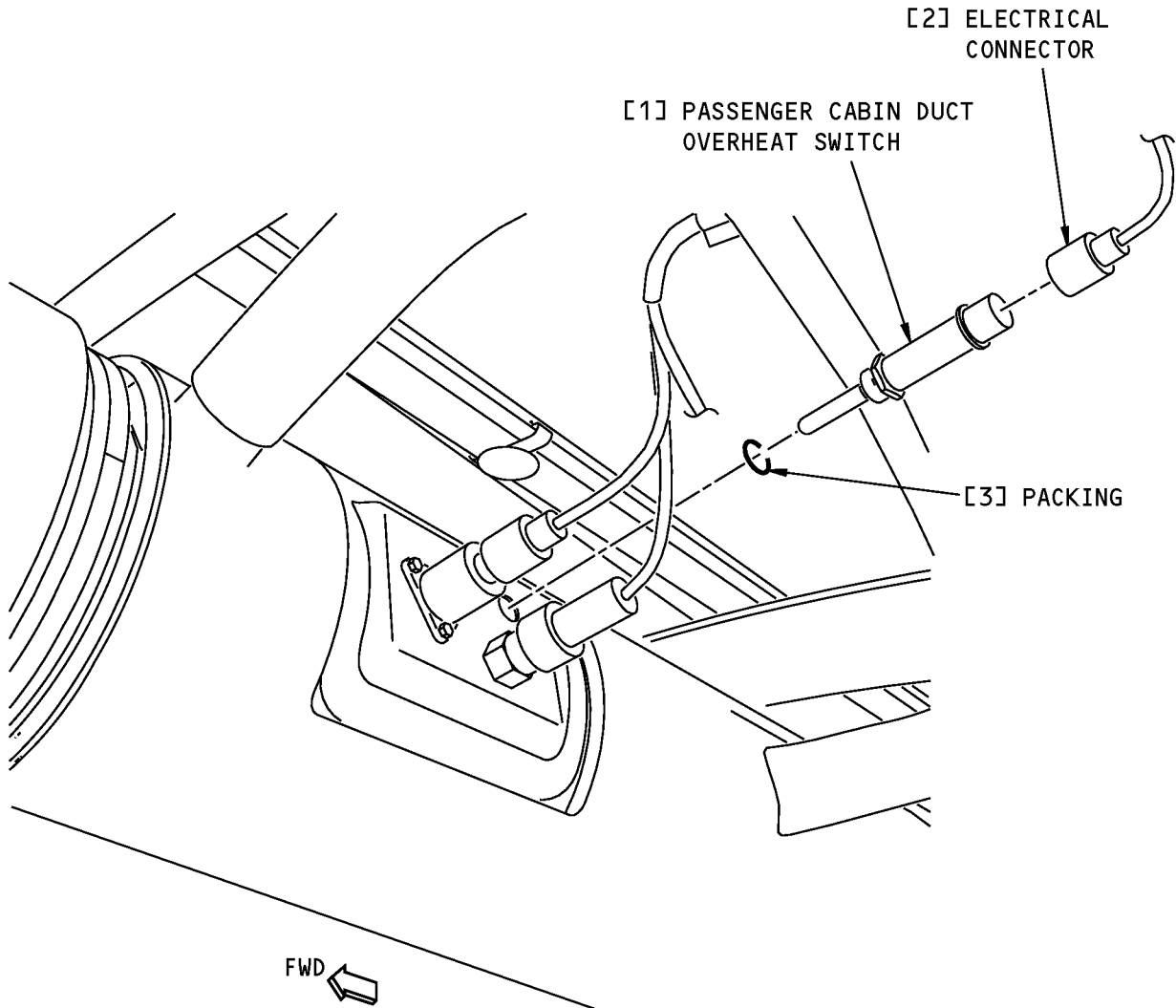




**Passenger Cabin Duct Overheat Switch Installation**  
**Figure 402 (Sheet 1 of 2)/21-61-05-990-803**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**PASSENGER CABIN DUCT OVERHEAT SWITCH  
(FORWARD CABIN SWITCH IS SHOWN, AFT CABIN SWITCH IS OPPOSITE)**

**B**

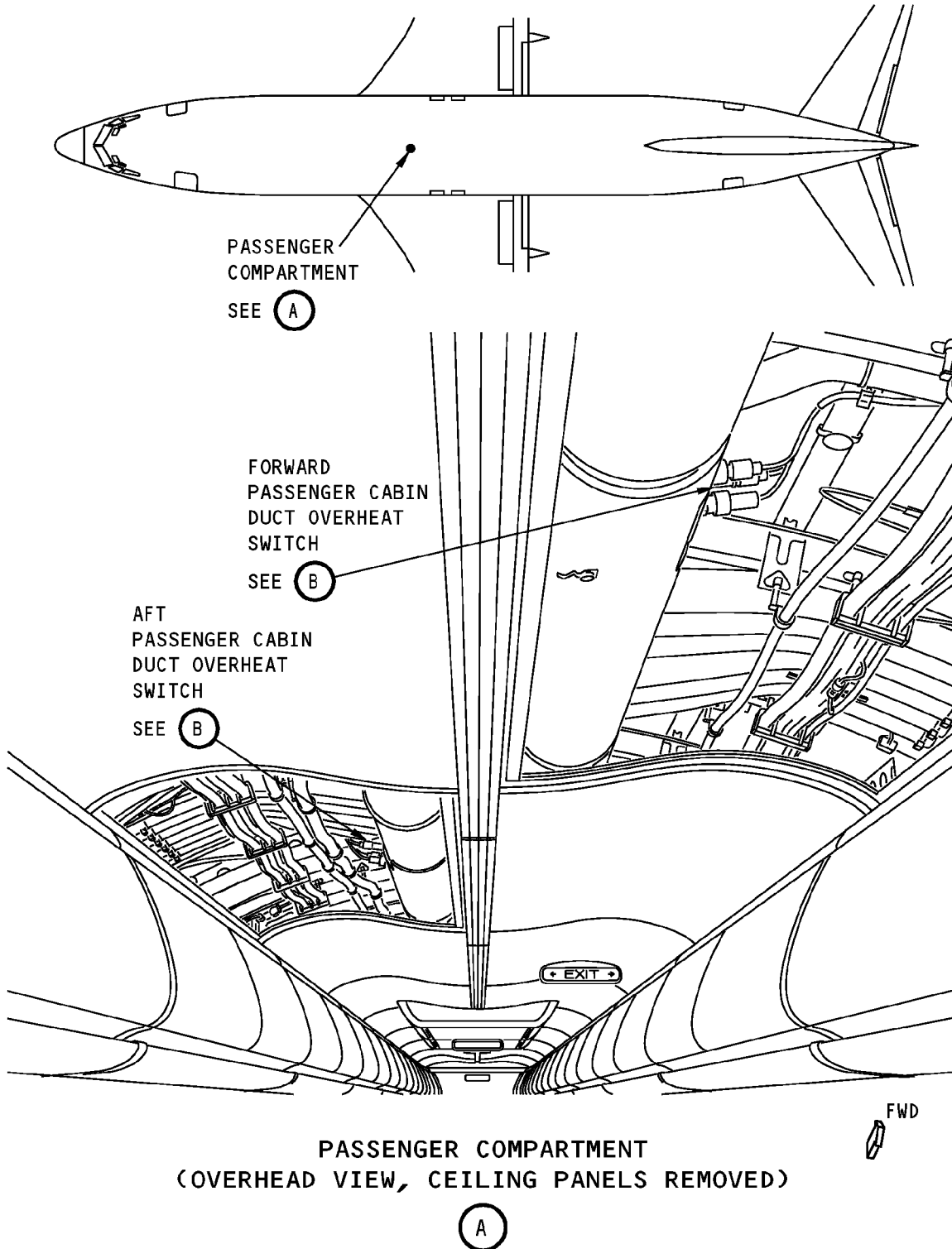
**Passenger Cabin Duct Overheat Switch Installation  
Figure 402 (Sheet 2 of 2)/21-61-05-990-803**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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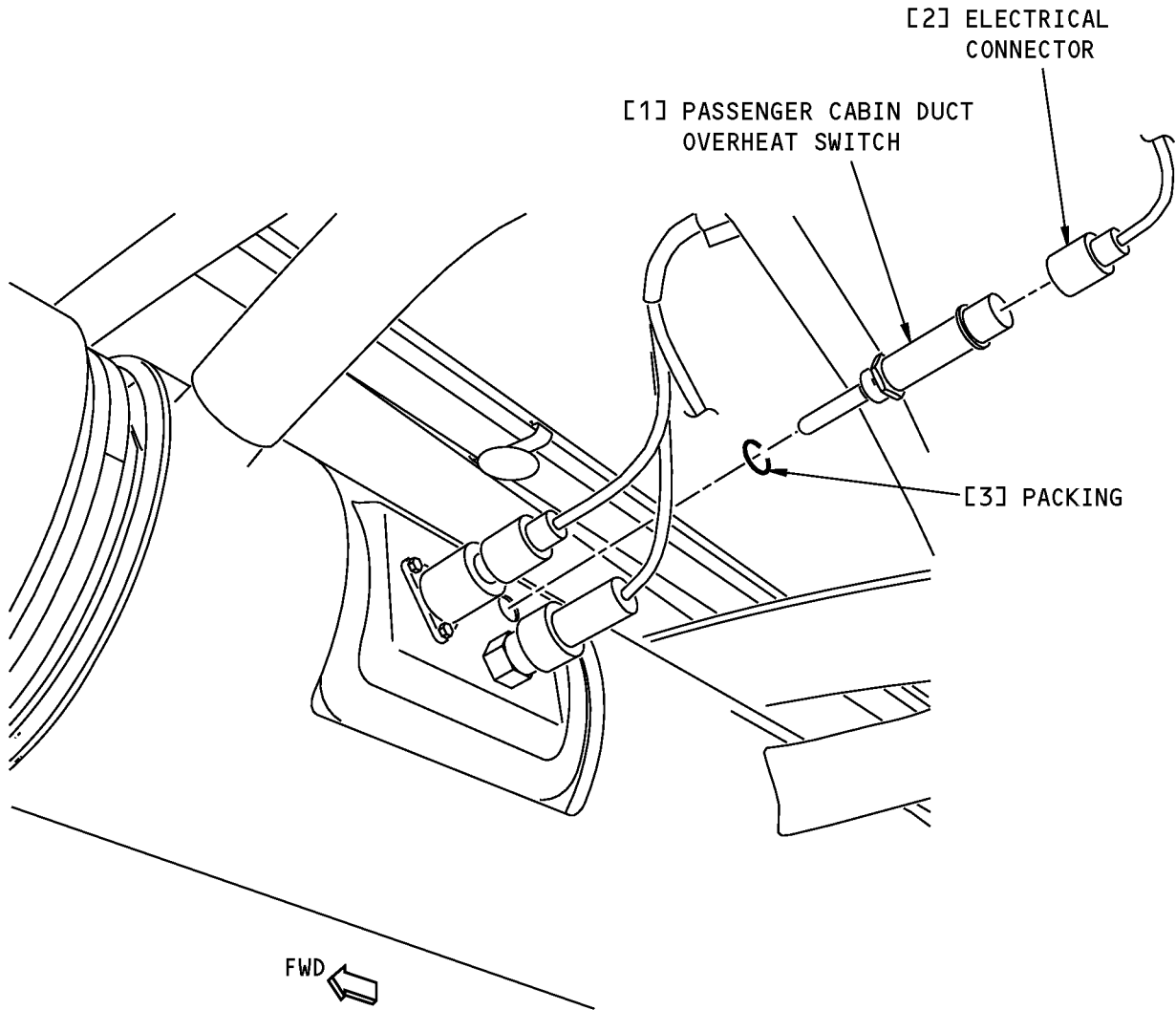
**Passenger Cabin Duct Overheat Switch Installation**  
**Figure 403 (Sheet 1 of 2)/21-61-05-990-805**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**PASSENGER CABIN DUCT OVERHEAT SWITCH  
(FORWARD CABIN SWITCH IS SHOWN, AFT CABIN SWITCH IS OPPOSITE)**

**B**

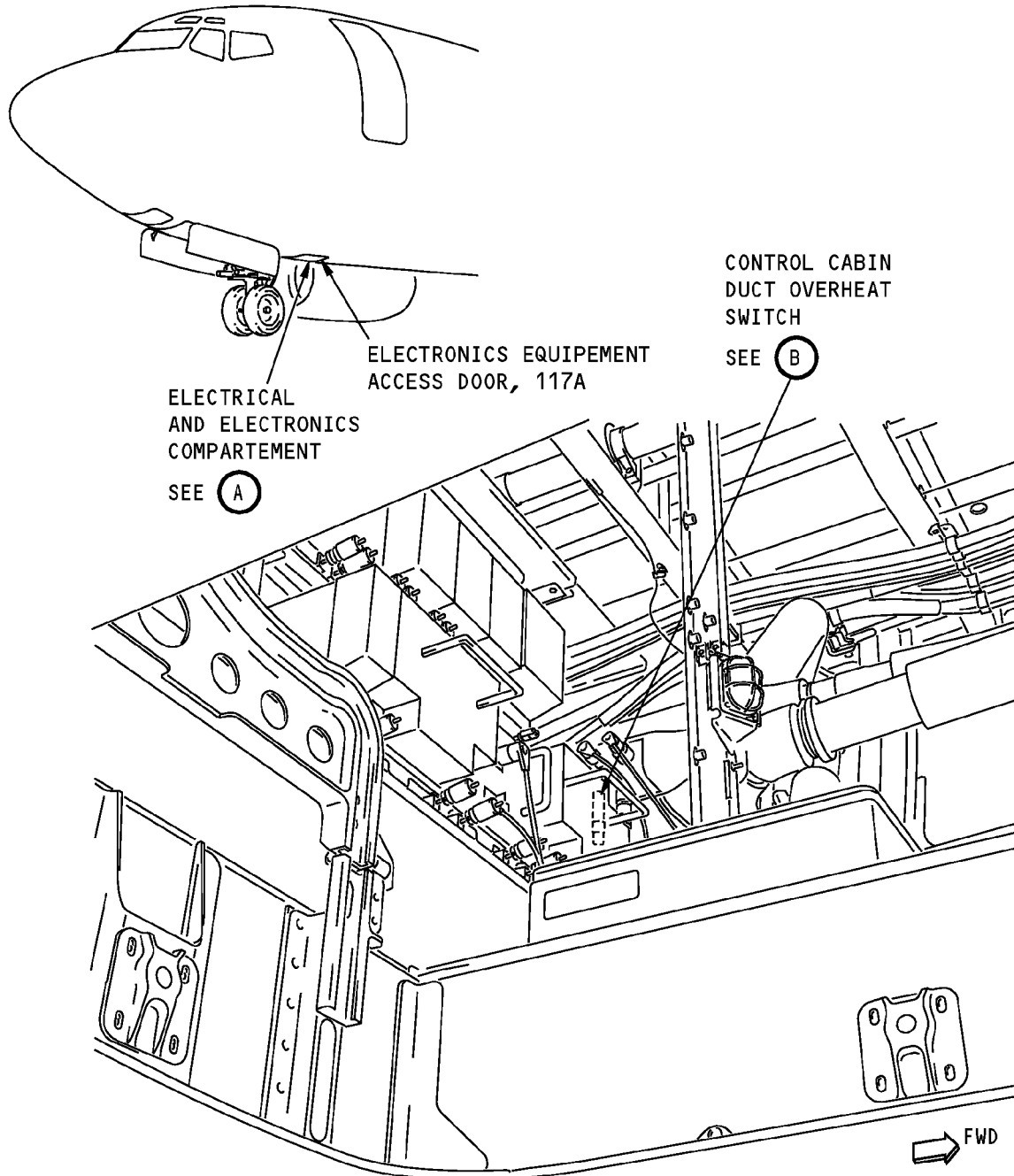
**Passenger Cabin Duct Overheat Switch Installation  
Figure 403 (Sheet 2 of 2)/21-61-05-990-805**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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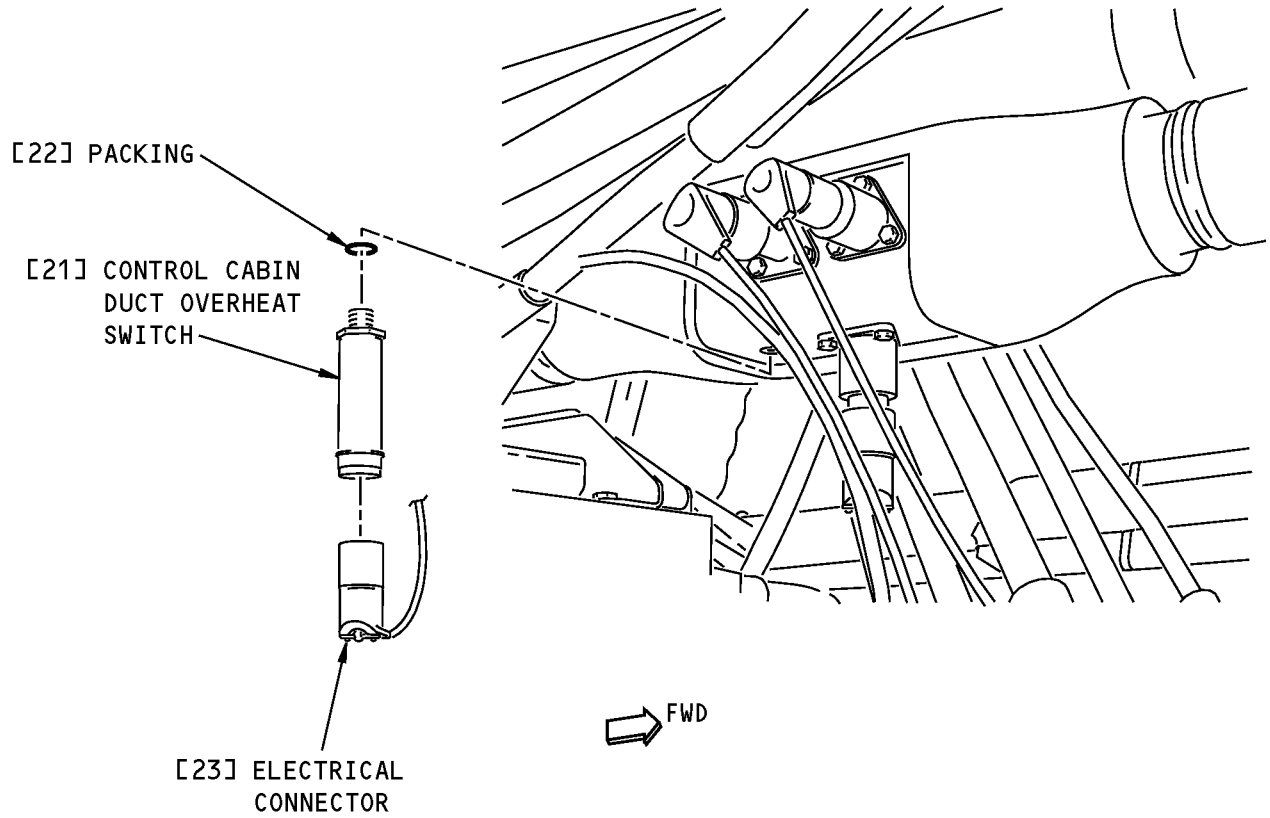
**ELECTRICAL AND ELECTRONICS COMPARTEMENT  
(VIEW THROUGH ACCESS DOOR, 117A)**

(A)

**Control Cabin Duct Overheat Switch Installation  
Figure 404 (Sheet 1 of 2)/21-61-05-990-802**

EFFECTIVITY  
HAP 101-999

**21-61-05**



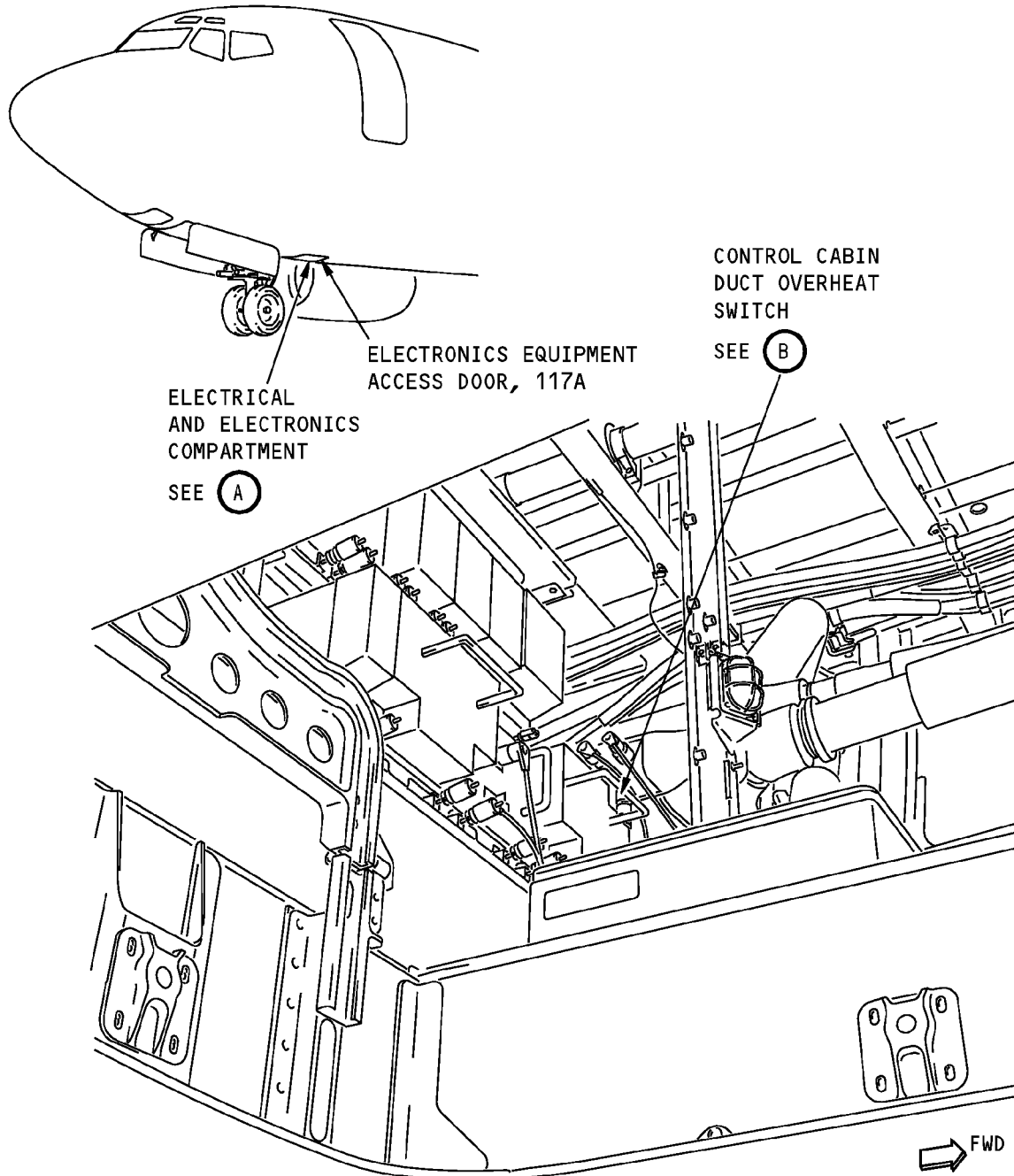
**CONTROL CABIN DUCT OVERHEAT SWITCH**

(B)

**Control Cabin Duct Overheat Switch Installation  
Figure 404 (Sheet 2 of 2)/21-61-05-990-802**

EFFECTIVITY  
HAP 101-999

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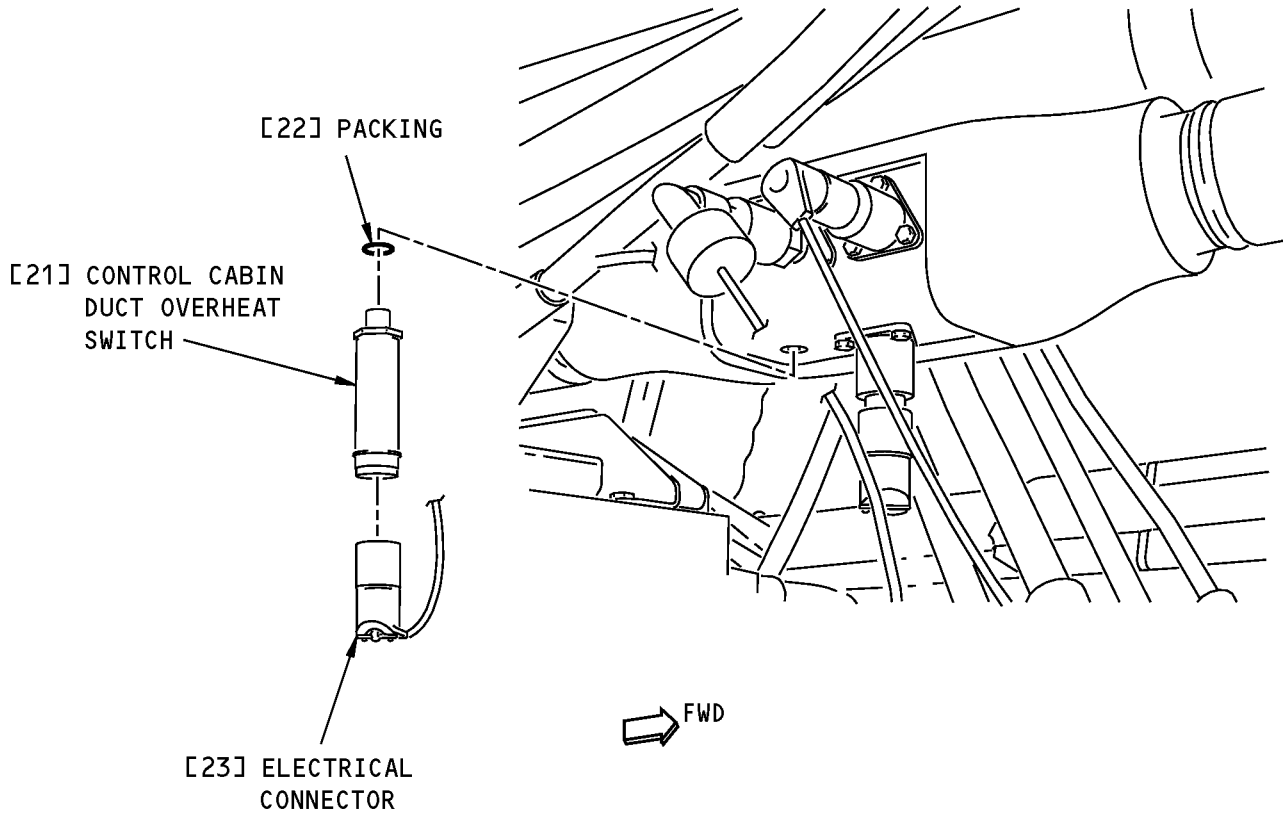
**ELECTRICAL AND ELECTRONICS COMPARTMENT  
(VIEW THROUGH ACCESS DOOR, 117A)**

(A)

**Control Cabin Duct Overheat Switch Installation  
Figure 405 (Sheet 1 of 2)/21-61-05-990-806**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**CONTROL CABIN DUCT OVERHEAT SWITCH**

**B**

**Control Cabin Duct Overheat Switch Installation  
Figure 405 (Sheet 2 of 2)/21-61-05-990-806**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

#### TASK 21-61-05-400-801

#### 3. Duct Overheat Switch Installation

##### A. References

Reference	Title
25-21-45-400-801	Sculptured 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	21-61-05-20-020	HAP 101-999
		21-61-05-22-005	HAP 012, 013, 015-026, 028-054
3	Packing	21-61-05-20-025	HAP 101-999
		21-61-05-22-010	HAP 012, 013, 015-026, 028-054
21	Switch	21-22-00-04-280	HAP 101-999
		21-22-00-05-335	HAP 012, 013, 015-026, 028-054
22	Packing	21-22-00-04-283	HAP 101-999
		21-22-00-05-337	HAP 012, 013, 015-026, 028-054
		21-61-05-04-020	HAP 001-011

##### 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 or Figure 403)

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.

EFFECTIVITY
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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 404 or Figure 405)

SUBTASK 21-61-05-420-007

(1) Install a new packing [22] on the duct overheat switch [21].

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].

**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:

<u>Number</u>	<u>Name/Location</u>
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: Sculptured Ceiling Panel Installation, TASK 25-21-45-400-801.

**END OF TASK**

EFFECTIVITY  
HAP ALL

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# AIRCRAFT MAINTENANCE MANUAL

## 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 or Figure 202 or Figure 203)

- A. General
  - (1) This procedure is a scheduled maintenance task.
- B. Location Zones

<u>Zone</u>	<u>Area</u>
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
212	Flight Compartment - Right
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75
232	Forward Passenger Compartment - Forward Entry Door to Sta 663.75 - Right

#### **HAP 001-013, 015-026, 028-054**

242 Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

#### **HAP ALL**

- C. Prepare for the Removal

#### **HAP 101-999**

SUBTASK 21-61-06-860-015

- (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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT

#### **HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-06-860-006

- (2) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01163	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT FLT DK

EFFECTIVITY <b>HAP ALL</b>
-------------------------------

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# AIRCRAFT MAINTENANCE MANUAL

HAP 001-013, 015-026, 028-054 (Continued)

## HAP 101-999

SUBTASK 21-61-06-860-018

(3) Do this step for the removal of the filter for the passenger compartment zone:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

## HAP 001-013, 015-026, 028-054

SUBTASK 21-61-06-860-007

(4) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-06-860-008

(5) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01170	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT AFT PASS

## HAP ALL

SUBTASK 21-61-06-010-001

(6) Find the filter for the flight compartment cabin temperature sensor assembly on the aft ceiling in the flight compartment.

SUBTASK 21-61-06-860-009

(7) Find the filter for the cabin temperature sensor assembly in passenger compartment zone behind the bullnose cover below the overhead stowage bin on the right side of the aisle. Use the illustration to find the correct bin.

### D. Flight Compartment Zone - Cabin Temperature Sensor Assembly Filter Removal

(Figure 201 or Figure 202 or Figure 203)

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 screw [2] that attach the grille [3] to the aft ceiling in the flight compartment.

(b) Remove the grille [3] and the filter [1].

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### E. Passenger Compartment Zone - Cabin Temperature Sensor Assembly Filter Removal (Figure 201 or Figure 202 or Figure 203)

SUBTASK 21-61-06-020-002

- (1) Remove the filter [21] for the cabin temperature sensor assembly in the passenger compartment as follows:
  - (a) Put a blunt-ended metal rod, approximately 1/16-inch (1.58 mm) diameter, into the hole at the edge of the grille until the spring catch releases.

**CAUTION:** DO NOT PRY OR APPLY TOO MUCH PRESSURE TO THE GRILLE. DAMAGE TO THE GRILLE OR BULLNOSE CAN RESULT.

- (b) Remove the grille [22] and the filter [21].

————— **END OF TASK** —————

EFFECTIVITY  
HAP ALL

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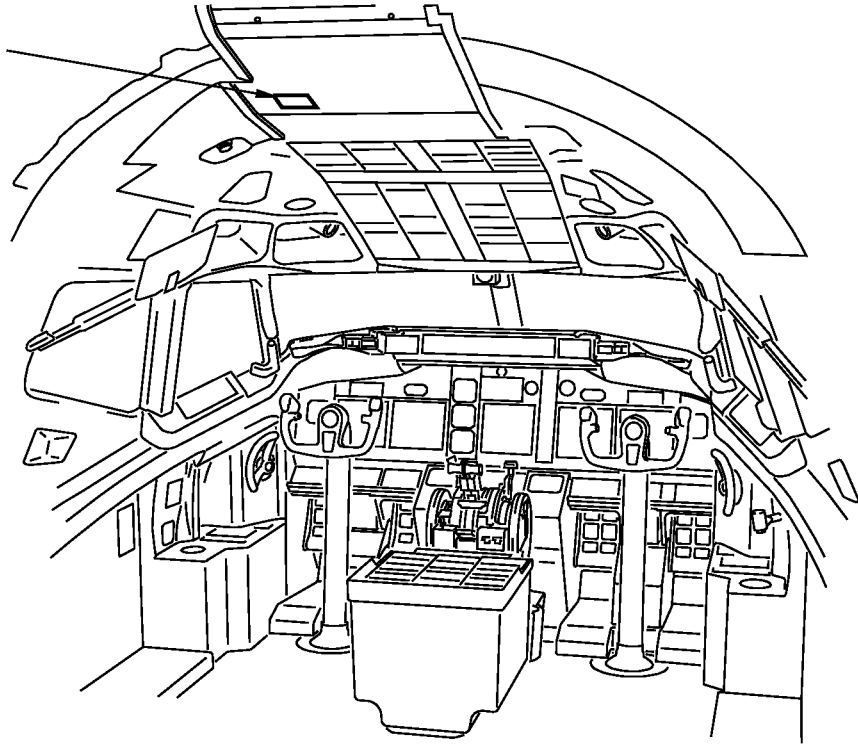
# 21-61-06

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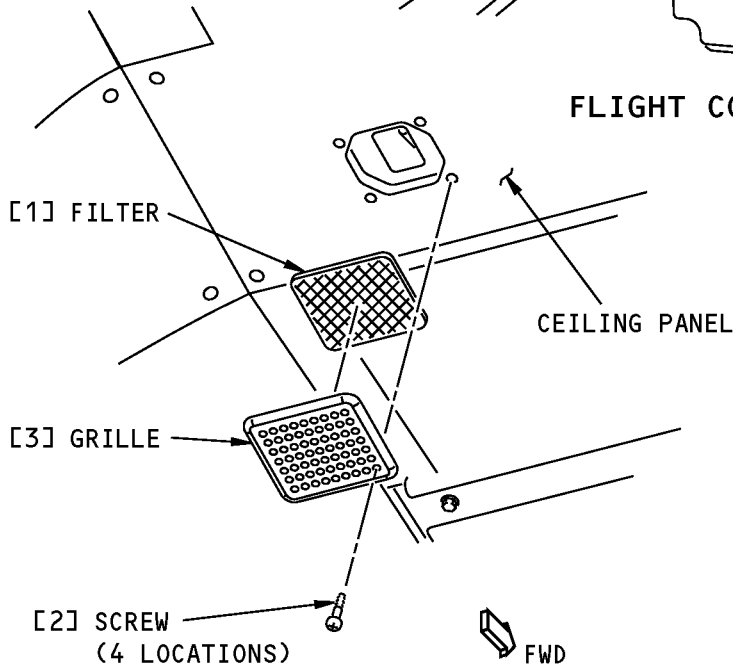
**AIRCRAFT MAINTENANCE MANUAL**

CABIN TEMPERATURE  
SENSOR ASSEMBLY  
FILTER

SEE (A)



FLIGHT COMPARTMENT



**CABIN TEMPERATURE SENSOR ASSEMBLY FILTER**

(A)

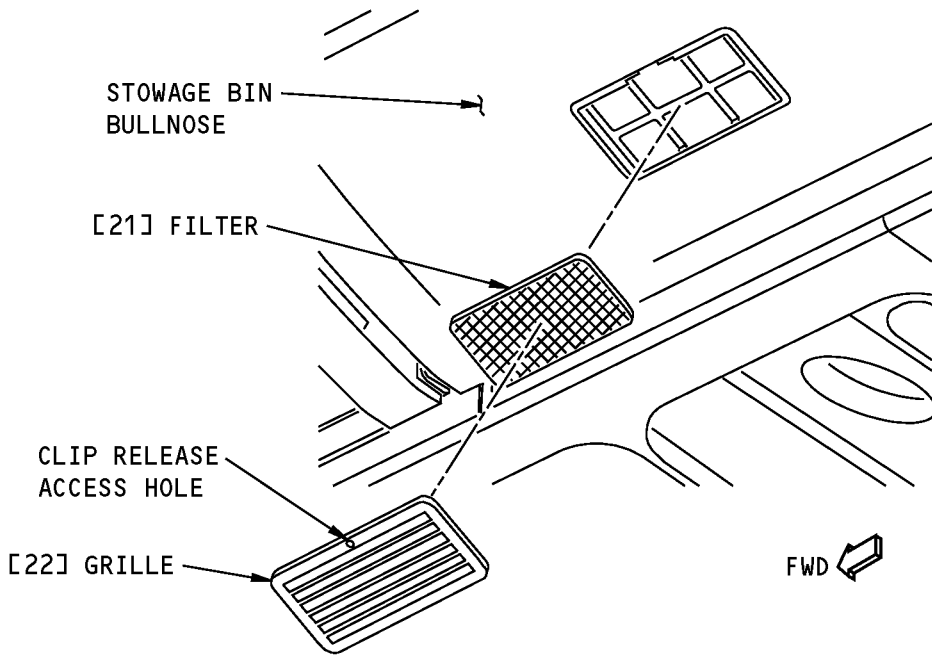
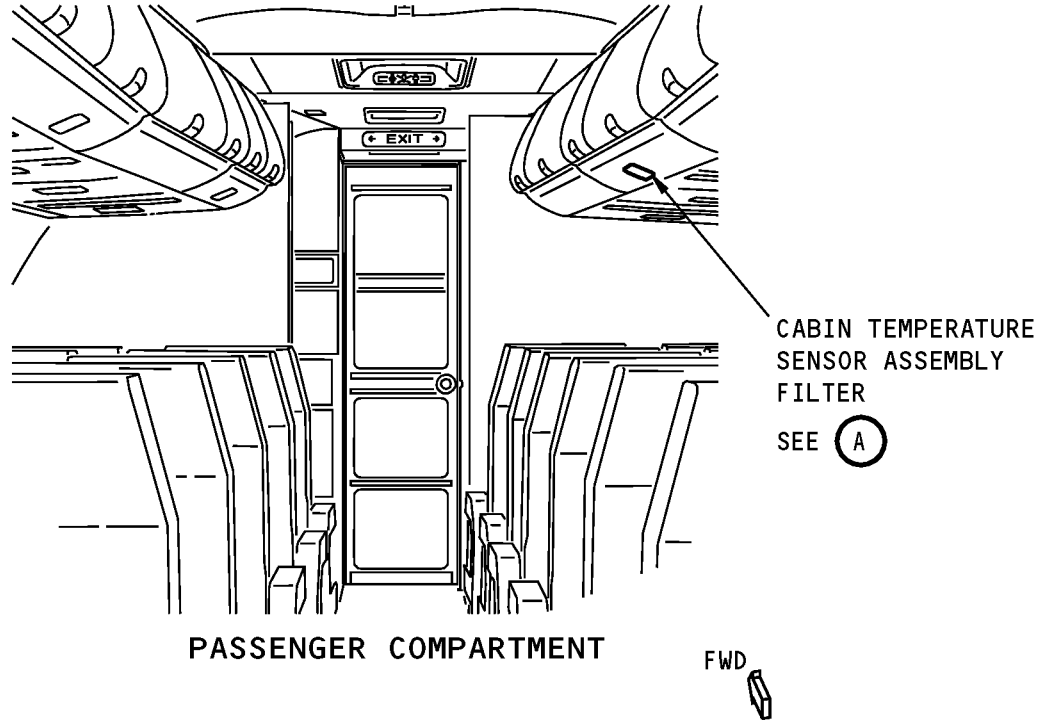
**Flight Compartment - Cabin Temperature Sensor Assembly Filter Installation**  
**Figure 201/21-61-06-990-801**

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AIRCRAFT MAINTENANCE MANUAL**



**CABIN TEMPERATURE SENSOR ASSEMBLY FILTER**

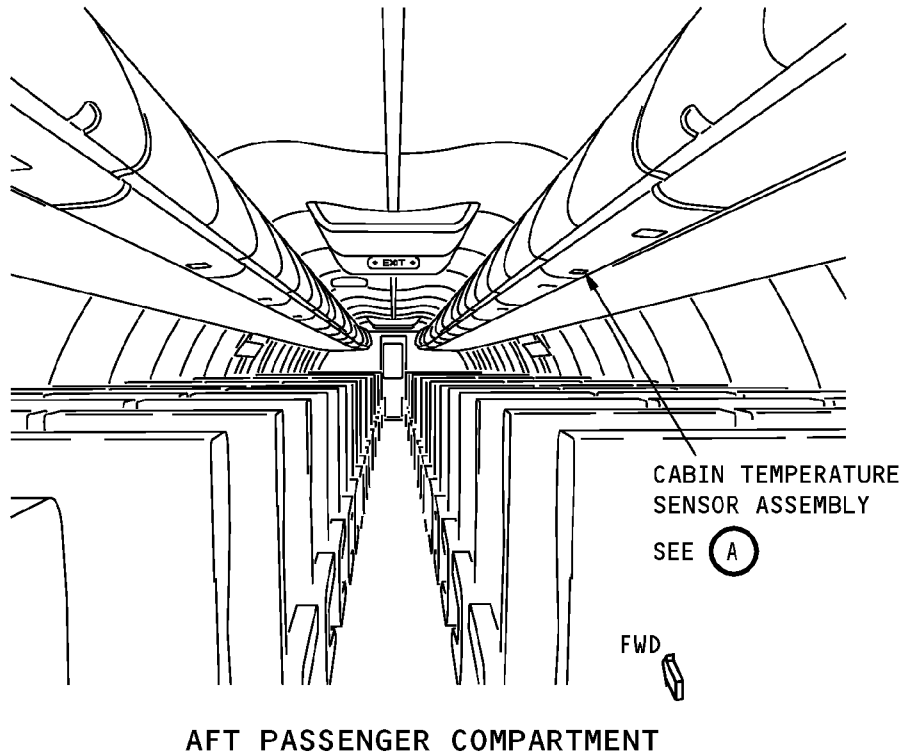
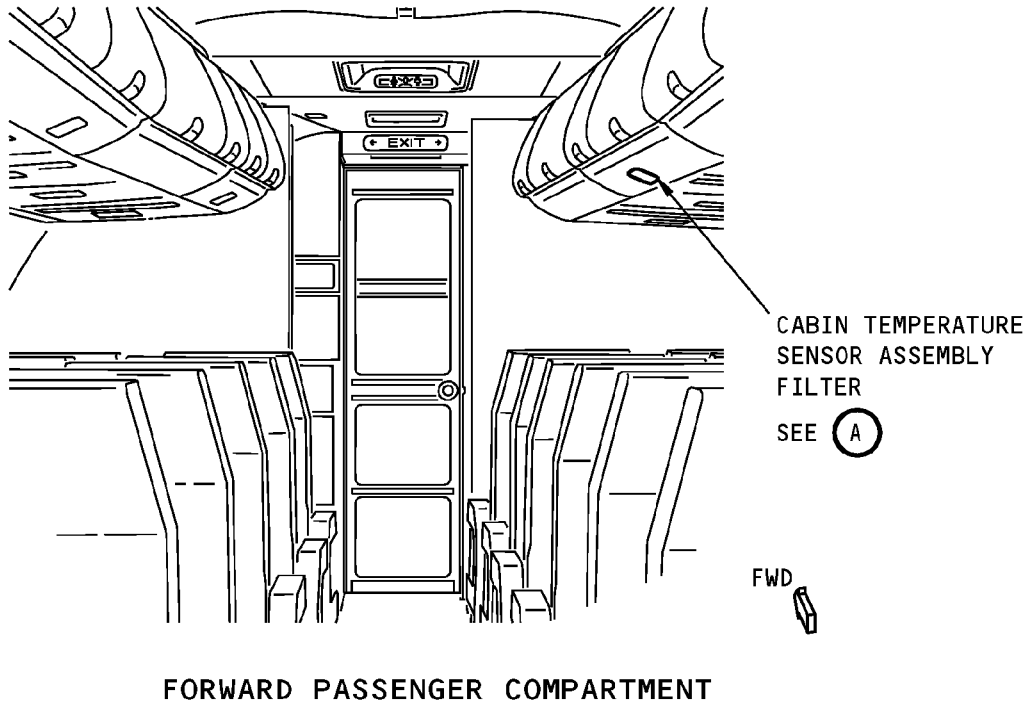
(A)

**Passenger Compartment - Cabin Temperature Sensor Assembly Filter Installation  
Figure 202/21-61-06-990-802**

EFFECTIVITY  
HAP 101-999

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AIRCRAFT MAINTENANCE MANUAL**



**Cabin Temperature Sensor Assembly Filter Installation  
Figure 203 (Sheet 1 of 2)/21-61-06-990-804**

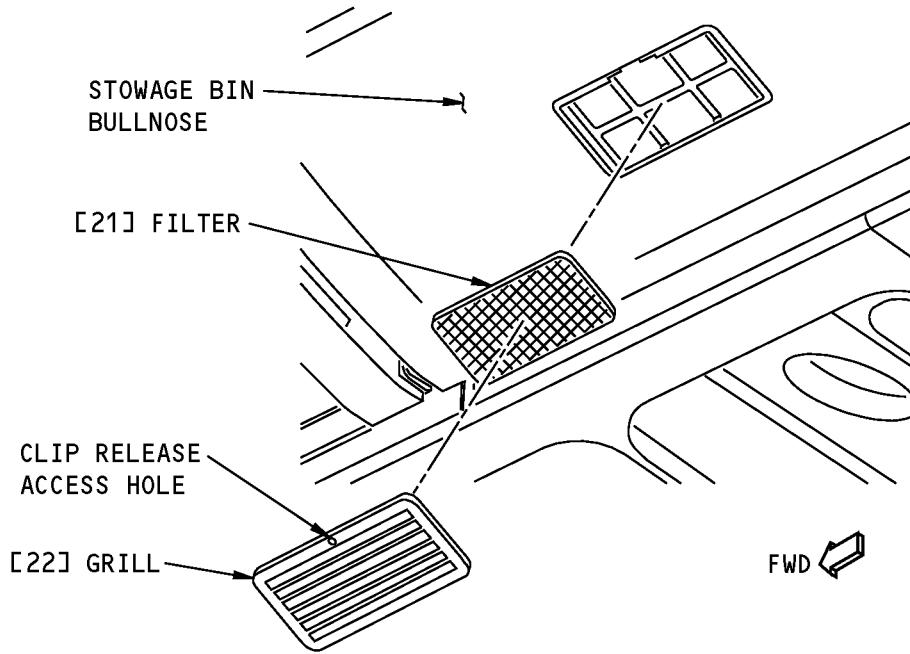
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**CABIN TEMPERATURE SENSOR ASSEMBLY FILTER**

(A)

**Cabin Temperature Sensor Assembly Filter Installation  
Figure 203 (Sheet 2 of 2)/21-61-06-990-804**

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# AIRCRAFT MAINTENANCE MANUAL

## TASK 21-61-06-100-801

### 3. Cabin Temperature Sensor Assembly Filter Cleaning

(Figure 201 or Figure 202 or Figure 203)

#### A. General

- (1) This procedure is a scheduled maintenance task.

#### B. Consumable Materials

Reference	Description	Specification
B00130	Alcohol - Isopropyl	TT-I-735
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5
G02472	Filter - 3/16 inch, Porosity Grade 45 Ppi, Color-Gray, Flame Retardent Foam	

#### C. 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.

#### D. Cleaning Procedure

SUBTASK 21-61-06-110-001

- (1) Prepare a cleaning solution of water and any readily available mild liquid detergent 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 detergent 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.

SUBTASK 21-61-06-100-003

- (6) Dry the filter with compressed air or the cotton wiper, G00034.

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E. 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

A. General

- (1) This procedure is a scheduled maintenance task.

B. Expendables/Parts

Table with 4 columns: AMM Item, Description, AIPC Reference, AIPC Effectivity. Rows include items 1 and 21 with their respective descriptions and references.

C. Location Zones

Table with 2 columns: Zone, Area. Rows include zones 210, 230, and 242 with their corresponding areas.

HAP ALL

D. Flight Compartment Zone - Cabin Temperature Sensor Assembly Filter Installation

(Figure 201 or Figure 202 or Figure 203)

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.

Box containing EFFECTIVITY and HAP ALL

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### AIRCRAFT MAINTENANCE MANUAL

#### E. Passenger Compartment Zone - Cabin Temperature Sensor Assembly Filter Installation

(Figure 201 or Figure 202 or Figure 203)

SUBTASK 21-61-06-420-004

(1) Install the filter [21] for the temperature sensor assembly in the passenger compartment as follows:

(a) Put a new or cleaned filter [21] in the grille [22].

**CAUTION:** DO NOT PRY OR APPLY TOO MUCH PRESSURE TO THE GRILLE. DAMAGE TO THE GRILLE OR BULLNOSE CAN RESULT.

(b) Put the edge of the grille [22] without the hole into the side of the grille retainer opposite the spring catch and then push the edge with the hole until the spring catch engages.

#### F. Put the Airplane Back to Its Usual Condition

##### HAP 101-999

SUBTASK 21-61-06-860-022

(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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT

##### HAP 001-013, 015-026, 028-054

SUBTASK 21-61-06-860-012

(2) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01163	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT FLT DK

##### HAP 101-999

SUBTASK 21-61-06-860-025

(3) If you installed the filter [21] for the passenger compartment zone, do this step:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

##### HAP 001-013, 015-026, 028-054

SUBTASK 21-61-06-860-013

(4) If you installed the filter [21] for the forward passenger compartment zone, do this step:

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HAP 001-013, 015-026, 028-054 (Continued)

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-06-860-014

- (5) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01170	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT AFT PASS

————— END OF TASK —————

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## AIRCRAFT MAINTENANCE MANUAL

### 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 two cabin temperature selectors installed in the P5-17 Cabin Temperature Panel. One selector is used to adjust the control cabin temperature. The other selector is used to adjust the passenger cabin temperature.

C. The removal and installation procedure is the same for the two cabin temperature selectors.

D. The P5-17 Cabin Temperature Panel is located in the P5 Forward Overhead Panel.

#### **TASK 21-61-07-000-804-001**

#### 2. Cabin Temperature Selector Removal

(Figure 401)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 21-61-07-840-007-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT
A	3	C00267	AIR CONDITIONING TEMP CONTROL MANUAL
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

C. Cabin Temperature Selector Removal

SUBTASK 21-61-07-020-008-001

**CAUTION:** HOLD THE SELECTOR WHEN YOU LOOSEN THE CLAMP. THE SELECTOR CAN FALL WHEN THE CLAMP IS LOOSE. THE SELECTOR CAN BE DAMAGED IF IT FALLS.

- (1) Turn the clamp tension screw in the counterclockwise direction to loosen the clamp that holds the selector to the P5-17 panel.

**NOTE:** Do not remove the clamp tension screw.

SUBTASK 21-61-07-020-009-001

- (2) Carefully pull the cabin temperature selector [3] out of the P5-17 panel [2].

SUBTASK 21-61-07-020-010-001

- (3) Disconnect the electrical connector [1] from the cabin temperature selector [3].

————— **END OF TASK** —————

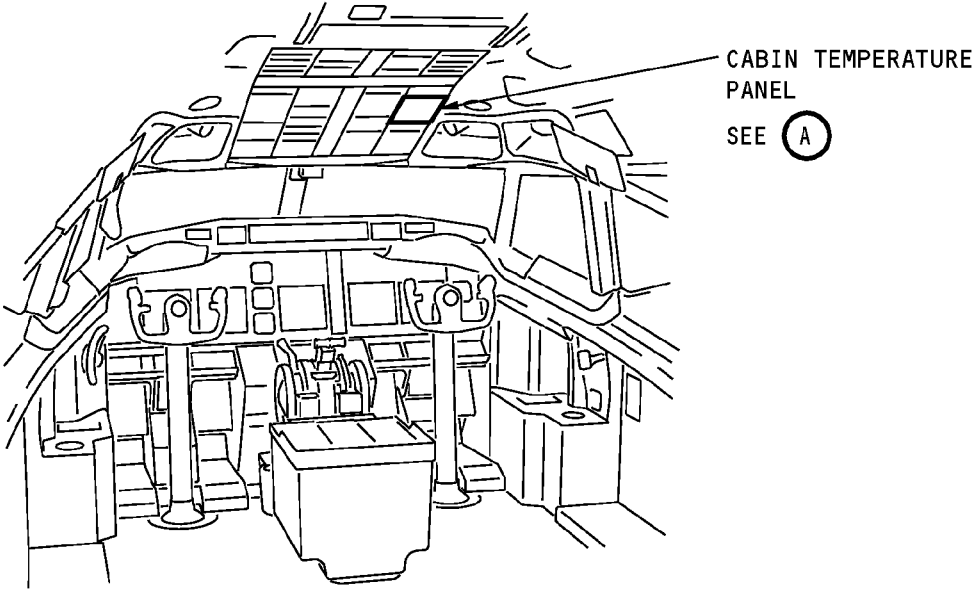
EFFECTIVITY  
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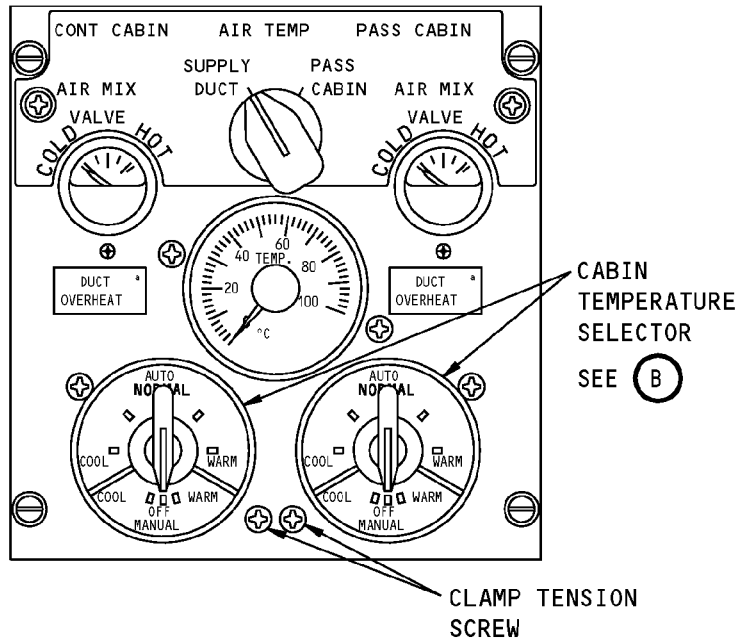
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AIRCRAFT MAINTENANCE MANUAL**



**FLIGHT COMPARTMENT**



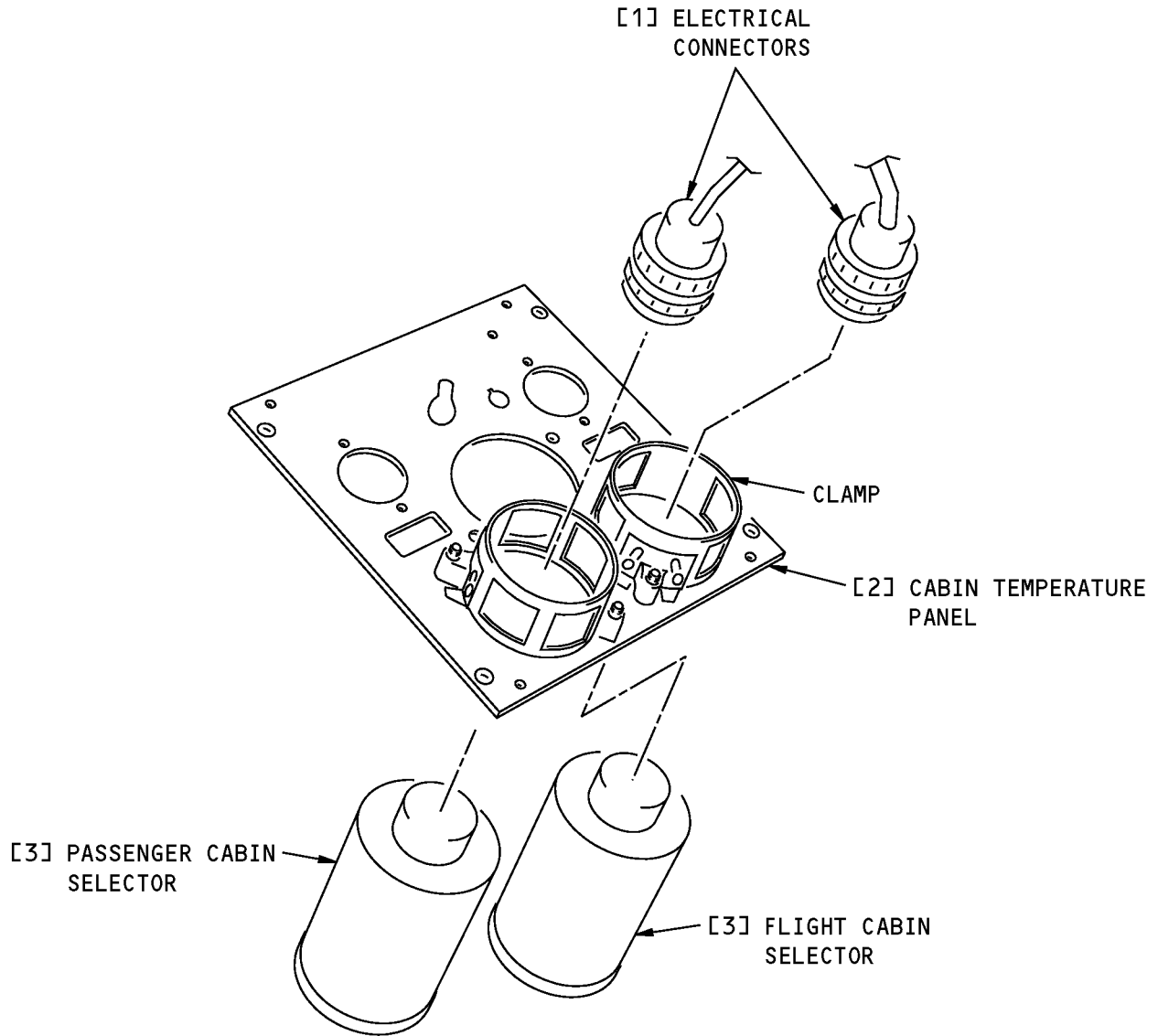
**CABIN TEMPERATURE PANEL**

(A)

**Cabin Temperature Selector Installation  
Figure 401 (Sheet 1 of 2)/21-61-07-990-804-001**

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**CABIN TEMPERATURE SELECTOR**

**B**

**Cabin Temperature Selector Installation  
Figure 401 (Sheet 2 of 2)/21-61-07-990-804-001**

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### AIRCRAFT MAINTENANCE MANUAL

TASK 21-61-07-400-804-001

#### 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)
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
3	Selector	21-61-07-02-005	HAP 101-999

##### C. Location Zones

Zone	Area
212	Flight Compartment - Right

##### D. Cabin Temperature Selector Installation

SUBTASK 21-61-07-420-006-001

(1) Connect the electrical connector [1] to the cabin temperature selector [3].

SUBTASK 21-61-07-420-007-001

(2) Carefully push the cabin temperature selector [3] into its position in the P5-17 panel [2].

SUBTASK 21-61-07-420-008-001

(3) Tighten the clamp tension screw 5 to 8 pound-inches (0.6 to 0.9 newton-meters).

**NOTE:** Hold the selector against the panel while you tighten the screw.

##### E. Cabin Temperature Selector Test

SUBTASK 21-61-07-840-008-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT
A	3	C00267	AIR CONDITIONING TEMP CONTROL MANUAL
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

SUBTASK 21-61-07-860-015-001

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

SUBTASK 21-61-07-860-016-001

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

SUBTASK 21-61-07-710-019-001

(4) Put the R PACK switch and the L PACK switch on the P5-10 Air Conditioning Panel in the AUTO position.

SUBTASK 21-61-07-710-020-001

(5) Put the cabin temperature selector in the AUTO WARM position.

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- (a) Make sure that the airflow from the conditioned air outlets in the applicable cabin becomes warm.

SUBTASK 21-61-07-710-021-001

- (6) Put the cabin temperature selector in the AUTO COOL position.

- (a) Make sure that the airflow from the conditioned air outlets in the applicable cabin becomes cool.

SUBTASK 21-61-07-710-022-001

- (7) Hold the cabin temperature selector in the MANUAL WARM position.

- (a) Make sure that the airflow from the conditioned air outlets in the applicable cabin becomes warm.

SUBTASK 21-61-07-710-023-001

- (8) Hold the cabin temperature selector in the MANUAL COOL position.

- (a) Make sure that the airflow from the conditioned air outlets in the applicable cabin becomes cool.

SUBTASK 21-61-07-810-004-001

- (9) If you find a problem with the cabin temperature selector, then do the steps in the FIM to correct the problem.

### F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-07-710-024-001

- (1) Put the cabin temperature selector in the NORMAL position.

SUBTASK 21-61-07-860-017-001

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

SUBTASK 21-61-07-860-018-001

- (3) Do this task: Remove Electrical Power, TASK 24-22-00-860-812.

————— **END OF TASK** —————

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# AIRCRAFT MAINTENANCE MANUAL

## 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 RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

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].

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HAP 001-013, 015-026, 028-054

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- (e) Carefully pull the cabin temperature selector [2] out of the P5-17 panel [3].

**END OF TASK**

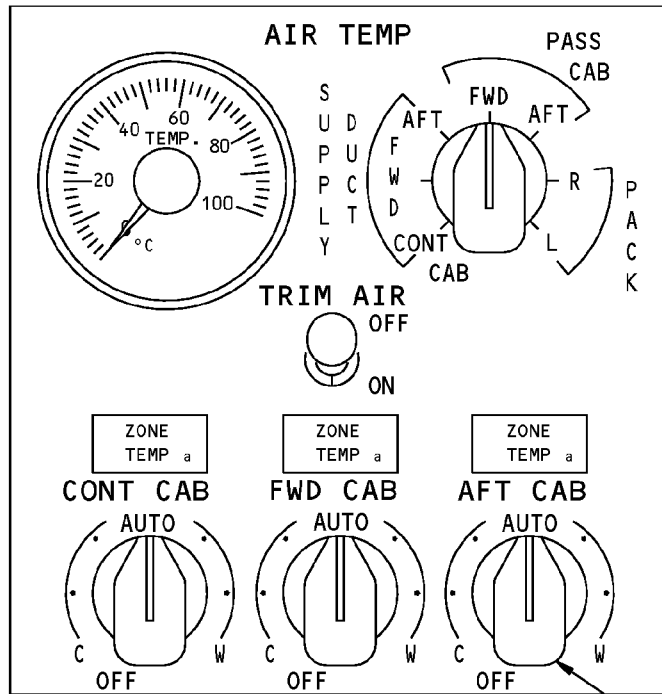
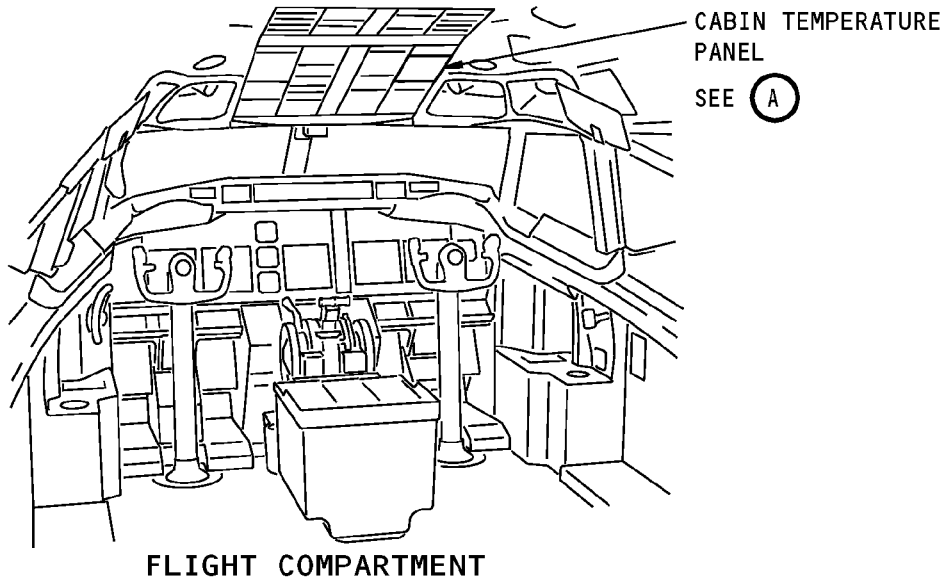
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**AIRCRAFT MAINTENANCE MANUAL**



**CABIN TEMPERATURE PANEL**

(A)

CABIN TEMPERATURE SELECTOR (3 LOCATIONS)

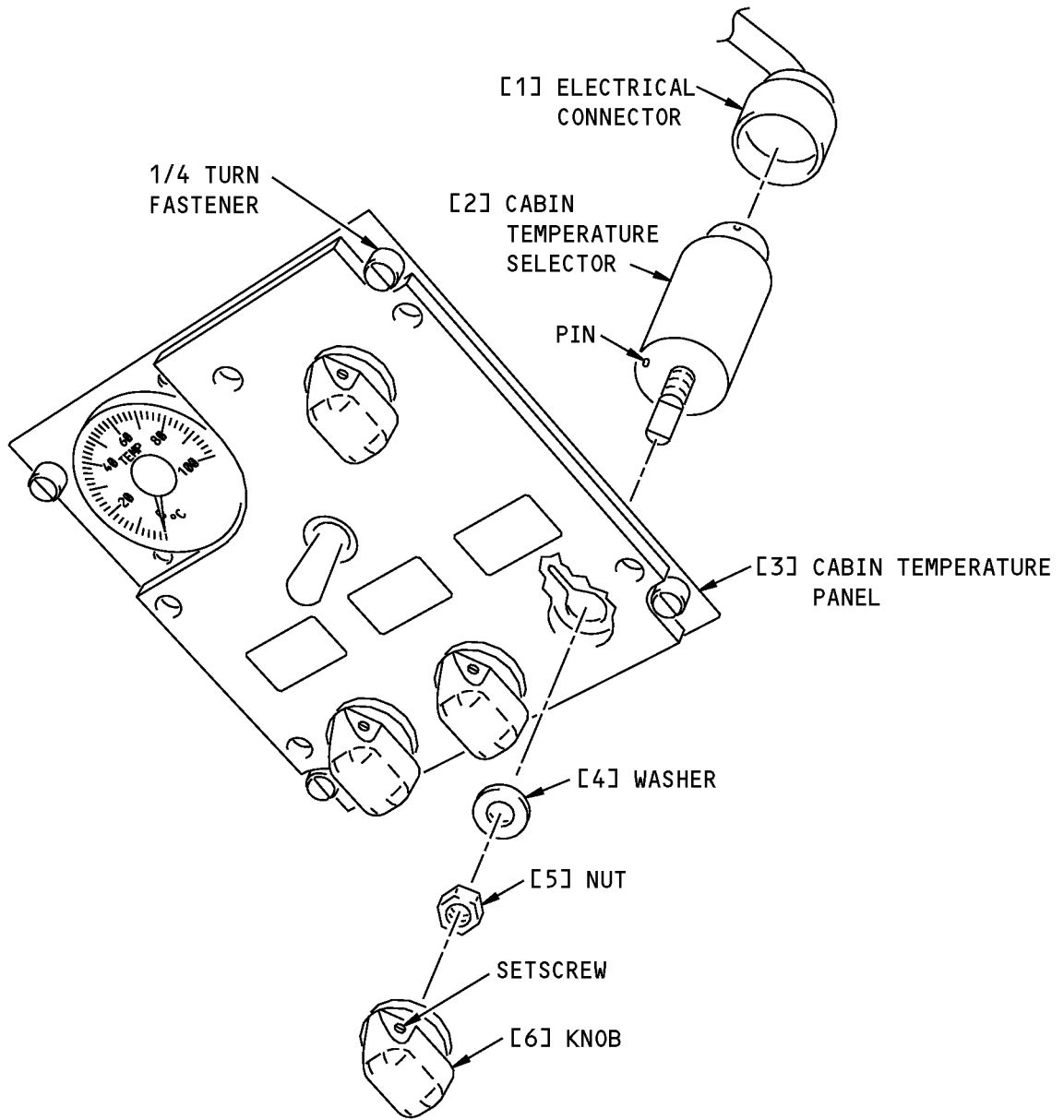
SEE (B)

**Cabin Temperature Selector Installation**  
**Figure 401 (Sheet 1 of 2)/21-61-07-990-803-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**CABIN TEMPERATURE SELECTOR  
(EXAMPLE)**

**B**

**Cabin Temperature Selector Installation  
Figure 401 (Sheet 2 of 2)/21-61-07-990-803-002**

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### AIRCRAFT MAINTENANCE MANUAL

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)
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	21-61-20-02-060	HAP 001-013, 015-026, 028
		21-61-20-03-020	HAP 029-054

##### 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 RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

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.

EFFECTIVITY HAP 001-013, 015-026, 028-054
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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.

### 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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## DUCT TEMPERATURE ANTICIPATOR SENSOR - REMOVAL/INSTALLATION

### 1. General

A. This procedure has these tasks:

- (1) A removal of the duct temperature anticipator sensor.
- (2) An installation of the duct temperature anticipator sensor.

B. There are two duct temperature anticipator sensors. One duct temperature anticipator sensor is for the flight compartment. The other duct temperature anticipator sensor is for the passenger compartment.

#### **TASK 21-61-08-000-801**

### 2. Duct Temperature Anticipator Sensor Removal

(Figure 401, Figure 402)

A. References

Reference	Title
25-21-45-000-801	Sculptured 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 21-61-08-010-001

(1) To get access to the temperature sensor for the flight compartment, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 21-61-08-010-002

(2) To get access to the temperature sensor for the passenger compartment, remove the ceiling liner that is five windows forward of the overwing escape hatches.

NOTE: To remove the liner, do this task: Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

E. Passenger Compartment - Duct Temperature Anticipator Sensor Removal

(Figure 401)

SUBTASK 21-61-08-020-004

(1) Disconnect the electrical connector [2] from the duct temperature anticipator sensor [1].

SUBTASK 21-61-08-020-005

(2) Remove the screws [3] from the duct temperature anticipator sensor [1].

SUBTASK 21-61-08-020-006

(3) Remove the duct temperature anticipator sensor [1].

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### F. Flight Compartment - Duct Temperature Anticipator Sensor Removal

(Figure 402)

SUBTASK 21-61-08-020-001

(1) Disconnect the electrical connector [22] from the duct temperature anticipator sensor [21].

SUBTASK 21-61-08-020-002

(2) Remove the screws [23] from the duct temperature anticipator sensor [21].

SUBTASK 21-61-08-020-003

(3) Remove the duct temperature anticipator sensor [21].

————— **END OF TASK** —————

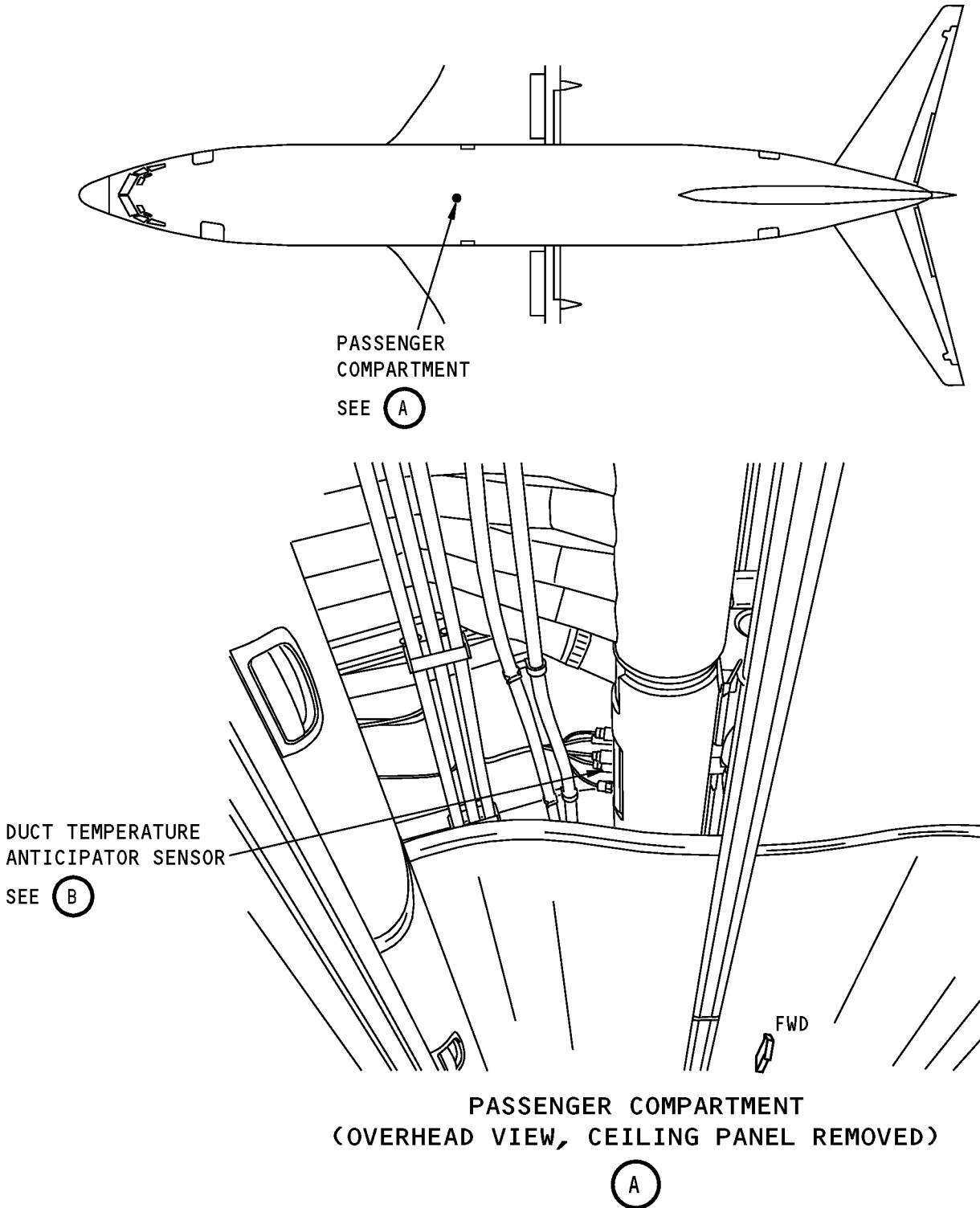
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AIRCRAFT MAINTENANCE MANUAL**



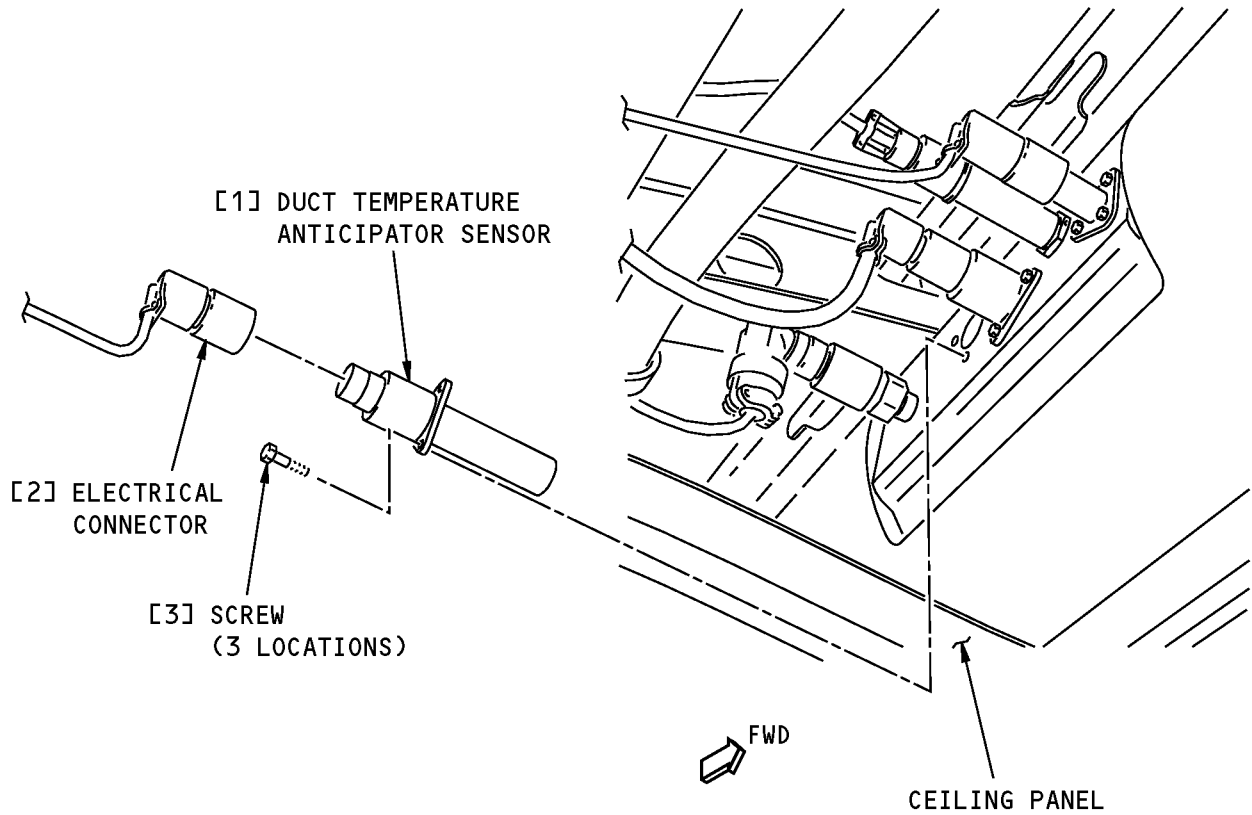
**Passenger Compartment - Duct Temperature Anticipator Sensor Installation  
Figure 401 (Sheet 1 of 2)/21-61-08-990-801**

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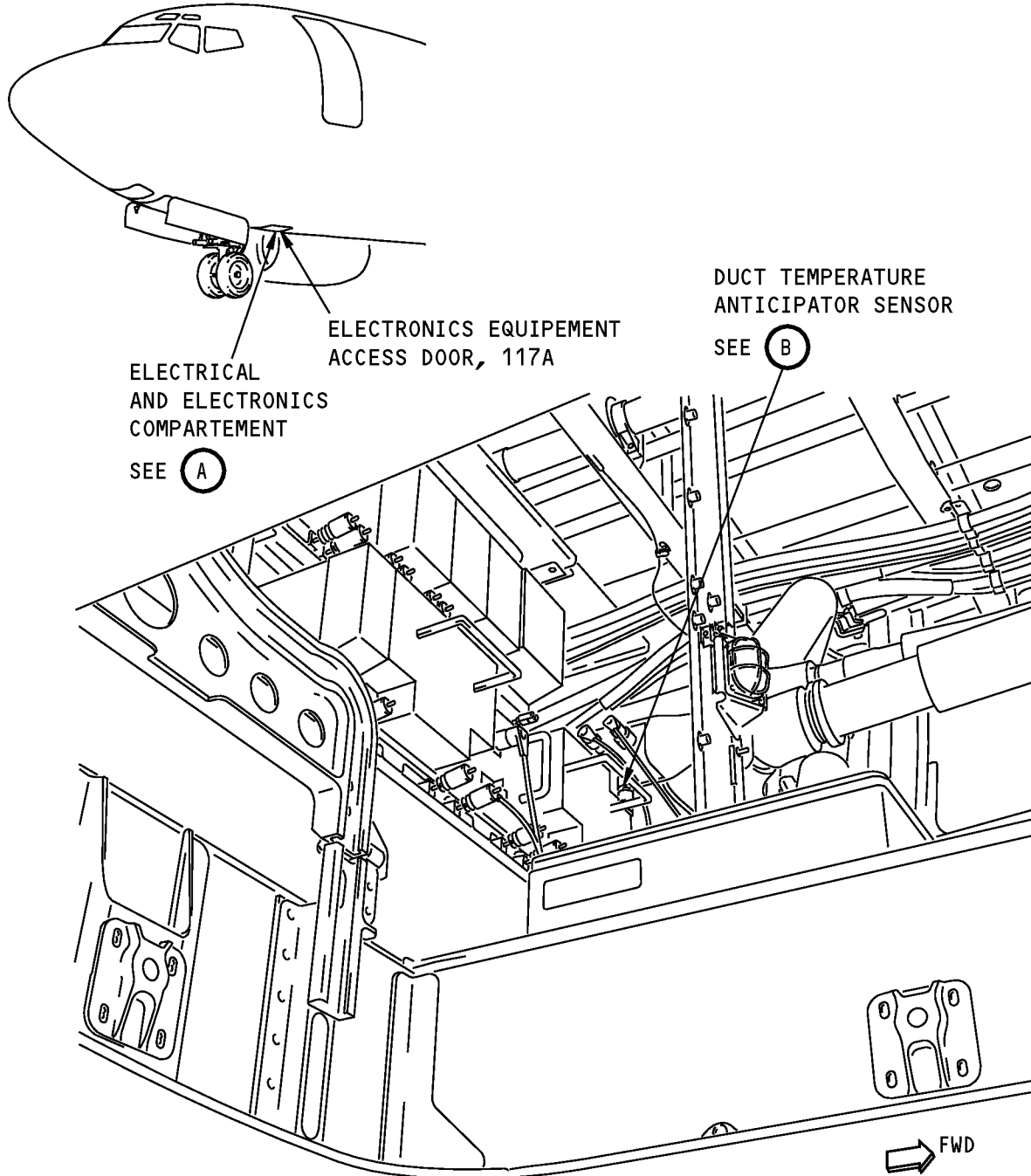
**DUCT TEMPERATURE ANTICIPATOR SENSOR**

**B**

**Passenger Compartment - Duct Temperature Anticipator Sensor Installation  
Figure 401 (Sheet 2 of 2)/21-61-08-990-801**

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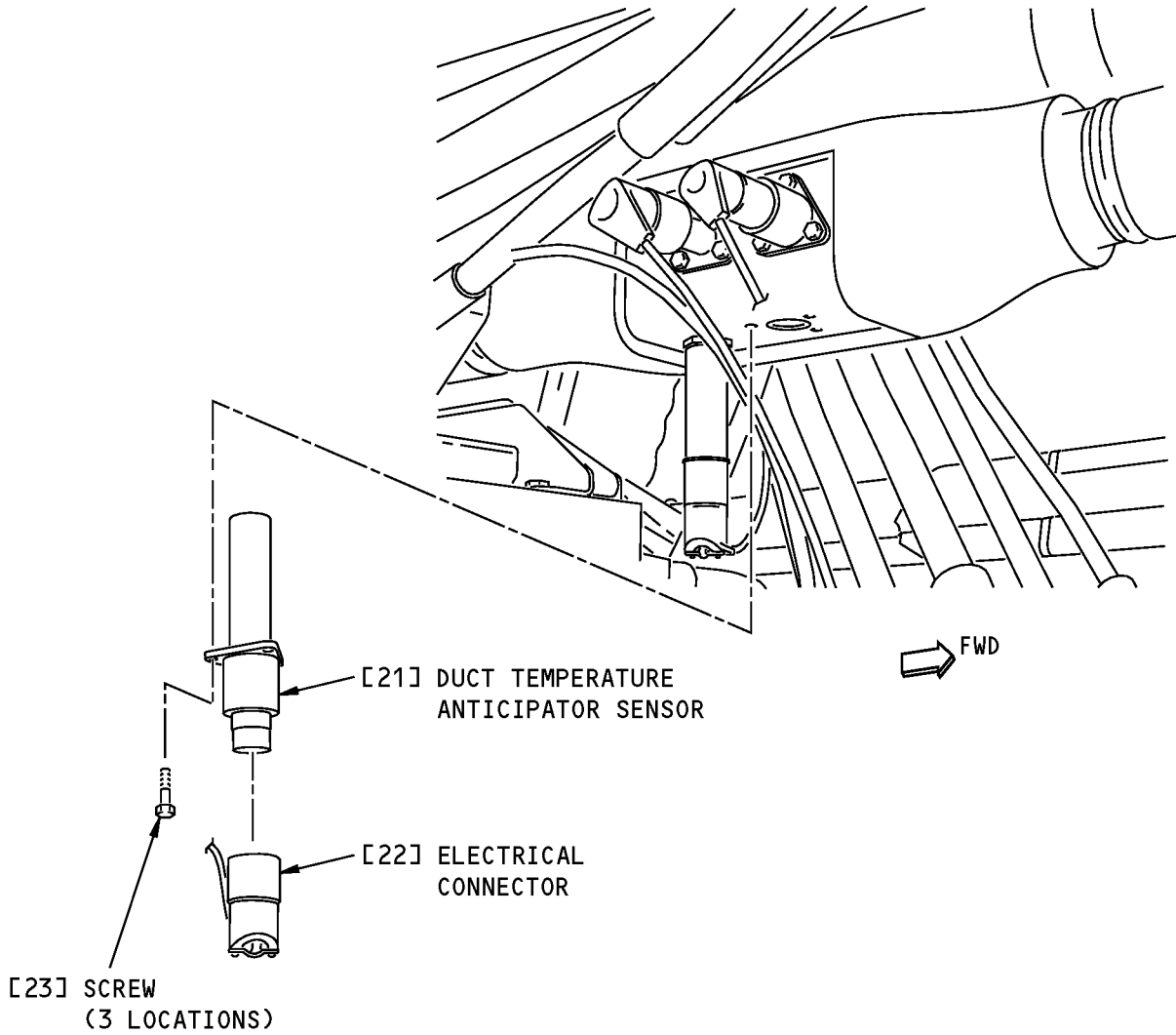
**ELECTRICAL AND ELECTRONICS COMPARTEMENT  
(VIEW THROUGH ACCESS DOOR, 117A)**

**(A)**

**Flight Compartment - Duct Temperature Anticipator Sensor Installation  
Figure 402 (Sheet 1 of 2)/21-61-08-990-802**

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**DUCT TEMPERATURE ANTICIPATOR SENSOR**

**B**

**Flight Compartment - Duct Temperature Anticipator Sensor Installation  
Figure 402 (Sheet 2 of 2)/21-61-08-990-802**

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#### TASK 21-61-08-400-801

### 3. Duct Temperature Anticipator Sensor Installation

(Figure 401, Figure 402)

#### 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)
25-21-45-400-801	Sculptured Ceiling Panel Installation (P/B 401)

#### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Sensor	21-61-08-20-010	HAP 101-999
21	Sensor	21-22-00-04-285	HAP 101-999

#### 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 Compartment - Duct Temperature Anticipator Sensor Installation

(Figure 401)

SUBTASK 21-61-08-420-001

(1) Put the duct temperature anticipator sensor [1] in its position on the duct.

SUBTASK 21-61-08-420-002

(2) Install the screws [3].

SUBTASK 21-61-08-420-003

(3) Connect the electrical connector [2] to the duct temperature anticipator sensor [1].

#### F. Flight Compartment - Duct Temperature Anticipator Sensor Installation

SUBTASK 21-61-08-420-004

(1) Put the duct temperature anticipator sensor [21] in its position on the duct.

SUBTASK 21-61-08-420-005

(2) Install the screws [23].

SUBTASK 21-61-08-420-006

(3) Connect the electrical connector [22] to the duct temperature anticipator sensor [21].

#### G. Do an Installation Test of the Duct Temperature Anticipator Sensor.

SUBTASK 21-61-08-860-001

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

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SUBTASK 21-61-08-010-003

- (2) If you replaced the duct temperature anticipator sensor [1] for the passenger compartment, open this access panel

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-61-08-860-002

- (3) Get access to the cabin temperature controller, installed on the top shelf of the E4 rack in the Electronics Equipment compartment.

SUBTASK 21-61-08-860-003

- (4) Put the BLEED 1 and BLEED 2 switches on the air conditioning module of the P5 overhead panel to the OFF positions.

SUBTASK 21-61-08-860-004

- (5) Put the APU BLEED switch on the air conditioning module to the OFF position.

SUBTASK 21-61-08-860-005

- (6) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00257	AIR CONDITIONING OVERHEAT

SUBTASK 21-61-08-860-006

- (7) Put the CONT CABIN and PASS CABIN temperature selectors on the temperature control module on the P5 overhead panel to the AUTO (12 o'clock) position.

SUBTASK 21-61-08-860-007

- (8) Put the L PACK and R PACK switches on the temperature control module to AUTO.

SUBTASK 21-61-08-860-008

- (9) Put the BITE switch on the controller to the START position.

SUBTASK 21-61-08-710-001

- (10) Push the GO and NO GO lights on the controller.
  - (a) Make sure the lights come on when you push them.

SUBTASK 21-61-08-710-002

- (11) Push and turn the BITE switch to the seventh position (DUCT ANTICIPATOR SENSOR).

NOTE: Make sure you push the BITE switch.

- (a) Make sure the green GO light comes on.

NOTE: The left pack light is for the control cabin sensor and the right pack is for the passenger cabin sensor.

SUBTASK 21-61-08-860-009

- (12) But the BITE switch to the START position.

SUBTASK 21-61-08-860-010

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00257	AIR CONDITIONING OVERHEAT

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### H. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-08-010-004

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-61-08-010-005

- (2) If you replaced the duct temperature anticipator sensor [1] for the passenger compartment, install the ceiling liner that is five windows forward of the overwing escape hatches.

NOTE: To install the liner, do this task: Sculptured Ceiling Panel Installation, TASK 25-21-45-400-801.

SUBTASK 21-61-08-860-011

- (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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## AIRCRAFT MAINTENANCE MANUAL

### 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	Air Conditioning Access Door
192CR	Air Conditioning 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	Air Conditioning 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	Air Conditioning Access Door

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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.
  - (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** —————

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

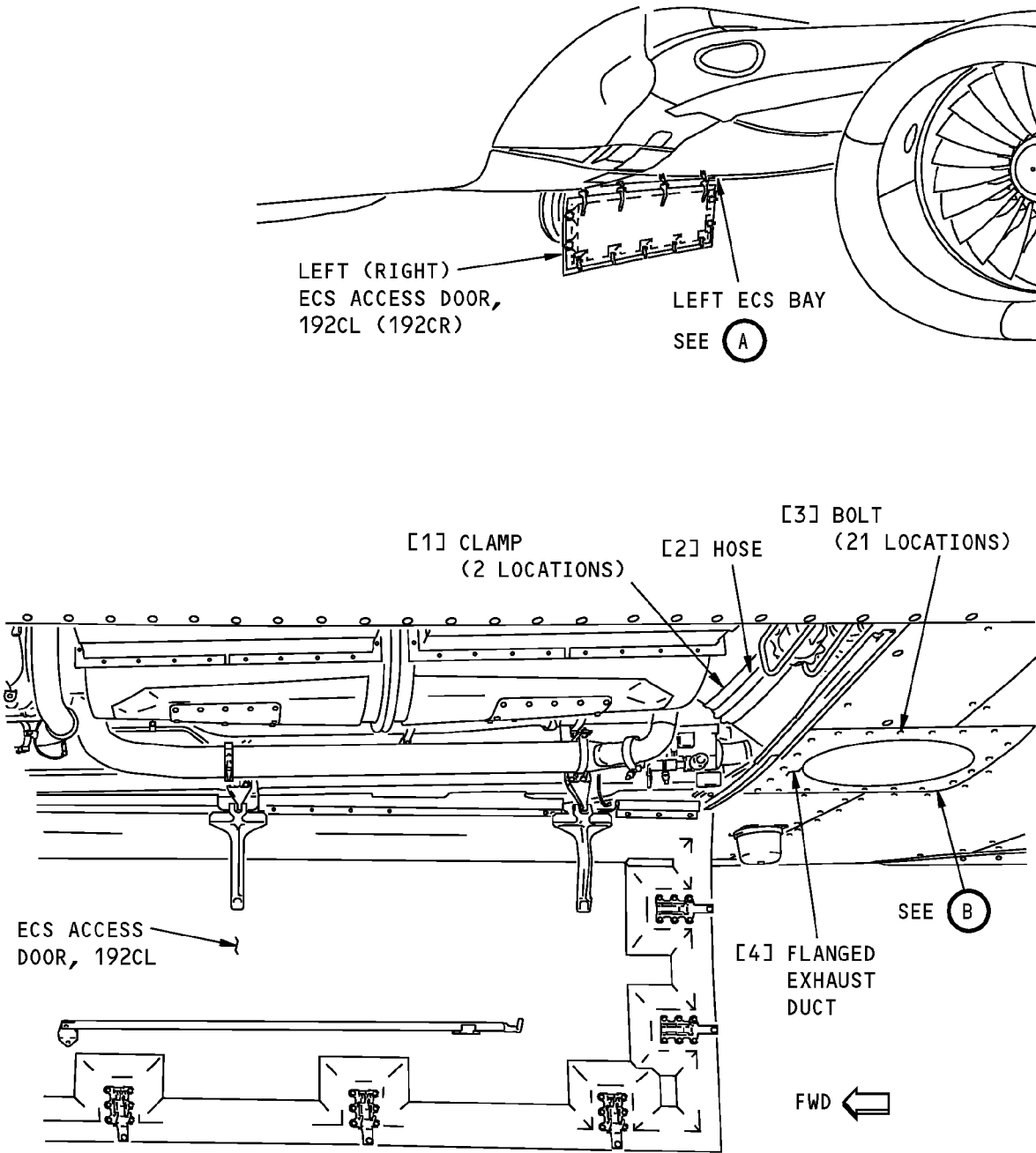
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**LEFT ECS BAY  
(RIGHT ECS BAY IS EQUIVALENT)**

(A)

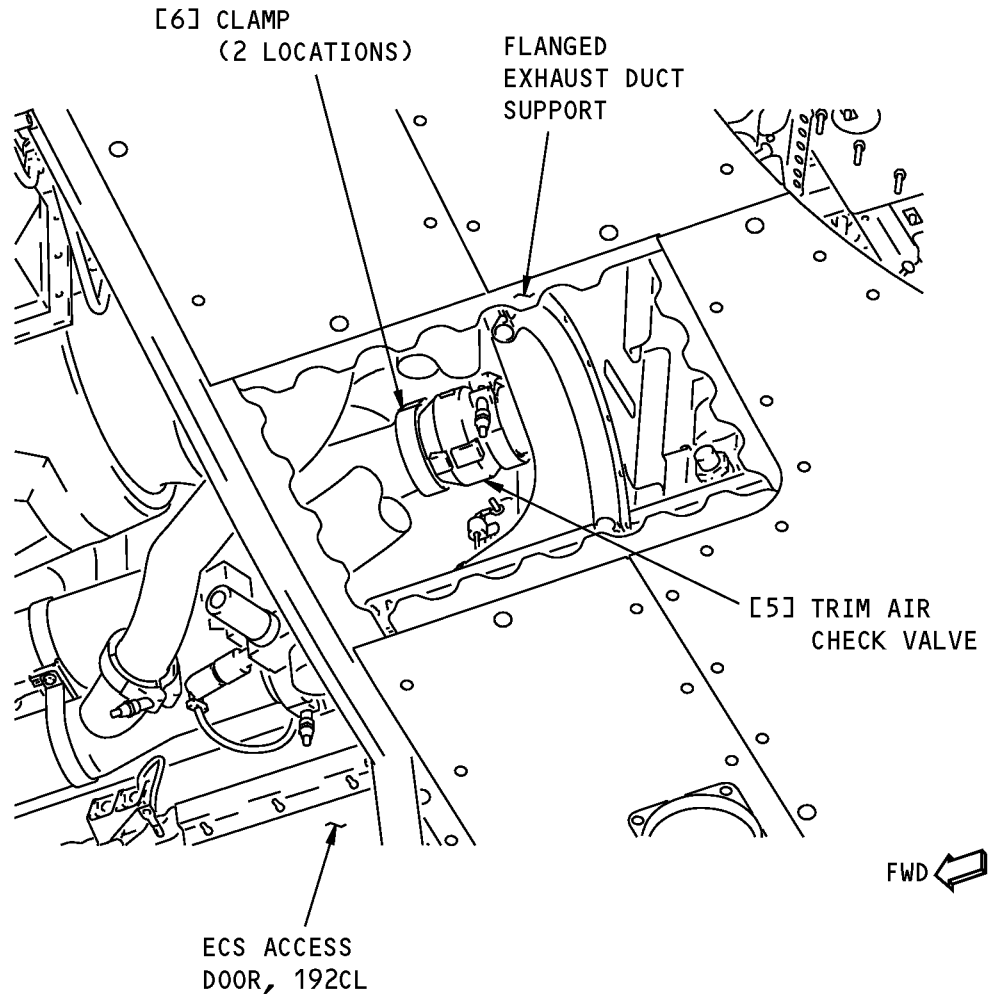
**Trim Air Check Valve Installation  
Figure 401 (Sheet 1 of 2)/21-61-09-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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B

**Trim Air Check Valve Installation  
Figure 401 (Sheet 2 of 2)/21-61-09-990-801**

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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	21-61-09-01-140	HAP 001-013, 015-026, 028-030
		21-61-09-02-130	HAP 031-054
		21-61-09-02-140	HAP 031-036, 038

##### 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	Air Conditioning Access Door
192CR	Air Conditioning 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.

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- (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.

#### 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192DR	ECS High Pressure Access Door

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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** —————

EFFECTIVITY  
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# AIRCRAFT MAINTENANCE MANUAL

## 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**

EFFECTIVITY HAP 001-013, 015-026, 028-054
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# AIRCRAFT MAINTENANCE MANUAL

## 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.

#### HAP 101-999

- (4) There is a cabin temperature sensor for the flight compartment zone and the passenger compartment zone.

#### HAP 001-013, 015-026, 028-054

- (5) There is a cabin temperature sensor for the flight compartment zone, the forward passenger compartment zone and the aft passenger compartment zone.

#### HAP ALL

##### TASK 21-61-10-000-802

### 2. Cabin Temperature Sensor Removal

(Figure 201 or Figure 202 or Figure 203)

#### 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
<b>HAP 001-013, 015-026, 028-054</b>	
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

#### HAP ALL

#### B. Preparation for the Removal

#### HAP 101-999

SUBTASK 21-61-10-000-001

- (1) Do this step for the removal of the sensor 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
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT

SUBTASK 21-61-10-030-001

- (2) Do this step for the removal of the sensor for the 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	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

EFFECTIVITY

HAP ALL

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## HAP 101-999 (Continued)

### HAP 001-013, 015-026, 028-054

SUBTASK 21-61-10-020-003

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

### HAP ALL

SUBTASK 21-61-10-020-004

(4) Find the cabin temperature sensor for the flight compartment zone on the aft ceiling in the flight compartment.

### HAP 001-013, 015-026, 028-054

SUBTASK 21-61-10-020-005

(5) Find the cabin temperature sensors for the passenger compartment zones behind the bullnose covers below the overhead stowage bins on the right side of the airplane.

### HAP 101-999

SUBTASK 21-61-10-860-035

(6) Find the cabin temperature sensor for the passenger compartment zone behind the bullnose cover below the overhead stowage bin on the right forward side of the aisle.

### HAP ALL

#### 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 or Figure 203):

(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.

### HAP 101-999

(b) Disconnect the electrical connector (D510) from the sensor [1].

### HAP 001-013, 015-026, 028-054

(c) Disconnect the electrical connector (D10958) from the sensor [1].

### HAP ALL

(d) Remove the two screws [2] and washers [3] that attach the sensor [1] to the temperature sensor assembly.

(e) Remove the sensor [1].

EFFECTIVITY HAP ALL	
------------------------	--

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## AIRCRAFT MAINTENANCE MANUAL

SUBTASK 21-61-10-860-037

(2) Remove the cabin temperature sensor [35] for passenger compartment zone as follows (Figure 201 or Figure 202 or Figure 203):

(a) Lower the PSU at each end of the bullnose cover:

NOTE: The PSUs must be lowered to get access to the fasteners that retain the closeouts for the bullnose cover.

1) Release the latches that hold the PSUs in position:

a) Put a blunt-ended metal rod, approximately 1/16-inch diameter, into the access holes in the bottom of the PSU until the latch releases.

2) Lower the PSU.

(b) Remove the bullnose cover [21] to get access to the temperature sensor assembly [30] as follows:

1) Do these steps to loosen the closeouts [27] at the ends of the bullnose cover [21]:

a) Open the stowage bin [24] door and remove the screws [22] and the washers [23].

b) Remove the screws [25] through the applicable hole in the MCD/PSU rail [26].

c) Move the closeouts [27] to the adjacent bins to release them from the edges of the bullnose cover [21].

2) Push inboard on the clips [28] to release the bullnose cover [21] from the MCD/PSU rail [26].

NOTE: The notches in the outboard flange of the MCD/PSU rail [26] show the locations of the clips [28].

3) Turn the bullnose cover [21] inboard to remove it.

(c) Disconnect the electrical connectors [36], [37] and [38].

(d) Remove the access plug [31].

(e) Remove the screws [33] and the washers [32].

(f) Remove the screws [29].

(g) Remove the temperature sensor assembly [30] and the washers [34].

(h) Remove the lockwire [42].

(i) Remove the screws [39] and the washers [40].

(j) Remove the sensor [35] and the gasket [41].

————— **END OF TASK** —————

EFFECTIVITY  
HAP ALL

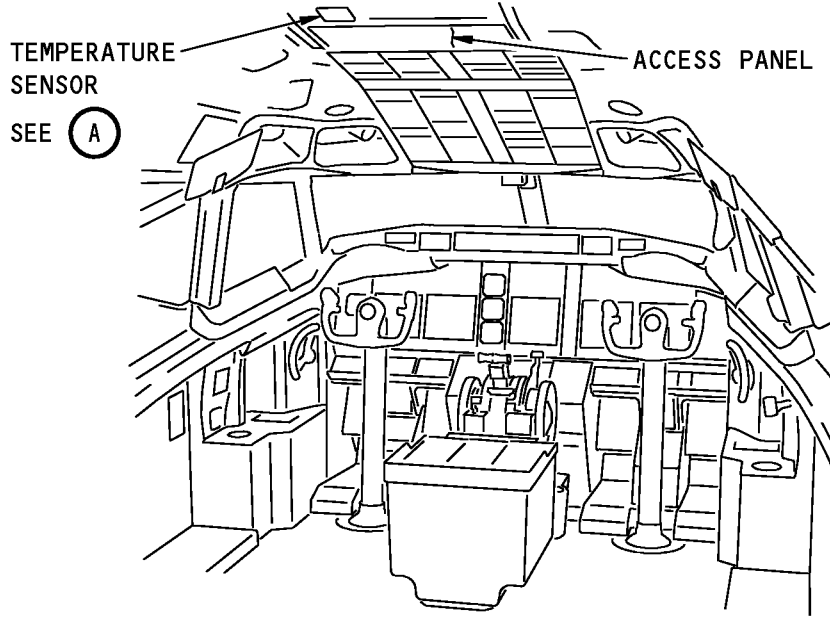
D633A101-HAP

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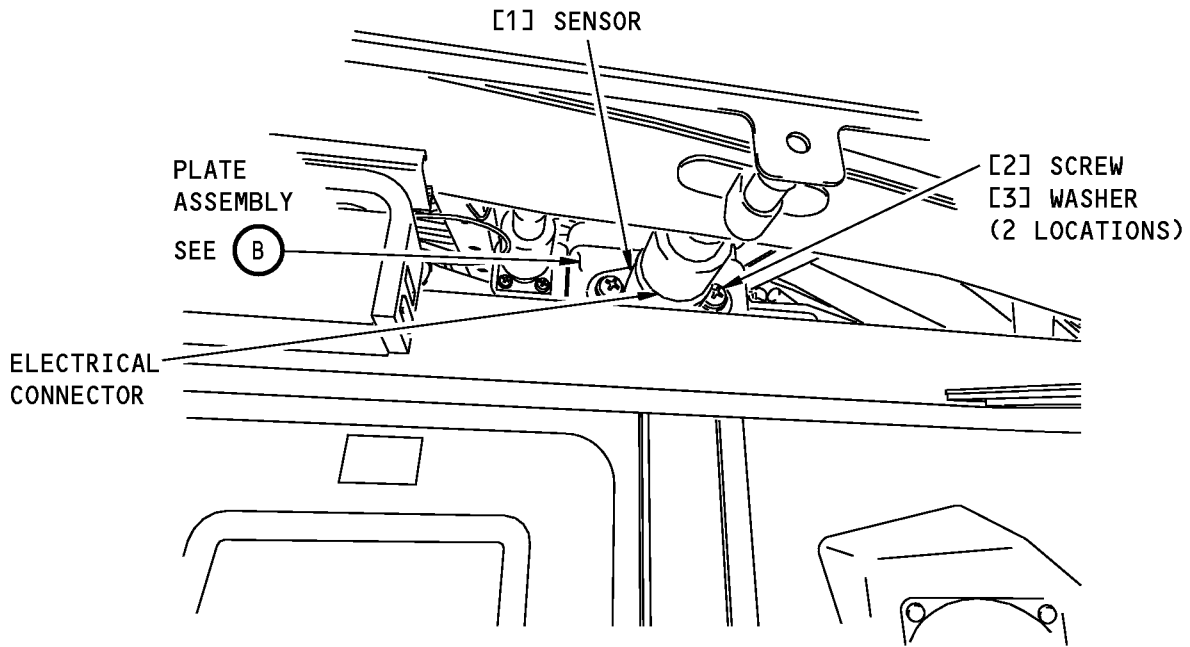
# 21-61-10

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**AIRCRAFT MAINTENANCE MANUAL**



**FLIGHT COMPARTMENT**



FWD

**TEMPERATURE SENSOR  
(VIEW THROUGH ACCESS  
PANEL OPENING)**

(A)

N27054 S0006563496\_V2

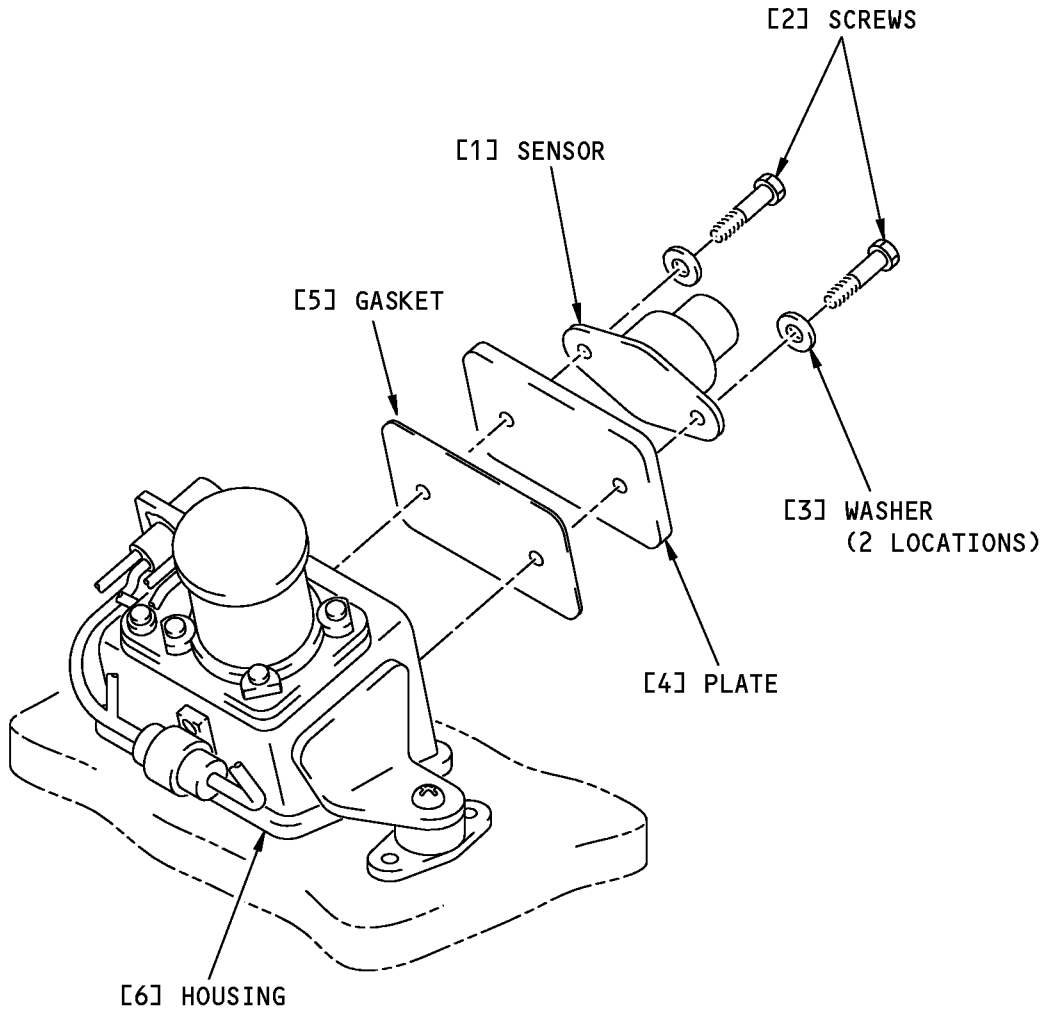
**Flight Compartment - Cabin Temperature Sensor Installation  
Figure 201 (Sheet 1 of 2)/21-61-10-990-806**

EFFECTIVITY  
HAP ALL

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**PLATE ASSEMBLY**

**B**

1737622 S0000314270\_V1

**Flight Compartment - Cabin Temperature Sensor Installation  
Figure 201 (Sheet 2 of 2)/21-61-10-990-806**

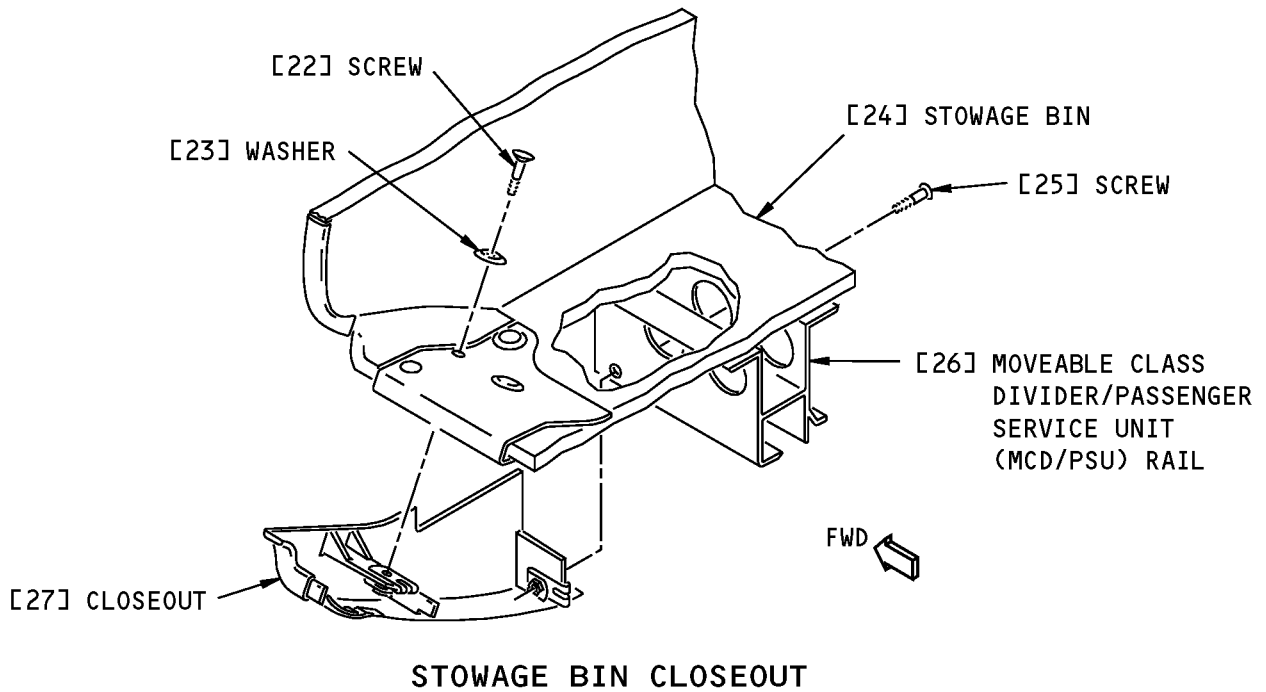
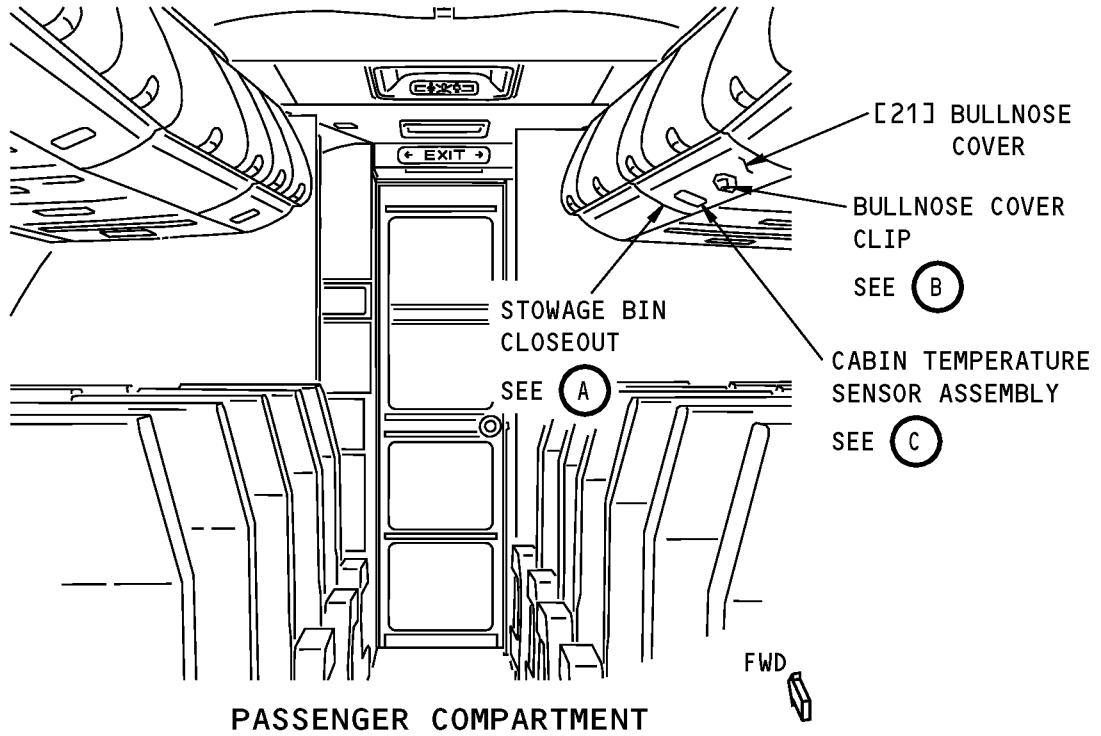
EFFECTIVITY  
HAP ALL

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AIRCRAFT MAINTENANCE MANUAL**



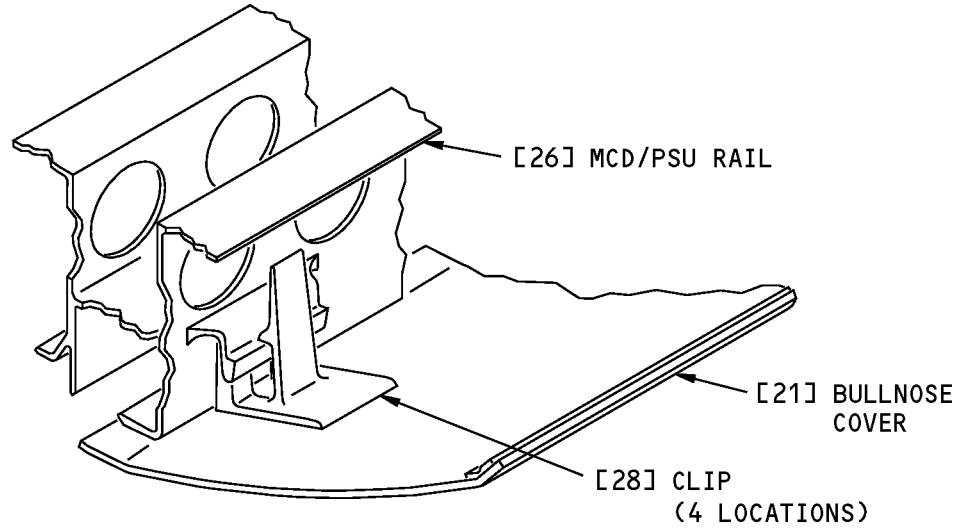
(A)

**Passenger Compartment - Cabin Temperature Sensor Installation  
Figure 202 (Sheet 1 of 4)/21-61-10-990-807**

EFFECTIVITY  
HAP 101-999

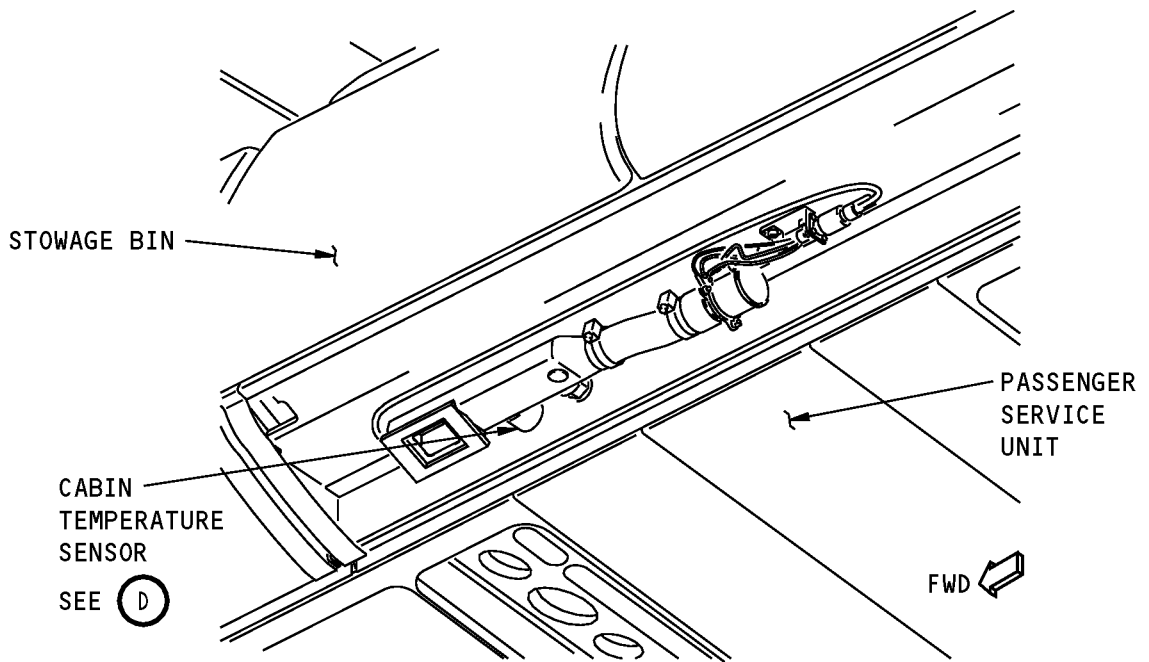
**21-61-10**

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AIRCRAFT MAINTENANCE MANUAL**



**BULLNOSE COVER CLIP**

(B)



**CABIN TEMPERATURE SENSOR ASSEMBLY  
(BULLNOSE COVER REMOVED)**

(C)

**Passenger Compartment - Cabin Temperature Sensor Installation  
Figure 202 (Sheet 2 of 4)/21-61-10-990-807**

EFFECTIVITY  
HAP 101-999

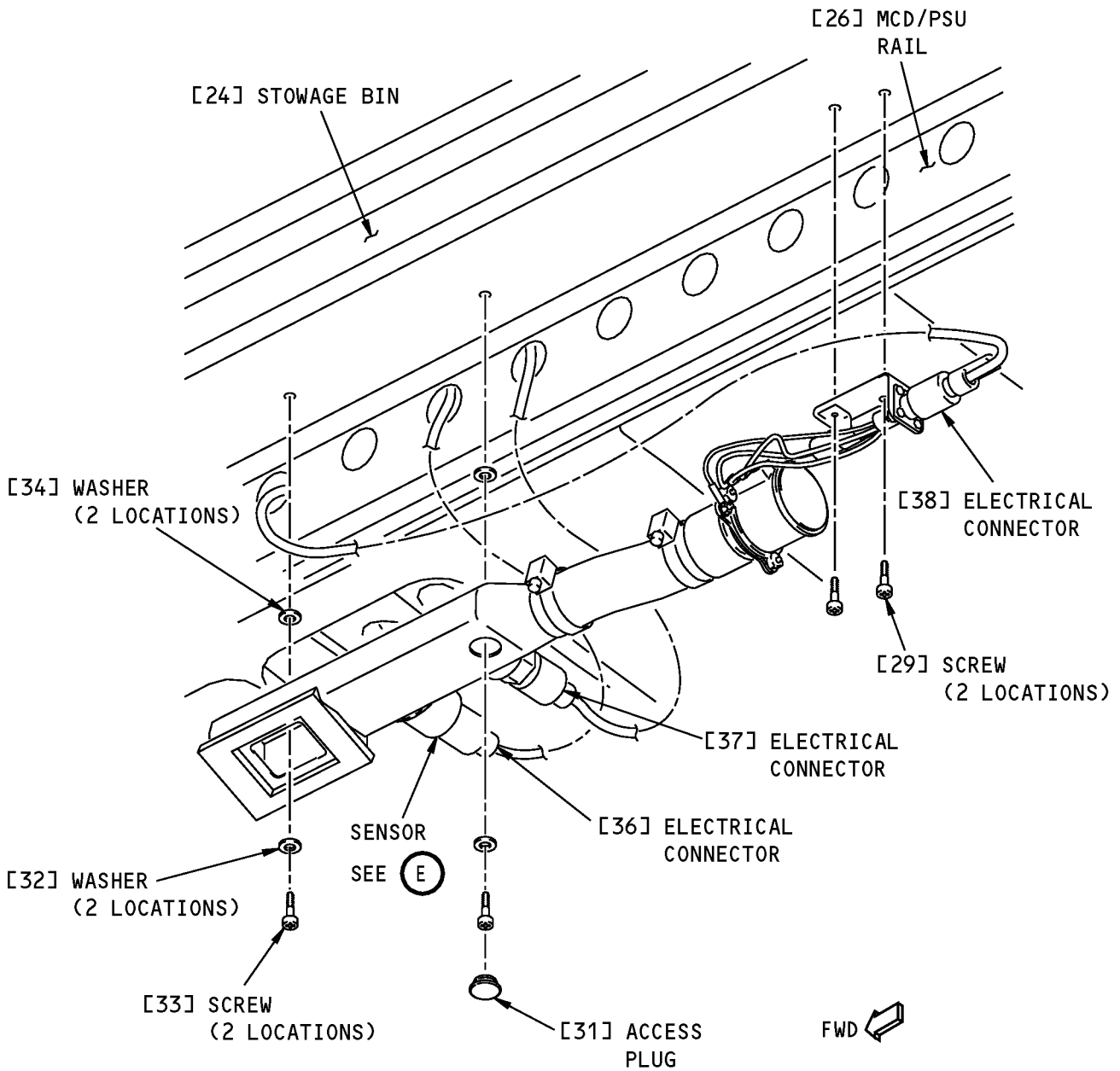
D633A101-HAP

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**CABIN TEMPERATURE SENSOR**

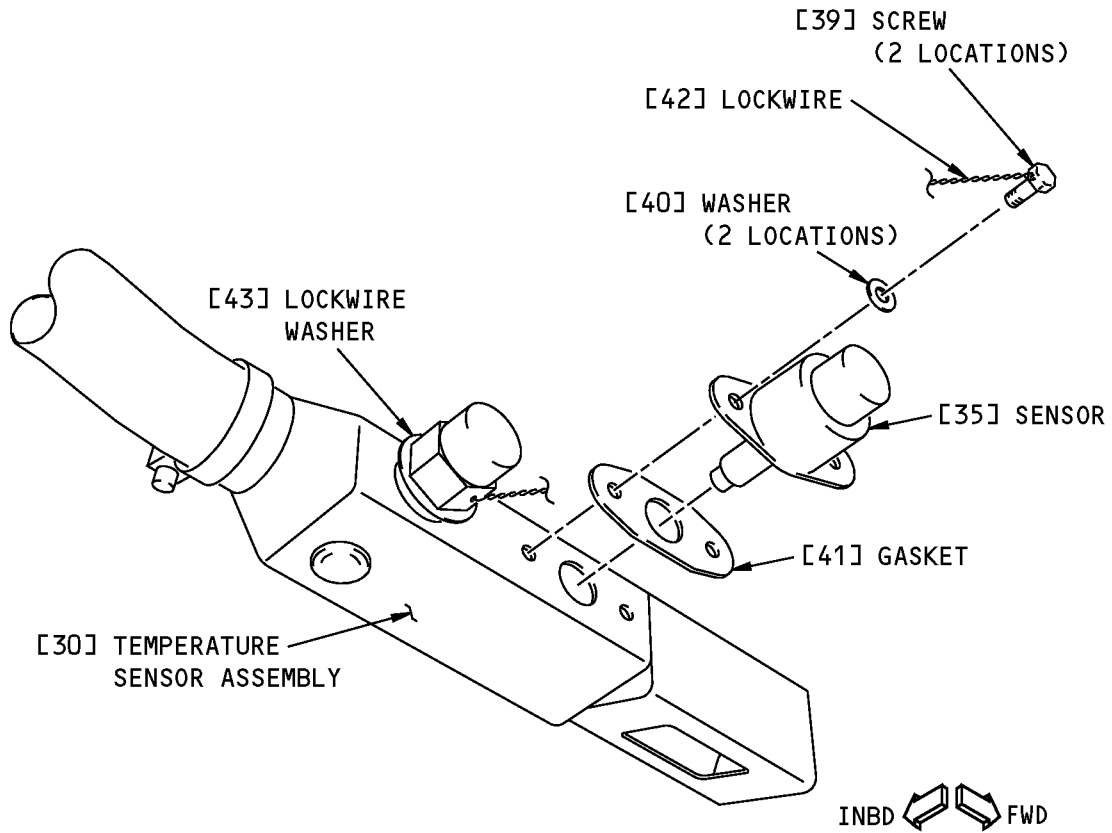


**Passenger Compartment - Cabin Temperature Sensor Installation  
Figure 202 (Sheet 3 of 4)/21-61-10-990-807**

EFFECTIVITY  
HAP 101-999

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SENSOR

(E)

**Passenger Compartment - Cabin Temperature Sensor Installation  
Figure 202 (Sheet 4 of 4)/21-61-10-990-807**

EFFECTIVITY  
HAP 101-999

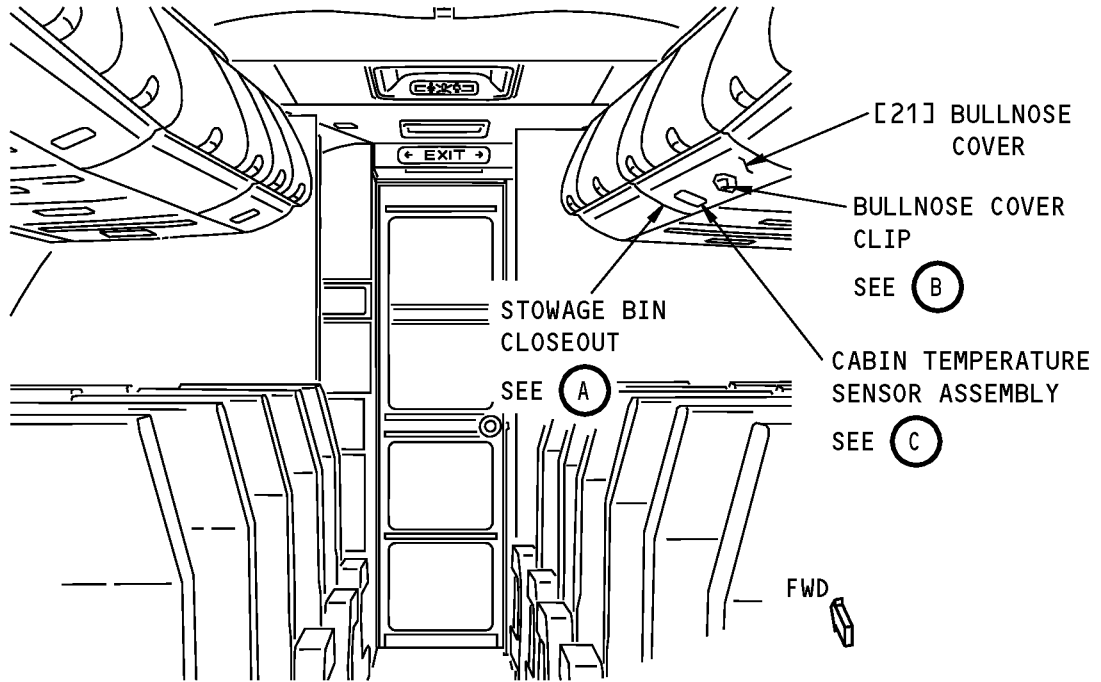
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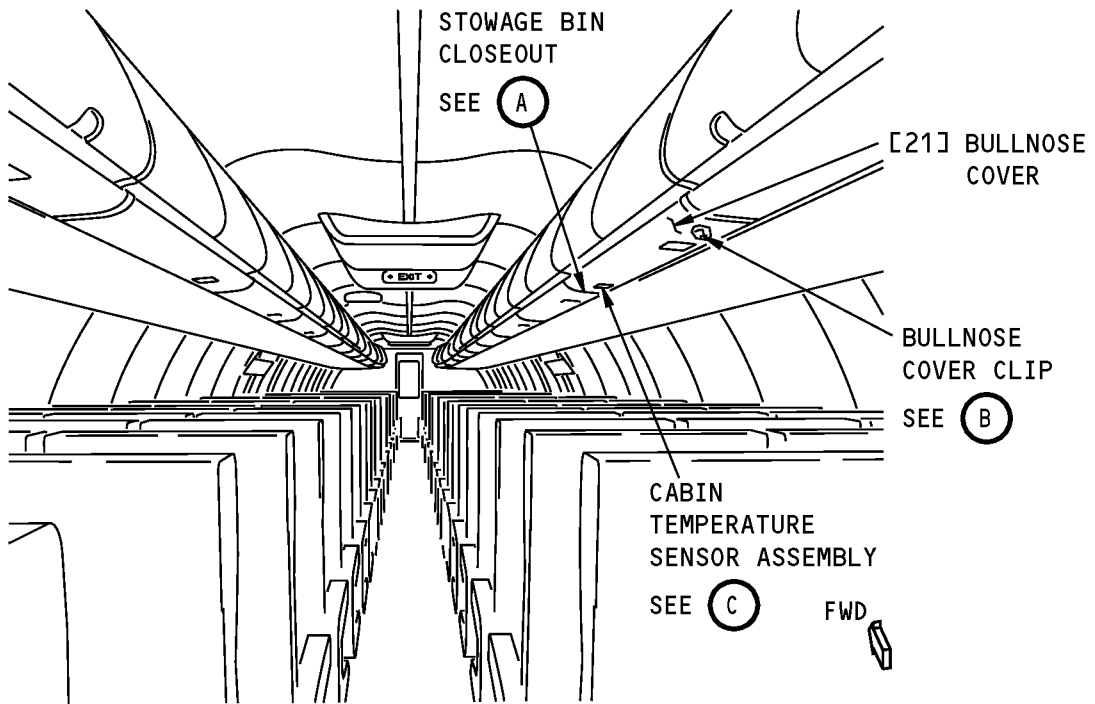
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**FORWARD PASSENGER COMPARTMENT**



**AFT PASSENGER COMPARTMENT**

**Passenger Cabin Temperature Sensor Installation  
Figure 203 (Sheet 1 of 5)/21-61-10-990-809**

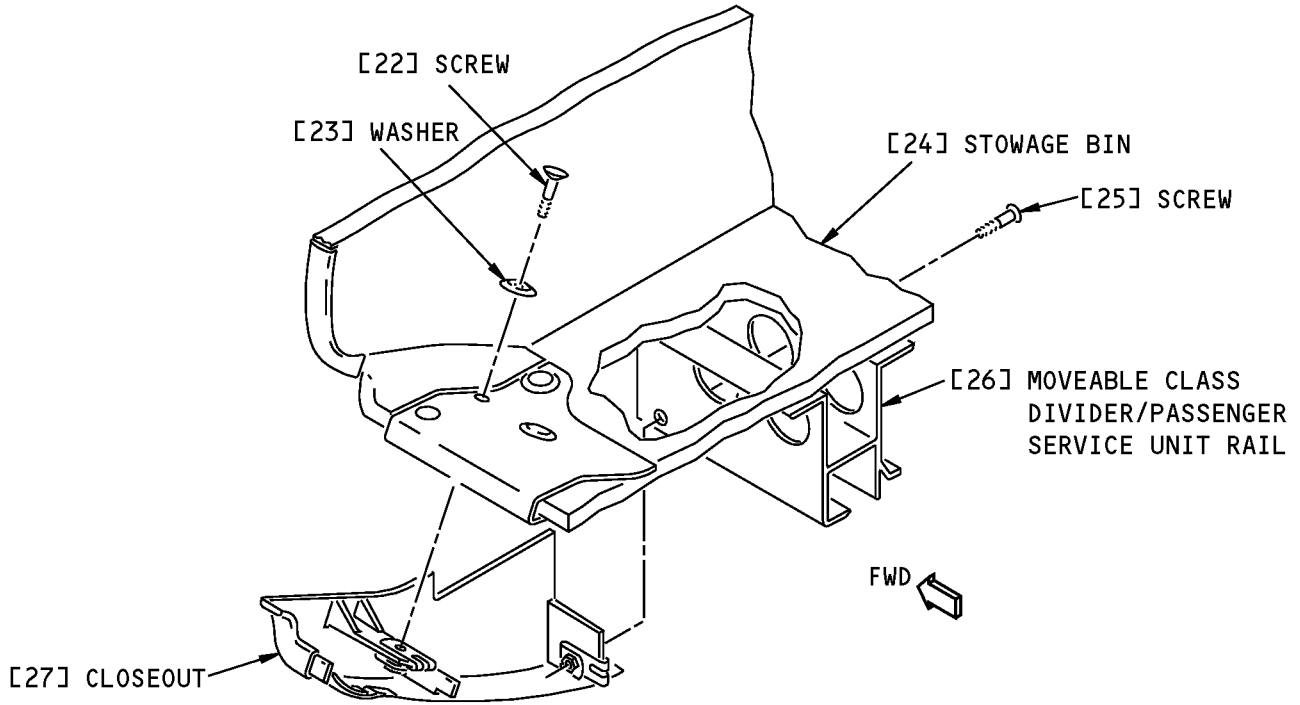
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

**21-61-10**

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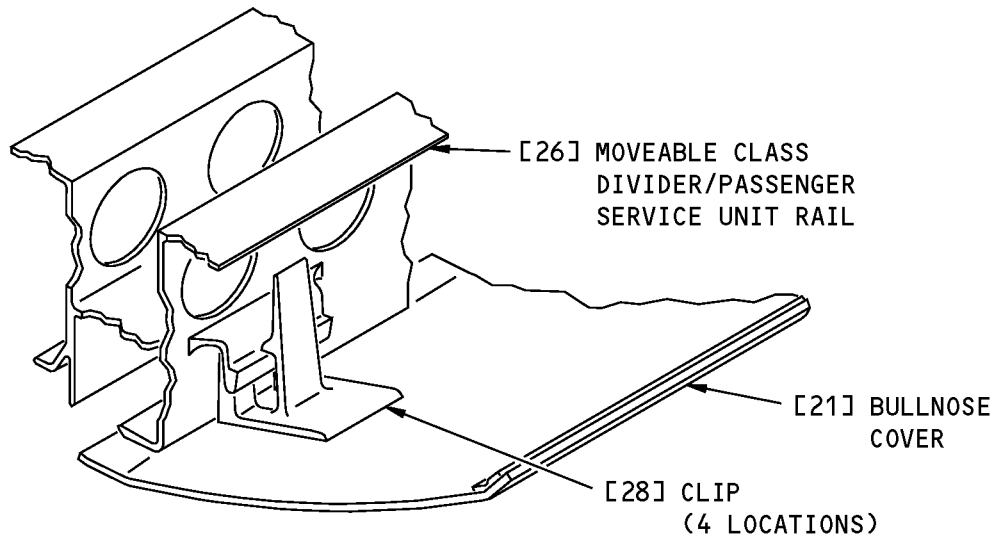
D633A101-HAP

**737-600/700/800/900  
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**STOWAGE BIN CLOSEOUT**

(A)



**BULLNOSE COVER CLIP**

(B)

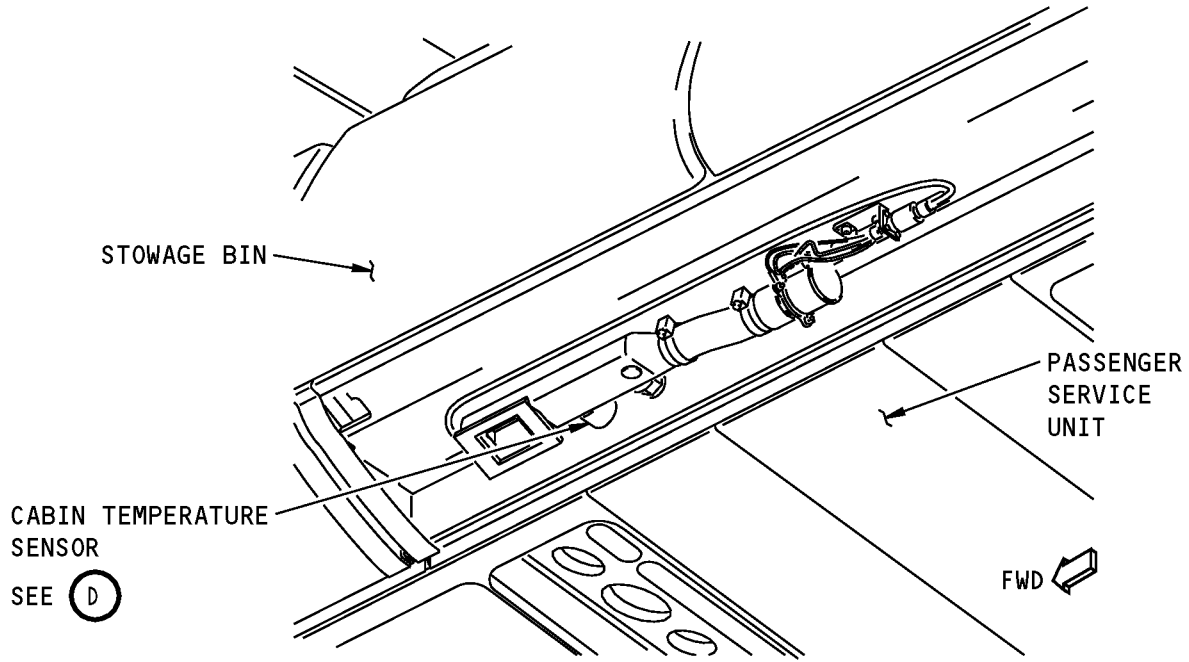
**Passenger Cabin Temperature Sensor Installation  
Figure 203 (Sheet 2 of 5)/21-61-10-990-809**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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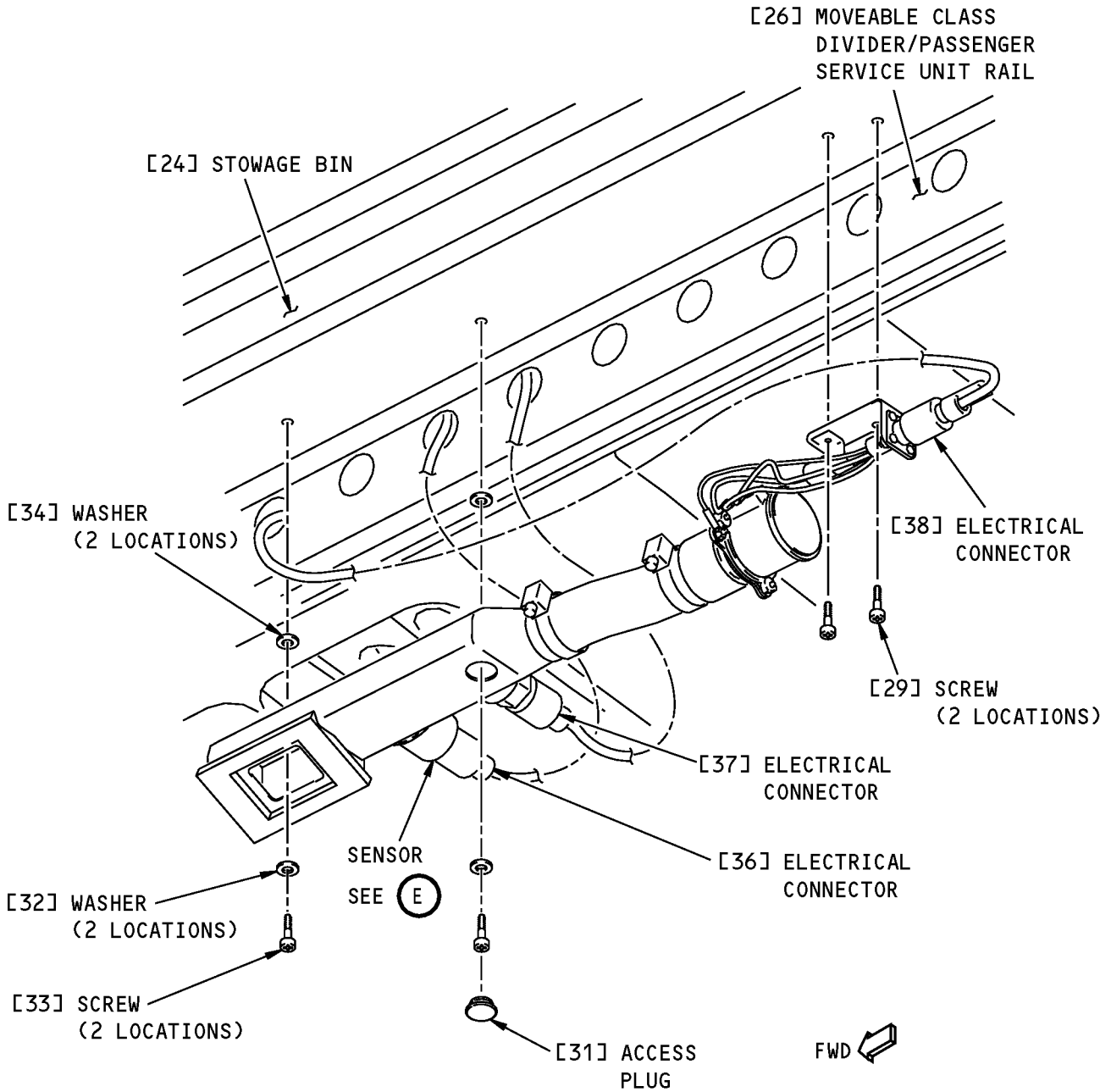
**CABIN TEMPERATURE SENSOR ASSEMBLY  
(BULLNOSE COVER REMOVED)**

(C)

**Passenger Cabin Temperature Sensor Installation  
Figure 203 (Sheet 3 of 5)/21-61-10-990-809**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

D633A101-HAP



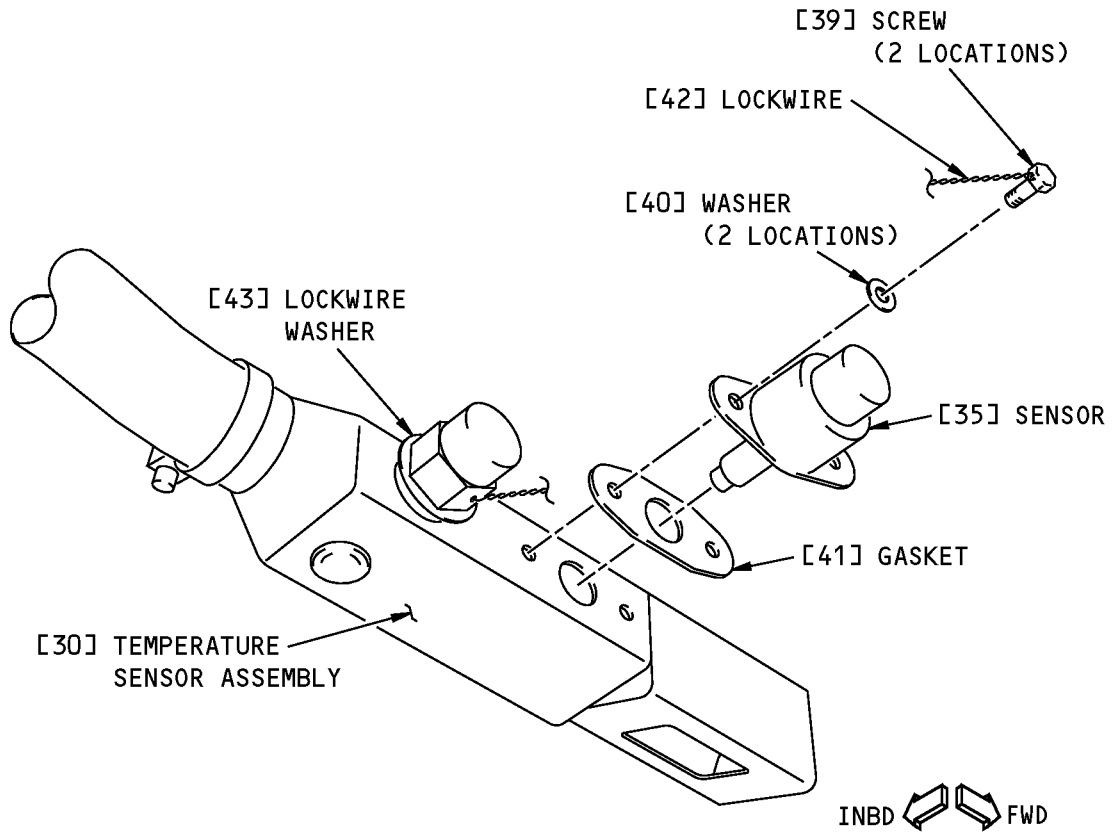
**CABIN TEMPERATURE SENSOR**



**Passenger Cabin Temperature Sensor Installation**  
Figure 203 (Sheet 4 of 5)/21-61-10-990-809

EFFECTIVITY
HAP 001-013, 015-026, 028-054

**21-61-10**



SENSOR

(E)

**Passenger Cabin Temperature Sensor Installation  
Figure 203 (Sheet 5 of 5)/21-61-10-990-809**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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## AIRCRAFT MAINTENANCE MANUAL

### 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

##### 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 or Figure 203)

##### A. References

Reference	Title
20-10-44-400-801	Lockwires 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
21-61-00-700-808-001	Cabin Temperature Controller BITE Test (P/B 501)
24-22-00-860-812	Remove Electrical Power (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
<b>HAP 001-013, 015-026, 028-054</b>	
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

**HAP ALL**

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. 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 or Figure 203):
  - (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].

**HAP 101-999**

- (d) Connect the electrical connector (D510) to the sensor [1].

**HAP 001-013, 015-026, 028-054**

- (e) Connect the electrical connector (D10958) to the sensor [1].

**HAP ALL**

- (f) To install the access panel, lift it to its closed position and make sure the hook and loop strips are fully engaged.

SUBTASK 21-61-10-420-011

- (2) Install the cabin temperature sensor [35] for the passenger compartment as follows (Figure 201 or Figure 202 or Figure 203):
  - (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: Lockwires Installation, TASK 20-10-44-400-801.
  - (d) Put the temperature sensor assembly [30] in its position below the overhead stowage bin.
    - 1) Put the washers [34] in position on the top of the temperature sensor assembly [30].

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- (e) Install the screws [29].
- (f) Install the washers [32] and the screws [33].
- (g) Install the access plug [31].
- (h) Install the electrical connectors [36], [37] and [38].
- (i) Do these steps to install the bullnose cover [21]:
  - 1) Make sure you engage the clips [28] on the MCD/PSU rail [26] as you put the bullnose cover [21] in its position.
  - 2) Move the closeouts [27] over the edges of the bullnose cover [21].
  - 3) Install the washers [23] and the screws [22].
  - 4) Install the screws [25].
- (j) Lift the PSU to its closed position.

#### HAP 101-999

SUBTASK 21-61-10-420-012

- (3) Do this step for the installation of the sensor for the flight compartment zone:
  - (a) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT

SUBTASK 21-61-10-420-013

- (4) Do this step for the installation of the sensor for the passenger compartment zone:
  - (a) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

#### HAP 001-013, 015-026, 028-054

SUBTASK 21-61-10-860-042

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

#### HAP ALL

##### E. Cabin Temperature Sensor Test

#### HAP 101-999

SUBTASK 21-61-10-860-043

- (1) Do a test of the sensor that was replaced. To do the test, do this task: Cabin Temperature Controller BITE Test, TASK 21-61-00-700-808-001.

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**HAP 101-999 (Continued)**

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-10-740-020

- (2) 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.

**HAP ALL**

**F. Put the Airplane Back to Its Usual Condition**

SUBTASK 21-61-10-740-021

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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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# AIRCRAFT MAINTENANCE MANUAL

## CABIN TEMPERATURE SENSOR - INSPECTION/CHECK

### 1. General

A. This procedure performs an electrical resistance check of the cabin temperature sensors.

### HAP 101-999

#### TASK 21-61-10-200-801

### 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
21-61-01-000-801	Cabin Temperature Controller (CTC) Removal (P/B 401)
21-61-01-400-801	Cabin Temperature Controller (CTC) Installation (P/B 401)
21-61-10-000-802	Cabin Temperature Sensor Removal (P/B 201)
21-61-10-400-802	Cabin Temperature Sensor Installation (P/B 201)

#### C. Tools/Equipment

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

Reference	Description
COM-3945	Multimeter - Standard (Part #: 187, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: 87V, Supplier: 89536, A/P Effectivity: 737-ALL) (Part #: MODEL 21, Supplier: 89536, A/P Effectivity: 737-600, -700, -700C, -700ER, -700QC, -800, -900, -900ER, -BBJ) (Part #: MODEL 27, Supplier: 89536, A/P Effectivity: 737-ALL)
COM-3955	Thermometer - Digital (Part #: 51 II, Supplier: 89536, A/P Effectivity: 737-600) (Opt Part #: 51-2, Supplier: 89536, A/P Effectivity: 737-600)

#### 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

#### E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

#### F. Sensor Resistance Check

SUBTASK 21-61-10-210-001

(1) Find the inlet grille that contains the temperature sensor in the control cabin and the passenger cabin (Figure 601).

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HAP 101-999 (Continued)

SUBTASK 21-61-10-970-001

- (2) Use a digital thermometer, COM-3955 or equivalent to measure the ambient cabin temperature near the inlet grille of the temperature sensor.

SUBTASK 21-61-10-010-006

- (3) Do this step (Figure 602):

To get access to the cabin temperature controller (M345) on the E4 rack, open the

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

SUBTASK 21-61-10-020-007

- (4) Do this task: Cabin Temperature Controller (CTC) Removal, TASK 21-61-01-000-801.

SUBTASK 21-61-10-760-001

- (5) Use a standard multimeter, COM-3945 or equivalent to measure the electrical resistance of the cabin temperature sensor at the electrical connector for the cabin temperature controller:
- (a) For the control cabin temperature sensor (M1718), measure the resistance across pin 23 and pin 24 of connector D454 (WDM 21-61-21).
  - (b) For the passenger cabin temperature sensor (M1719), measure the resistance across pin 23 and pin 24 of connector D456 (WDM 21-61-22).

SUBTASK 21-61-10-760-002

- (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 21-61-10-420-007

- (7) Do this task: Cabin Temperature Controller (CTC) Installation, TASK 21-61-01-400-801.

SUBTASK 21-61-10-410-001

- (8) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

————— END OF TASK —————

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HAP ALL

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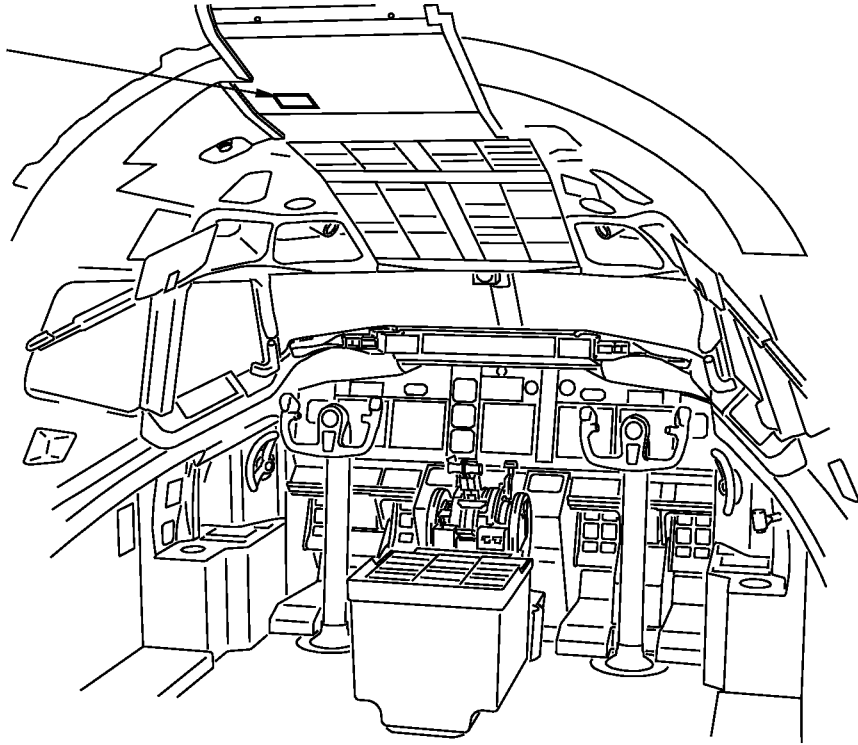
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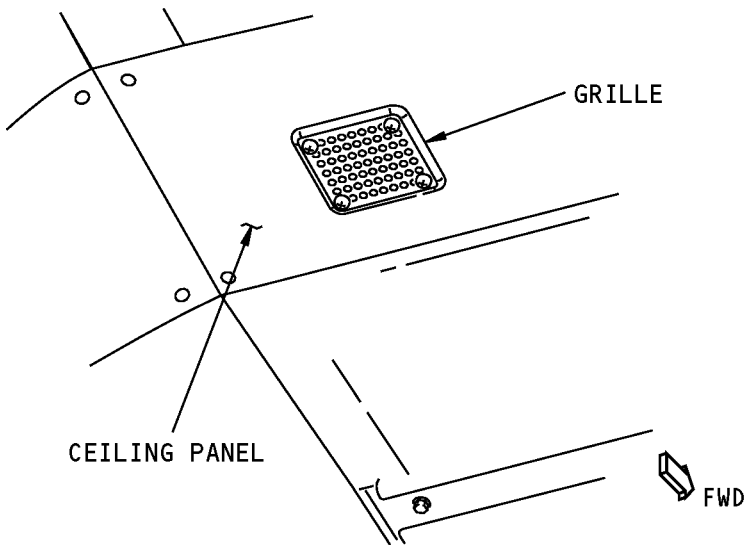
**AIRCRAFT MAINTENANCE MANUAL**

CABIN TEMPERATURE  
SENSOR GRILLE

SEE (A)



**FLIGHT COMPARTMENT**



**CABIN TEMPERATURE SENSOR GRILLE**

(A)

**Cabin Temperature Sensor Inspection  
Figure 601 (Sheet 1 of 2)/21-61-10-990-815**

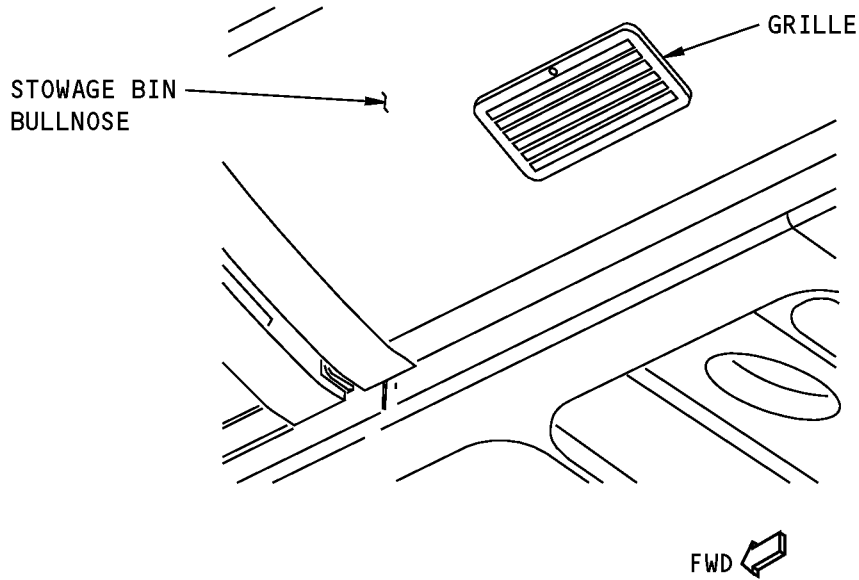
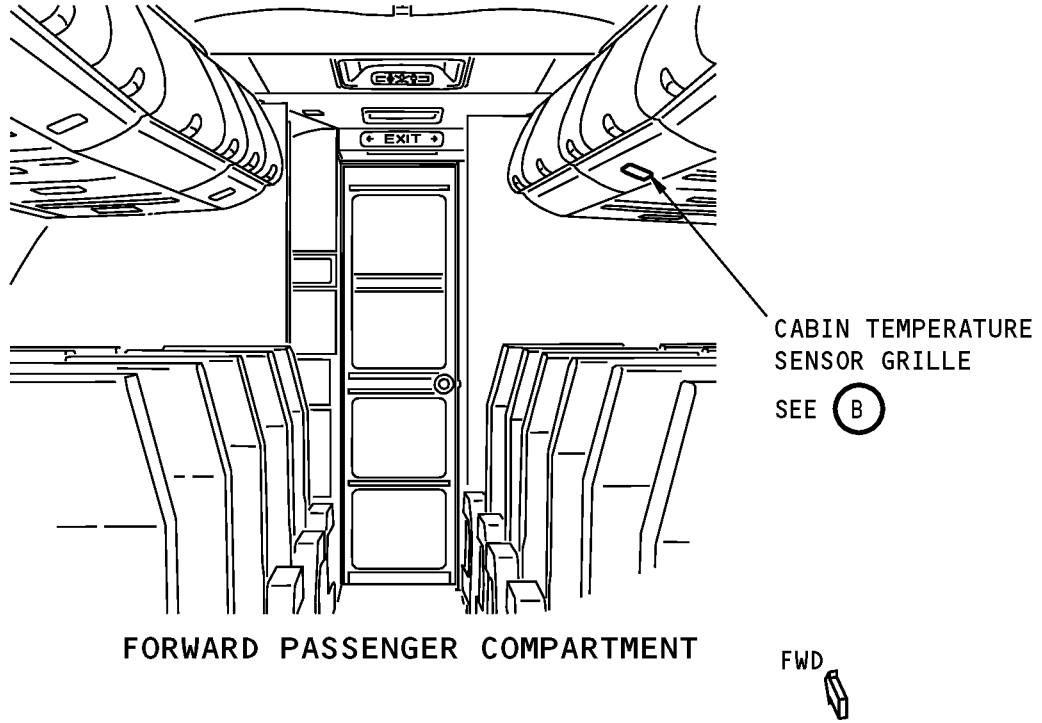
EFFECTIVITY  
HAP 101-999

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**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**



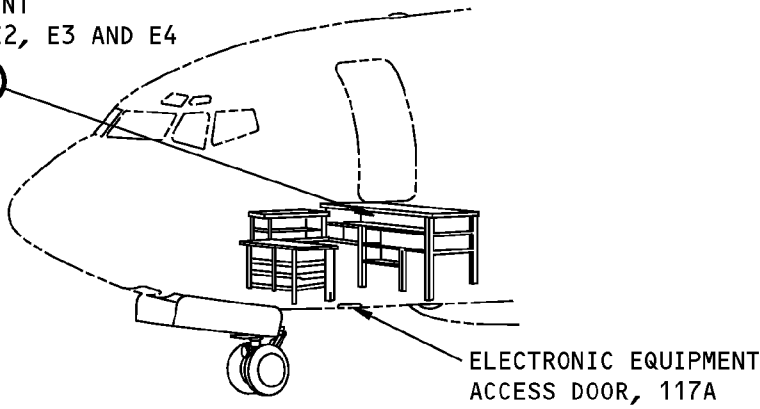
**Cabin Temperature Sensor Inspection  
Figure 601 (Sheet 2 of 2)/21-61-10-990-815**

EFFECTIVITY  
HAP 101-999

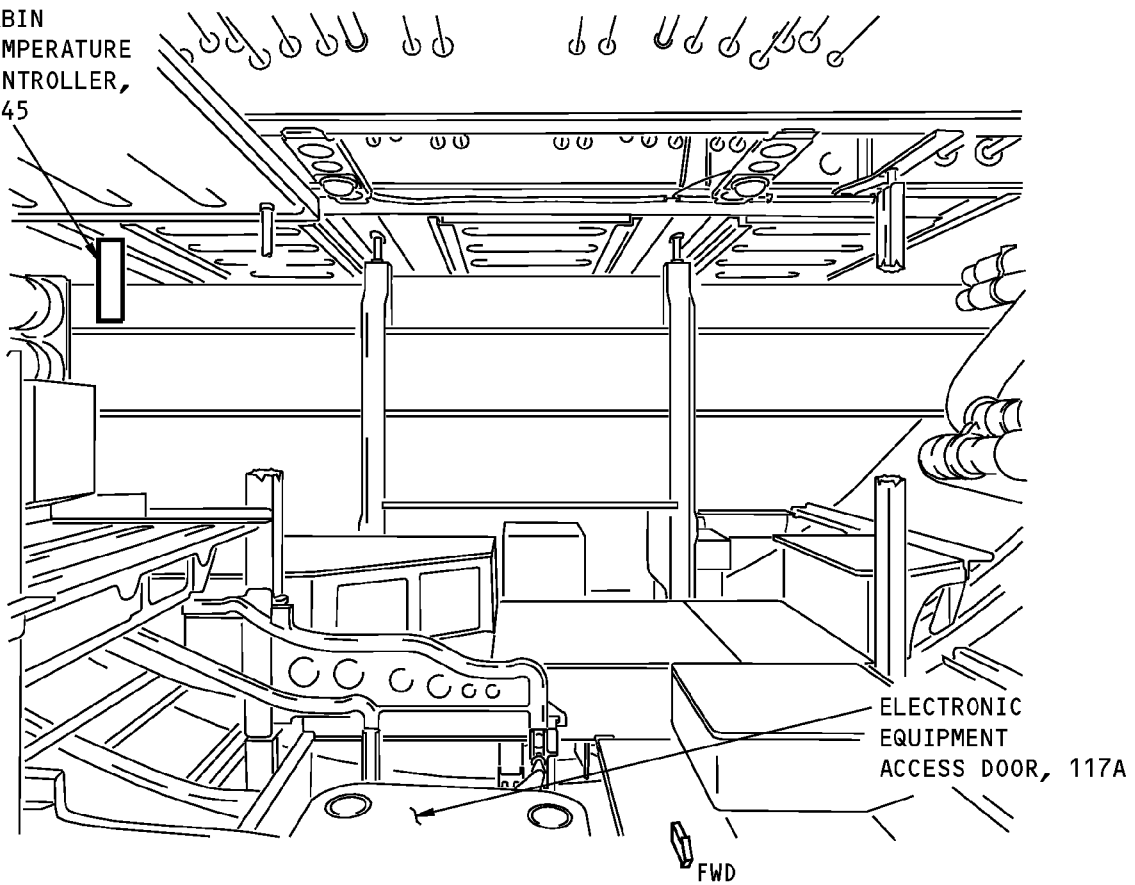
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ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

SEE (A)



CABIN  
TEMPERATURE  
CONTROLLER,  
M345



**ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4**

(A)

**Cabin Temperature Controller Inspection**  
**Figure 602/21-61-10-990-816**

EFFECTIVITY  
HAP 101-999

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TEMPERATURE °F (°C)	RESISTANCE (OHMS)	TEMPERATURE °F (°C)	RESISTANCE (OHMS)
-40 (-40)	43030-45210	55 (12.7)	3200-3340
-35 (-37.2)	36690-38550	60 (15.5)	2850-2980
-30 (-34.4)	31360-32960	65 (18.3)	2550-2660
-25 (-31.6)	26930-28230	70 (21.1)	2290-2390
-20 (-28.8)	23140-24260	75 (23.8)	2040-2130
-15 (-26.1)	19940-20900	80 (26.6)	1830-1920
-10 (-23.3)	17220-18050	85 (29.4)	1650-1730
-5 (-20.5)	14890-15580	90 (32.2)	1480-1560
0 (-17.7)	12950-13550	95 (35)	1340-1400
5 (-15)	11310-11780	100 (37.7)	1210-1270
10 (-12.2)	9870-10290	105 (40.5)	1100-1150
15 (-9.4)	8640-9000	110 (43.3)	990-1040
20 (-6.6)	7520-7900	115 (46.1)	900-950
25 (-3.8)	6660-6940	120 (48.8)	820-860
30 (-1.1)	5870-6120	125 (51.6)	740-790
35 (1.6)	5180-5400	130 (54.4)	680-720
40 (4.4)	4580-4770	135 (57.2)	620-660
45 (7.2)	4060-4230	140 (60)	560-600
50 (10)	3600-3750		

CABIN TEMPERATURE SENSOR P/N 548392-1 (10-60498-3)  
RESISTANCE VS TEMPERATURE TABLE

Cabin Temperature Sensor - Temperature and Resistance Data  
Figure 603 (Sheet 1 of 2)/21-61-10-990-817

EFFECTIVITY  
HAP 101-999

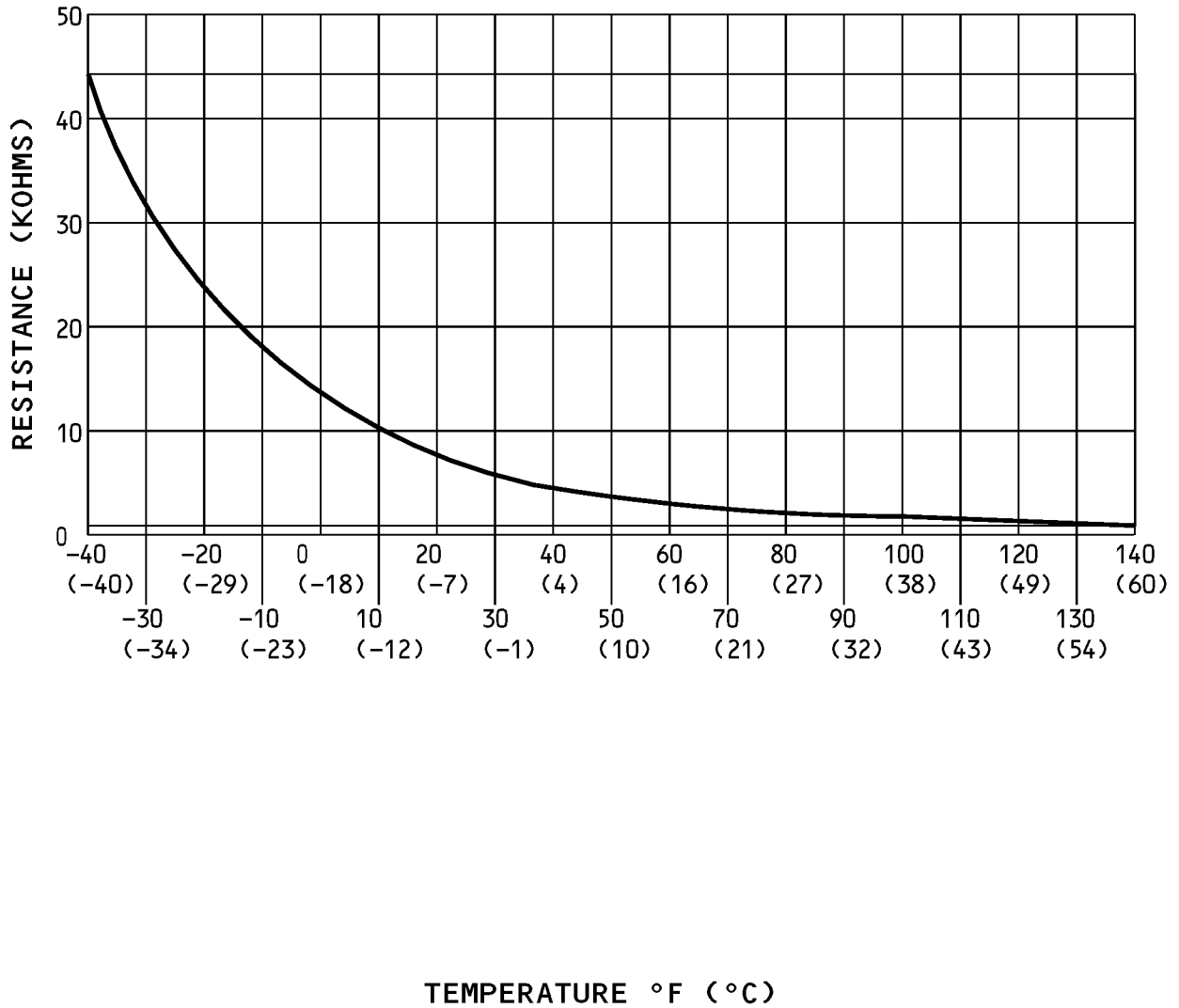
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AIRCRAFT MAINTENANCE MANUAL



CABIN TEMPERATURE SENSOR P/N 548392-1 (10-60498-3)  
RESISTANCE VS TEMPERATURE GRAPH

Cabin Temperature Sensor - Temperature and Resistance Data  
Figure 603 (Sheet 2 of 2)/21-61-10-990-817

EFFECTIVITY  
HAP 101-999

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AIRCRAFT MAINTENANCE MANUAL

HAP 101-999 (Continued)

HAP 001-013, 015-026, 028-054

TASK 21-61-10-200-802

3. Cabin Temperature Sensor Resistance Check

(Figure 604, Figure 605, Figure 606)

A. General

- (1) This procedure does a temperature versus electrical resistance check of the cabin temperature sensors to check for sensor drift.

B. References

Table with 2 columns: Reference, Title. Rows include 21-61-10-000-802 Cabin Temperature Sensor Removal (P/B 201), 21-61-10-400-802 Cabin Temperature Sensor Installation (P/B 201), 21-61-20-000-801 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.

Table with 2 columns: Reference, Description. Rows include COM-3945 Multimeter - Standard (Part #: 187, Supplier: 89536, A/P Effectivity: 737-ALL), COM-3955 Thermometer - Digital (Part #: 51 II, Supplier: 89536, A/P Effectivity: 737-600)

D. Location Zones

Table with 2 columns: Zone, Area. Rows include 210 Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50, 230 Subzone - Passenger Compartment - Body Station 360.00 to 663.75

E. Access Panels

Table with 2 columns: Number, Name/Location. Row includes 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 604).

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.

EFFECTIVITY HAP ALL

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## AIRCRAFT MAINTENANCE MANUAL

HAP 001-013, 015-026, 028-054 (Continued)

SUBTASK 21-61-10-970-003

(3) Do this step (Figure 605):

To get access to the left and right pack/zone temperature controllers (M1442 and M1443) on the E3 rack, open the

<u>Number</u>	<u>Name/Location</u>
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

SUBTASK 21-61-10-020-010

(5) Use a standard multimeter, COM-3945 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).

SUBTASK 21-61-10-210-003

(6) Compare the measured resistance to the resistance given in (Figure 606) 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 606), 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.

EFFECTIVITY  
HAP ALL

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**AIRCRAFT MAINTENANCE MANUAL**

**HAP 001-013, 015-026, 028-054 (Continued)**

SUBTASK 21-61-10-760-003

(8) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

————— **END OF TASK** —————

EFFECTIVITY  
HAP ALL

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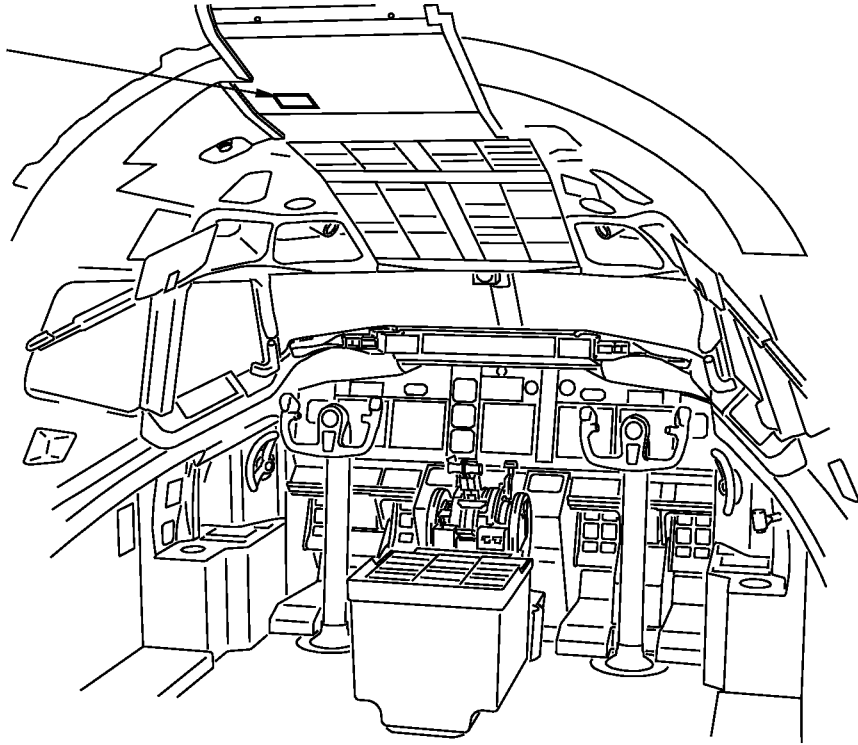
**21-61-10**

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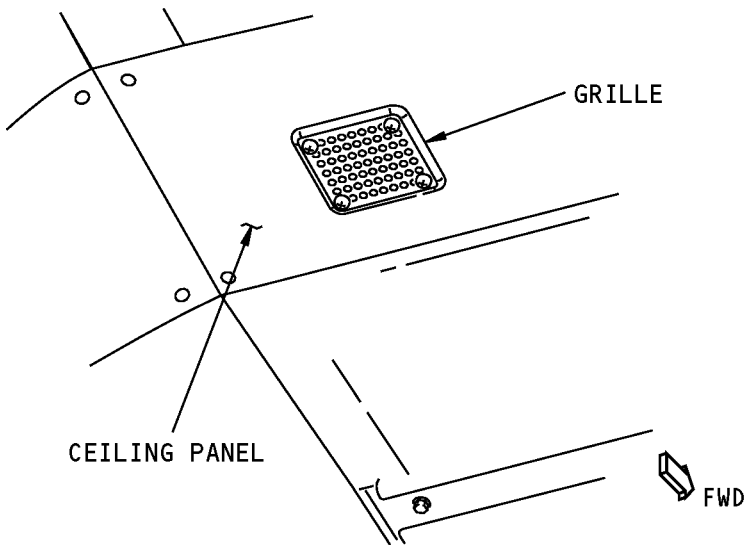
**AIRCRAFT MAINTENANCE MANUAL**

CABIN TEMPERATURE  
SENSOR GRILLE

SEE (A)



**FLIGHT COMPARTMENT**



**CABIN TEMPERATURE SENSOR GRILLE**

(A)

**Cabin Temperature Sensor Inspection  
Figure 604 (Sheet 1 of 3)/21-61-10-990-810**

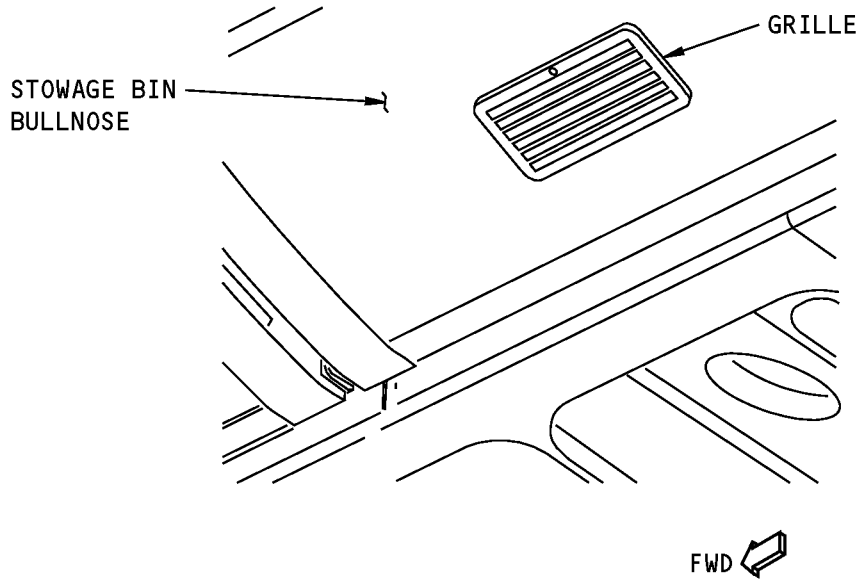
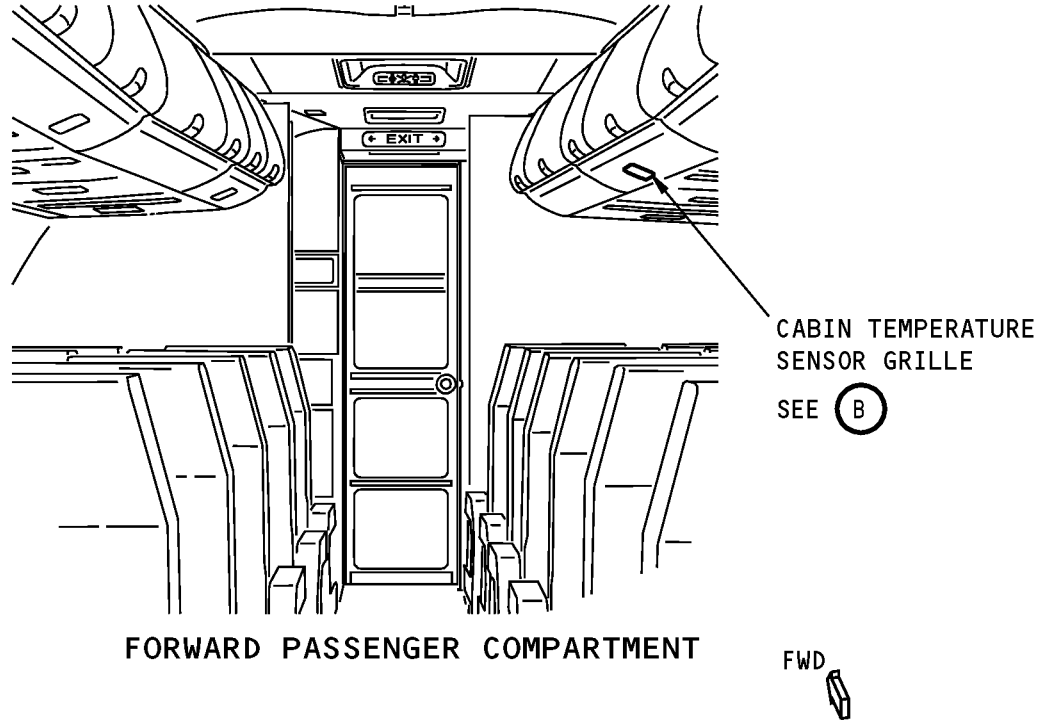
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**737-600/700/800/900  
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(B)

**Cabin Temperature Sensor Inspection  
Figure 604 (Sheet 2 of 3)/21-61-10-990-810**

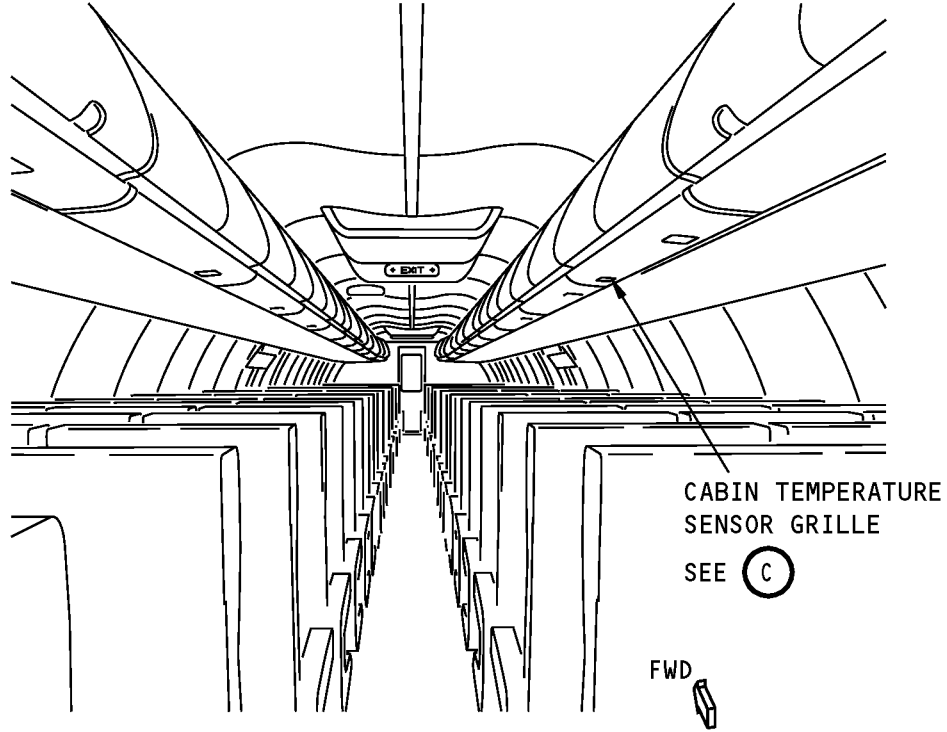
EFFECTIVITY  
HAP 001-013, 015-026, 028-054

**21-61-10**

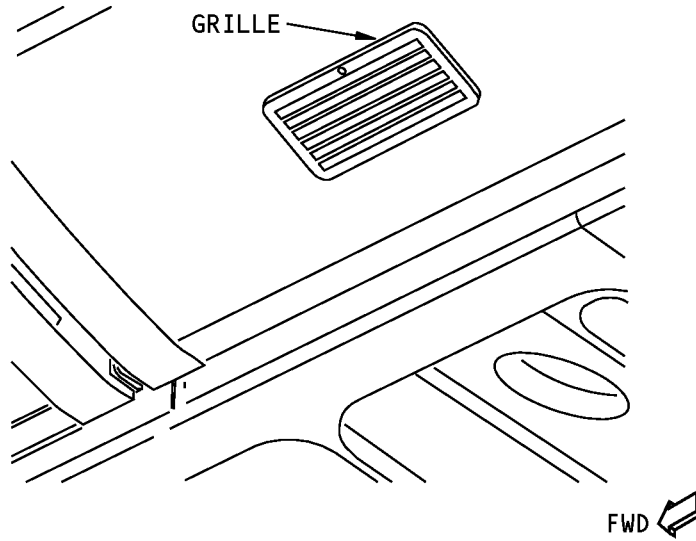
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**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**



**AFT PASSENGER COMPARTMENT**



**CABIN TEMPERATURE SENSOR GRILLE**

(C)

**Cabin Temperature Sensor Inspection  
Figure 604 (Sheet 3 of 3)/21-61-10-990-810**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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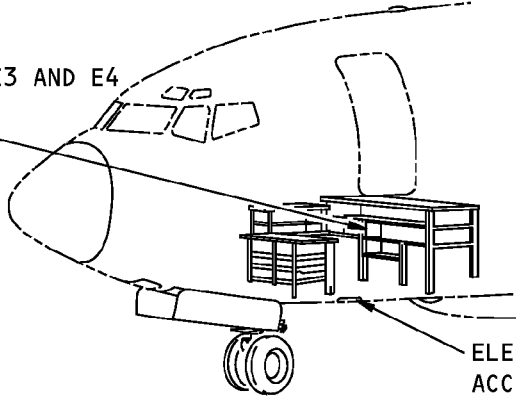
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ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

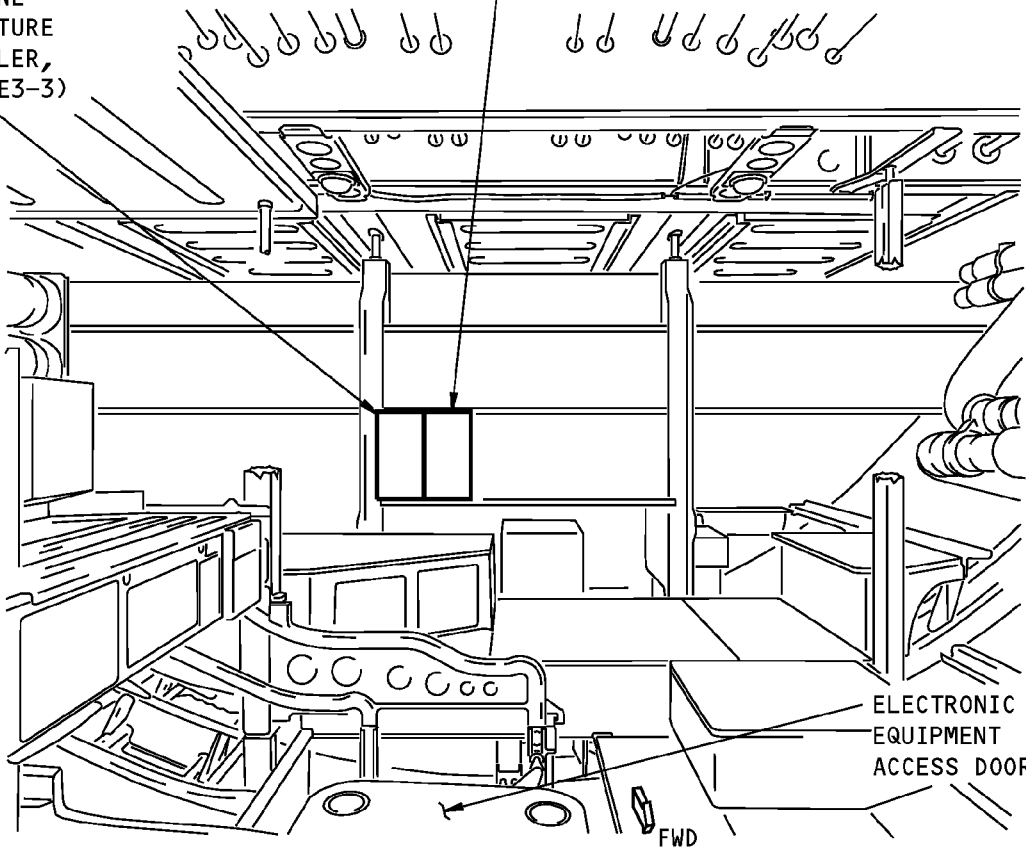
SEE (A)



ELECTRONIC EQUIPMENT  
ACCESS DOOR, 117A

PACK/ZONE  
TEMPERATURE  
CONTROLLER,  
M1443 (E3-3)

PACK/ZONE TEMPERATURE  
CONTROLLER, M1442 (E3-3)



ELECTRONIC  
EQUIPMENT  
ACCESS DOOR, 117A

ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

(A)

**Pack/Zone Temperature Controller Inspection**  
**Figure 605/21-61-10-990-812**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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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**

**Cabin Temperature Sensor - Temperature and Resistance Data  
Figure 606 (Sheet 1 of 4)/21-61-10-990-814**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

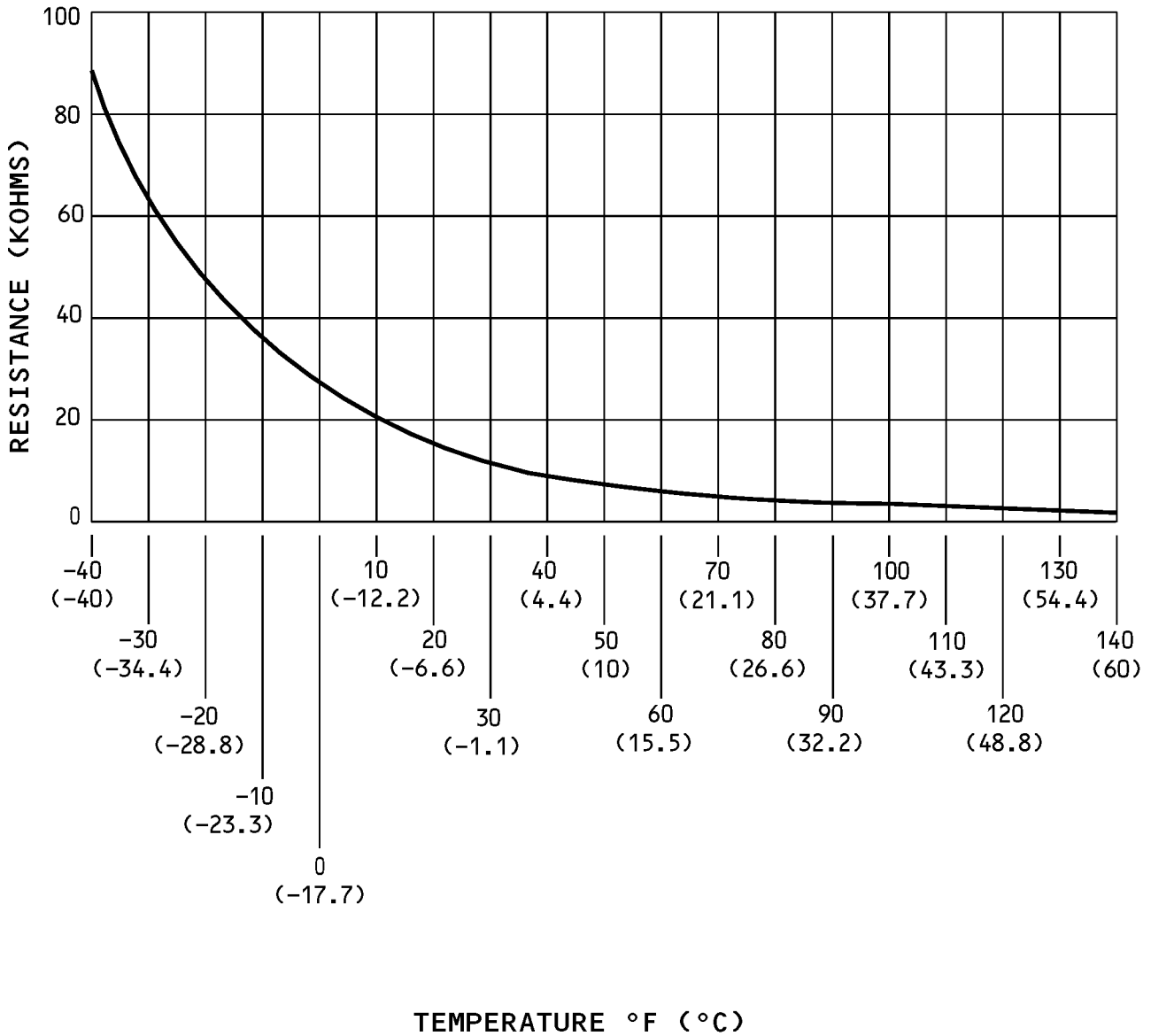
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AIRCRAFT MAINTENANCE MANUAL  
MAIN ELEMENT



CABIN TEMPERATURE SENSOR P/N 624018-1 (S210T130-21)  
RESISTANCE VS TEMPERATURE GRAPH

Cabin Temperature Sensor - Temperature and Resistance Data  
Figure 606 (Sheet 2 of 4)/21-61-10-990-814

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**

**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**

**Cabin Temperature Sensor - Temperature and Resistance Data  
Figure 606 (Sheet 3 of 4)/21-61-10-990-814**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

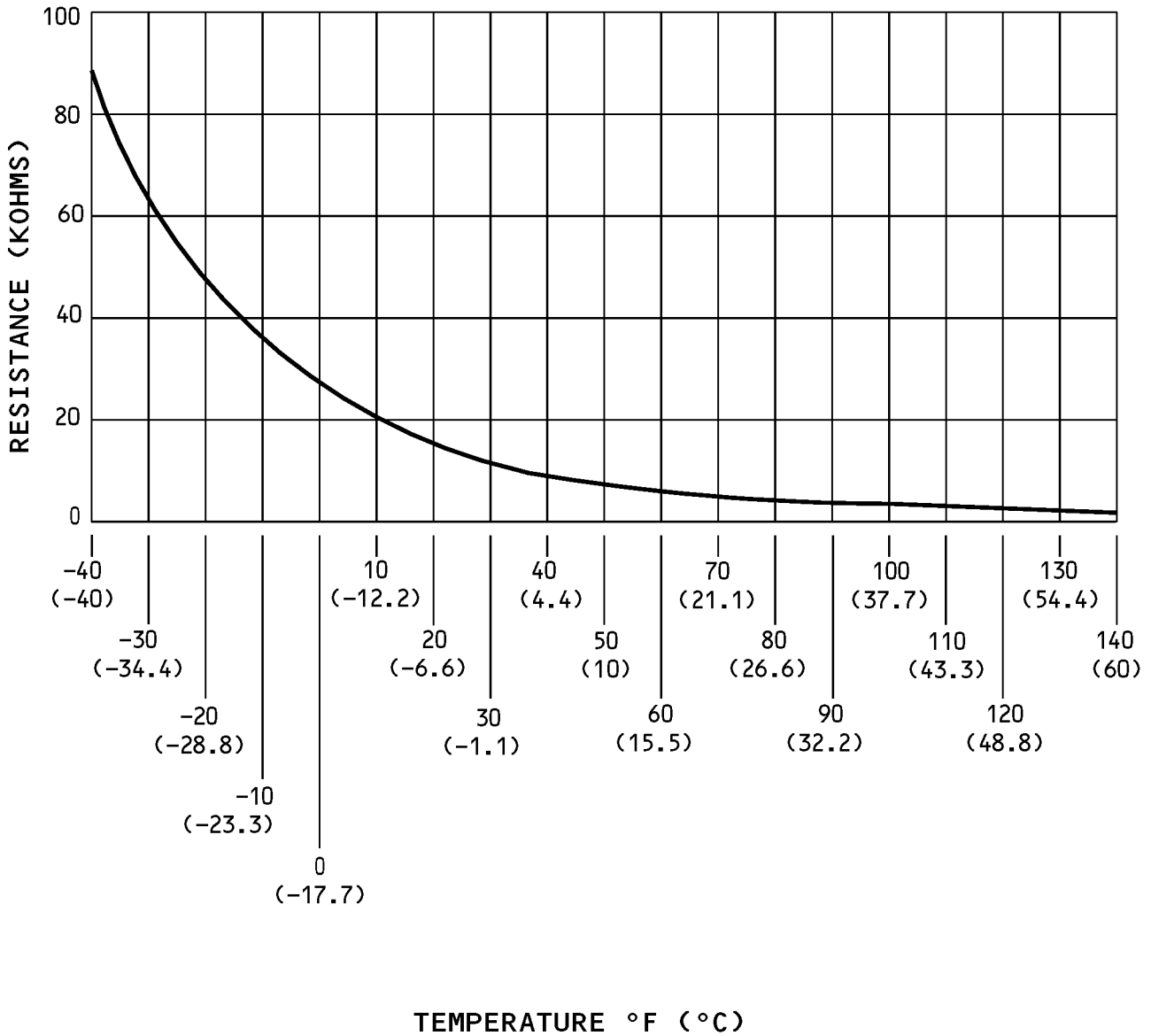
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BACKUP ELEMENT



CABIN TEMPERATURE SENSOR P/N 624018-1 (S210T130-21)  
RESISTANCE VS TEMPERATURE GRAPH

Cabin Temperature Sensor - Temperature and Resistance Data  
Figure 606 (Sheet 4 of 4)/21-61-10-990-814

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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# AIRCRAFT MAINTENANCE MANUAL

## 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.

#### HAP 101-999

- B. There is a cabin temperature sensor fan for each of the two temperature control zones, the flight compartment zone and the passenger compartment zone.

#### HAP 001-013, 015-026, 028-054

- C. 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.

#### HAP ALL

##### TASK 21-61-11-000-801

### 2. Cabin Temperature Sensor Fan Removal

(Figure 401, Figure 402 or Figure 403)

#### A. References

Reference	Title
25-11-21-000-801	Flight Compartment Forward 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

#### HAP 001-013, 015-026, 028-054

242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right
-----	---

#### HAP ALL

#### 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:

#### HAP 101-999

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT

#### HAP ALL

SUBTASK 21-61-11-860-007

- (2) Do this step for the removal of the fan for the flight compartment zone:

EFFECTIVITY	
HAP ALL	

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AIRCRAFT MAINTENANCE MANUAL**

**HAP 001-013, 015-026, 028-054**

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01163	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT FLT DK

**HAP 101-999**

SUBTASK 21-61-11-860-016

- (3) Do this step for the removal of the fan for the passenger compartment zone:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-11-860-008

- (4) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-11-860-009

- (5) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01170	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT AFT PASS

**HAP ALL**

SUBTASK 21-61-11-010-001

- (6) Find the cabin temperature sensor fan for the flight compartment above the aft ceiling in the flight compartment.

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-11-860-010

- (7) Find the applicable cabin temperature sensor fan in the passenger compartment.

**NOTE:** The fans for the passenger compartment are found behind the bullnose cover that is below the overhead stowage bin on the right side of the aisle.

EFFECTIVITY
HAP ALL

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## AIRCRAFT MAINTENANCE MANUAL

HAP 001-013, 015-026, 028-054 (Continued)

### HAP 101-999

SUBTASK 21-61-11-860-003

- (8) Find the cabin temperature sensor fan for the passenger compartment behind the bullnose cover below the overhead stowage bin on the right forward side of the aisle.

### HAP ALL

#### 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.

### HAP 101-999

- (b) Disconnect the electrical connectors [1] and [2] (D510 and D2512) for the temperature sensor and the fan.

### HAP 001-013, 015-026, 028-054

- (c) Disconnect the electrical connectors [1] and [2] (D10958 and D10956) for the temperature sensor and the fan.

### HAP ALL

- (d) Remove the aft ceiling panel [7] in the flight compartment. To remove the panel, do this task: Flight Compartment Forward Ceiling Panel Removal, TASK 25-11-21-000-801.
- (e) Attach a tag to each fan wire [4] to show its correct location for later installation.
- (f) Remove the screws [5] and the 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].

- (g) Remove the four clamps [10], washers [11] and screws [12] which attach the fan [3] to the temperature sensor assembly.
- (h) Remove the fan [3] from the temperature sensor assembly.

#### E. Passenger Compartment - Cabin Temperature Sensor Fan Removal

Figure 402 or Figure 403)

SUBTASK 21-61-11-020-002

- (1) Remove the cabin temperature sensor fan [44] in the passenger compartment as follows:
  - (a) Lower the PSU at each end of the bullnose cover:

NOTE: The PSUs must be lowered to get access to the screws [25] that retain the closeouts [27] for the bullnose cover [21].

- 1) Release the latches that hold the PSUs in position:
  - a) Put a blunt-ended metal rod, approximately 1/16-inch diameter, into the access holes in the bottom of the PSU until the latches release.

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HAP ALL

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- 2) Lower the PSU.
- (b) Remove the bullnose cover [21] to get access to the temperature sensor assembly [36] as follows:
  - 1) Do these steps to loosen the closeouts [27] at the ends of the bullnose cover [21]:
    - a) Open the stowage bin [24] door and remove the screws [22] and the washers [23].
    - b) Remove the screws [25] through the applicable hole in the MCD/PSU rail [26].
    - c) Move the closeouts [27] to the adjacent bins to release them from the edges of the bullnose cover [21].
  - 2) Push inboard on the clips [28] to release the bullnose cover [1] from the MCD/PSU rail [26].

NOTE: The notches in the outboard flange of the MCD/PSU rail [26] show the locations of the clips [28].

- 3) Turn the bullnose cover [21] inboard to remove it.
- (c) Disconnect the electrical connectors [29], [31] and [32].
- (d) Remove the access plug [33].
- (e) Remove the screws [34] and the washers [35].
- (f) Remove the screws [30].
- (g) Remove the temperature sensor assembly [36] and the washers [37].
- (h) Attach a tag to each fan wire [45] to show its correct location for later installation.
- (i) Remove the fan wires [45] from the terminal board [46] on the fan [44].

NOTE: Do not remove the bonding jumper [47] from the metal flange [40].

- (j) Remove the three screws [38], washers [39] and clamps [41] which attach the fan [44] to the temperature sensor assembly.
- (k) Remove the fan [44] from the assembly:
  - 1) Make a record of the position of the terminal board [46] on the fan [44] so that it can be installed the same.

————— **END OF TASK** —————

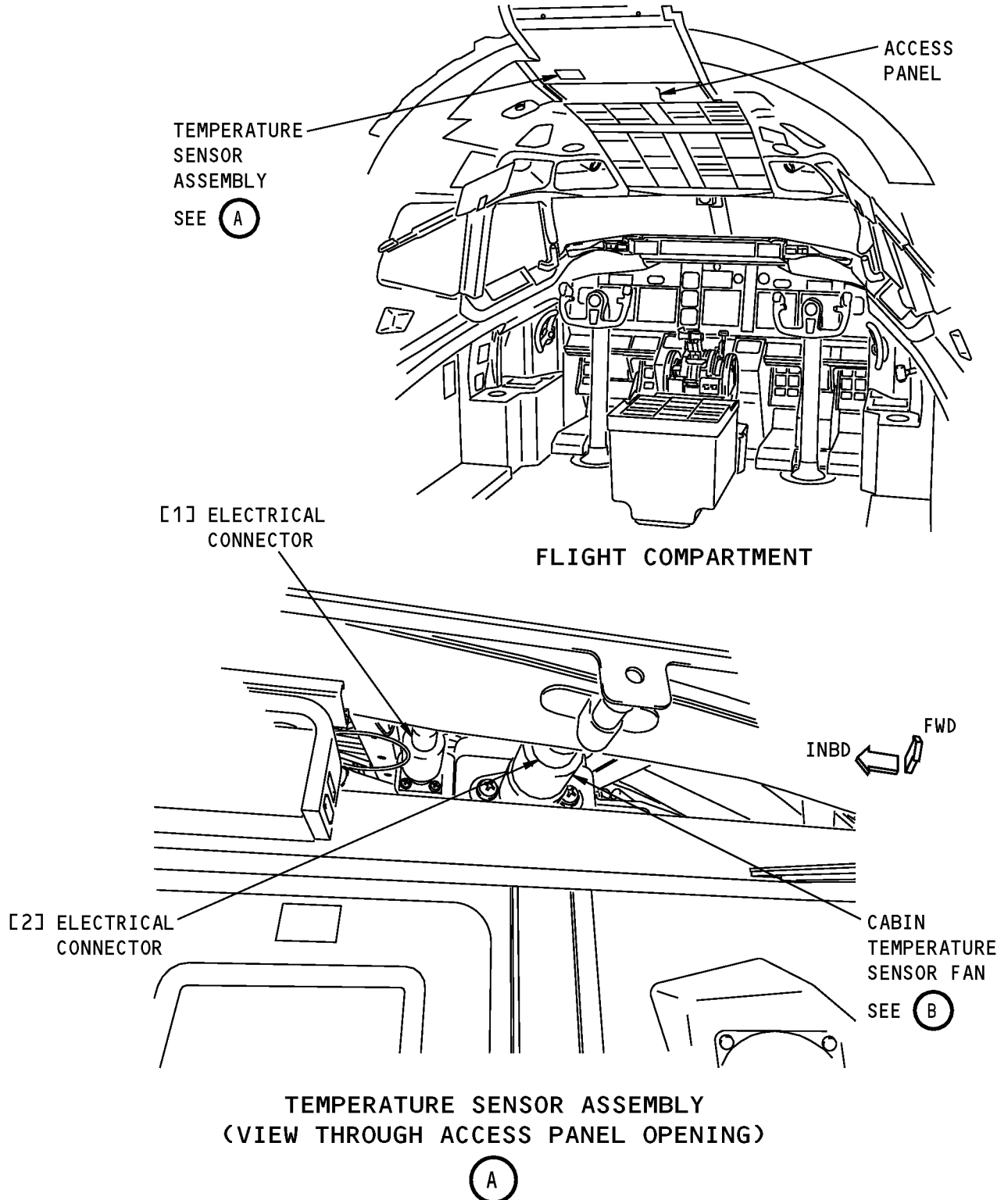
EFFECTIVITY  
HAP ALL

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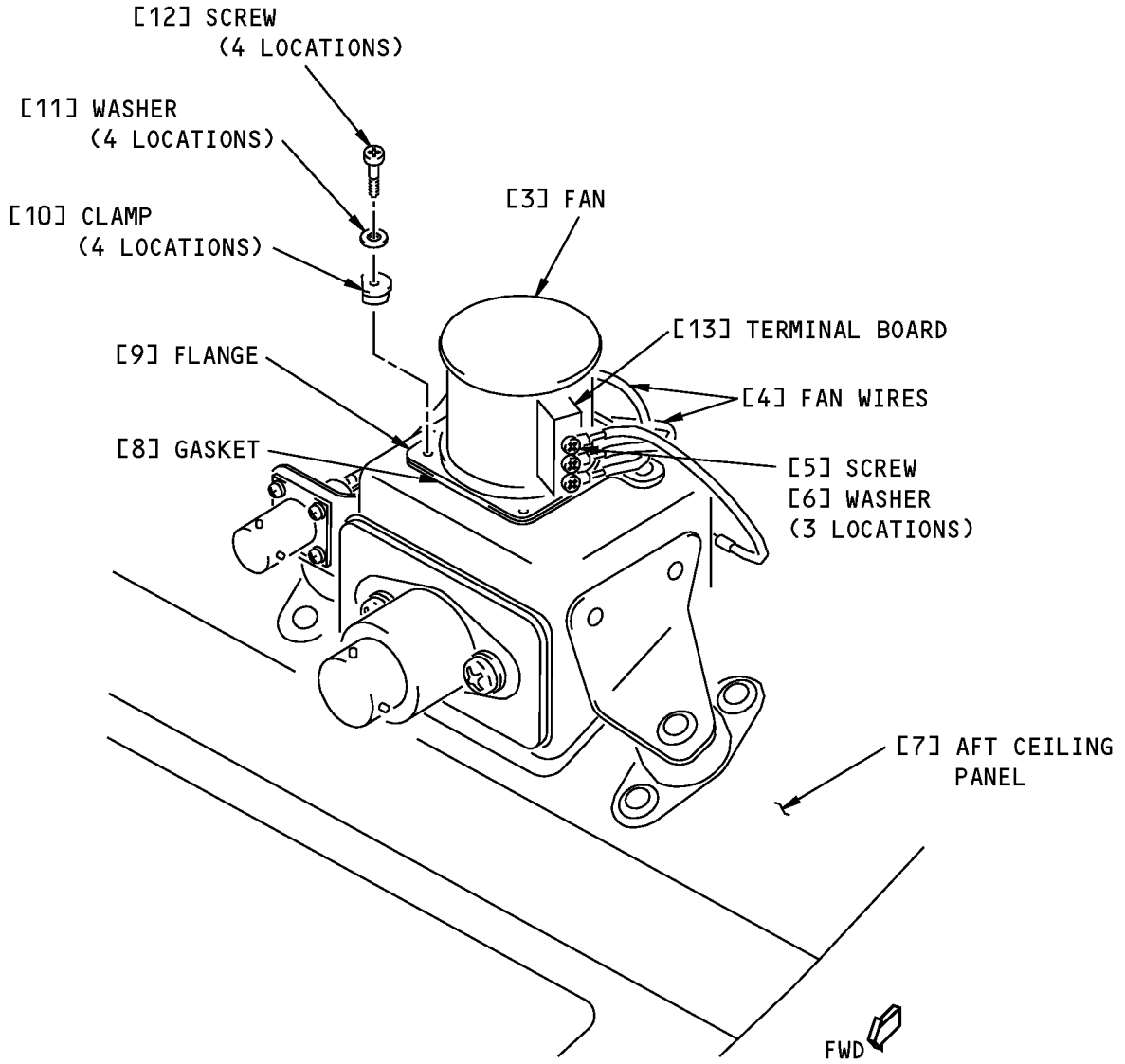
**AIRCRAFT MAINTENANCE MANUAL**



**Flight Compartment - Cabin Temperature Sensor Fan Installation**  
**Figure 401 (Sheet 1 of 2)/21-61-11-990-801**

EFFECTIVITY  
HAP ALL

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**CABIN TEMPERATURE SENSOR FAN**

(B)

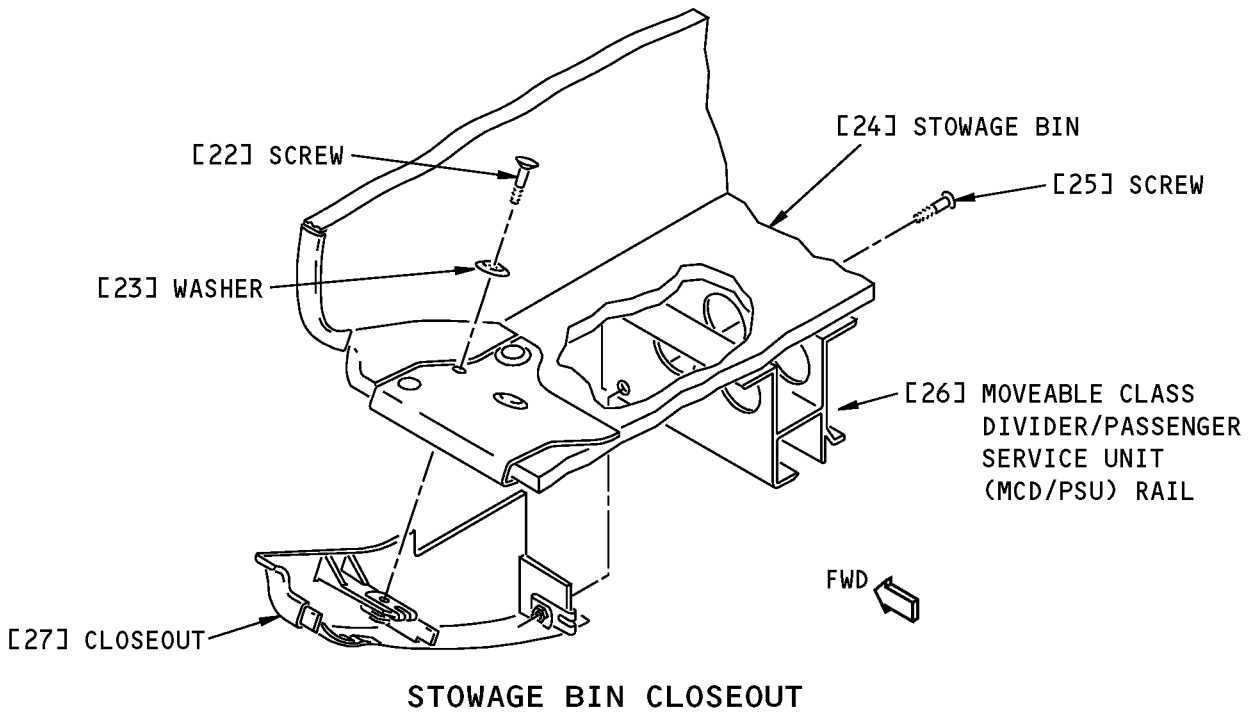
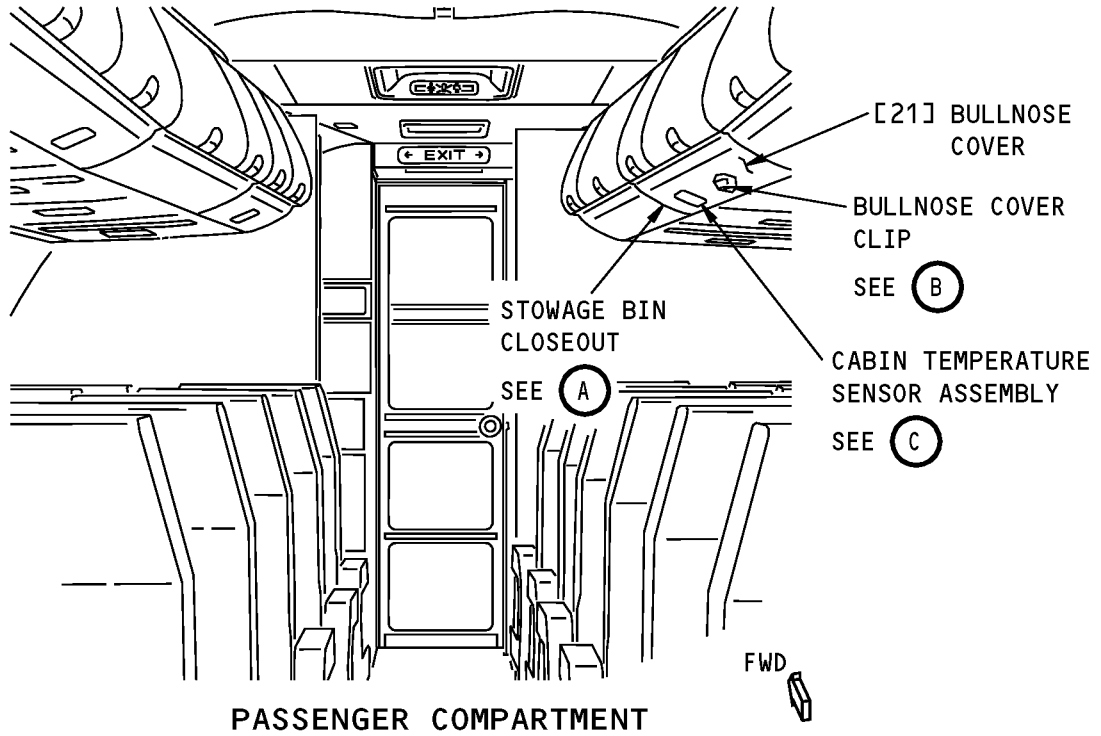
**Flight Compartment - Cabin Temperature Sensor Fan Installation  
Figure 401 (Sheet 2 of 2)/21-61-11-990-801**

EFFECTIVITY  
HAP ALL

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AIRCRAFT MAINTENANCE MANUAL**



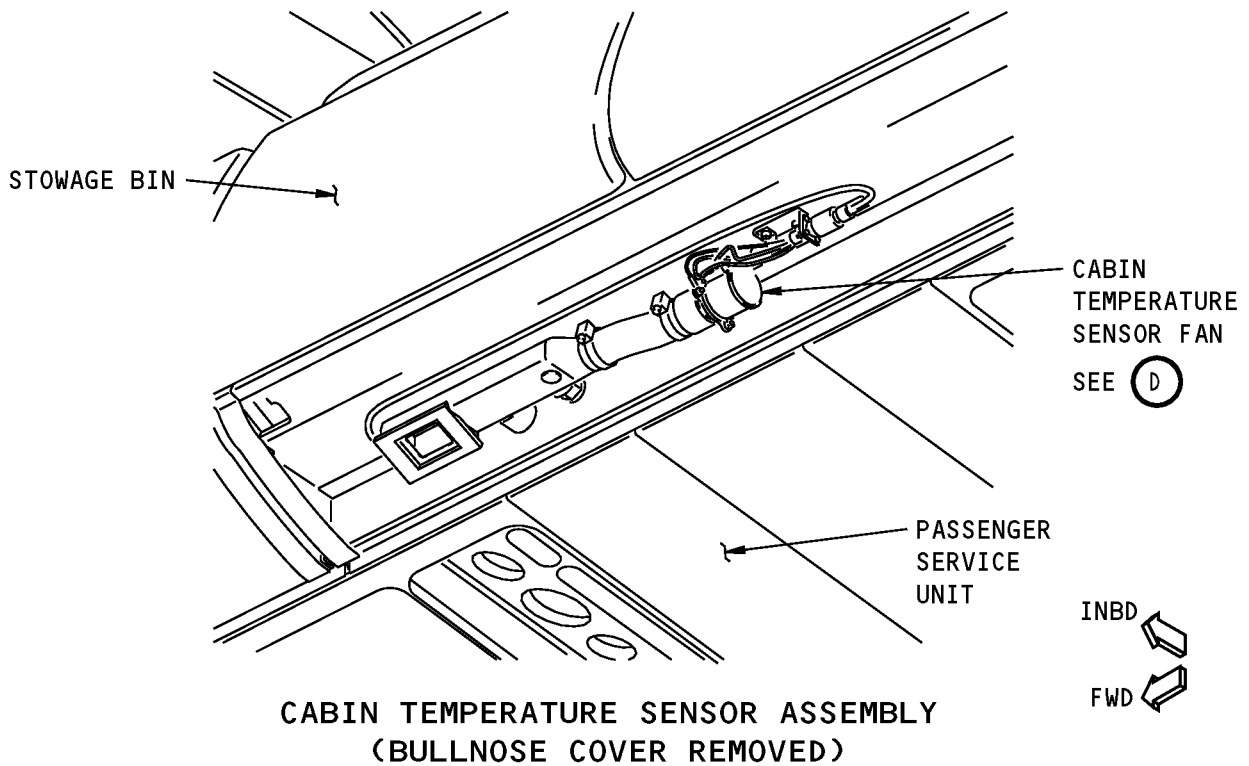
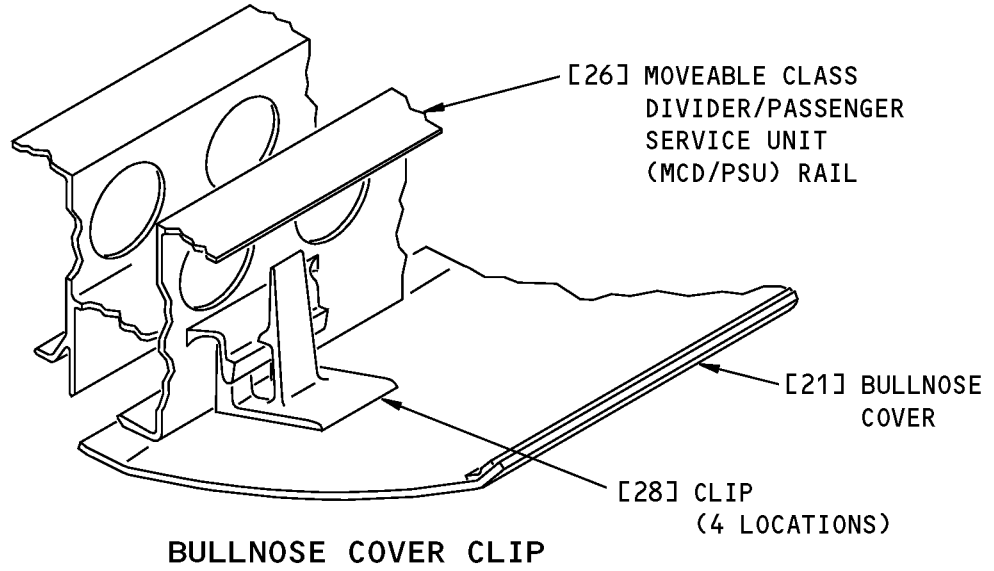
(A)

**Passenger Compartment - Cabin Temperature Sensor Fan Installation  
Figure 402 (Sheet 1 of 4)/21-61-11-990-802**

EFFECTIVITY  
HAP 101-999

**21-61-11**

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AIRCRAFT MAINTENANCE MANUAL**



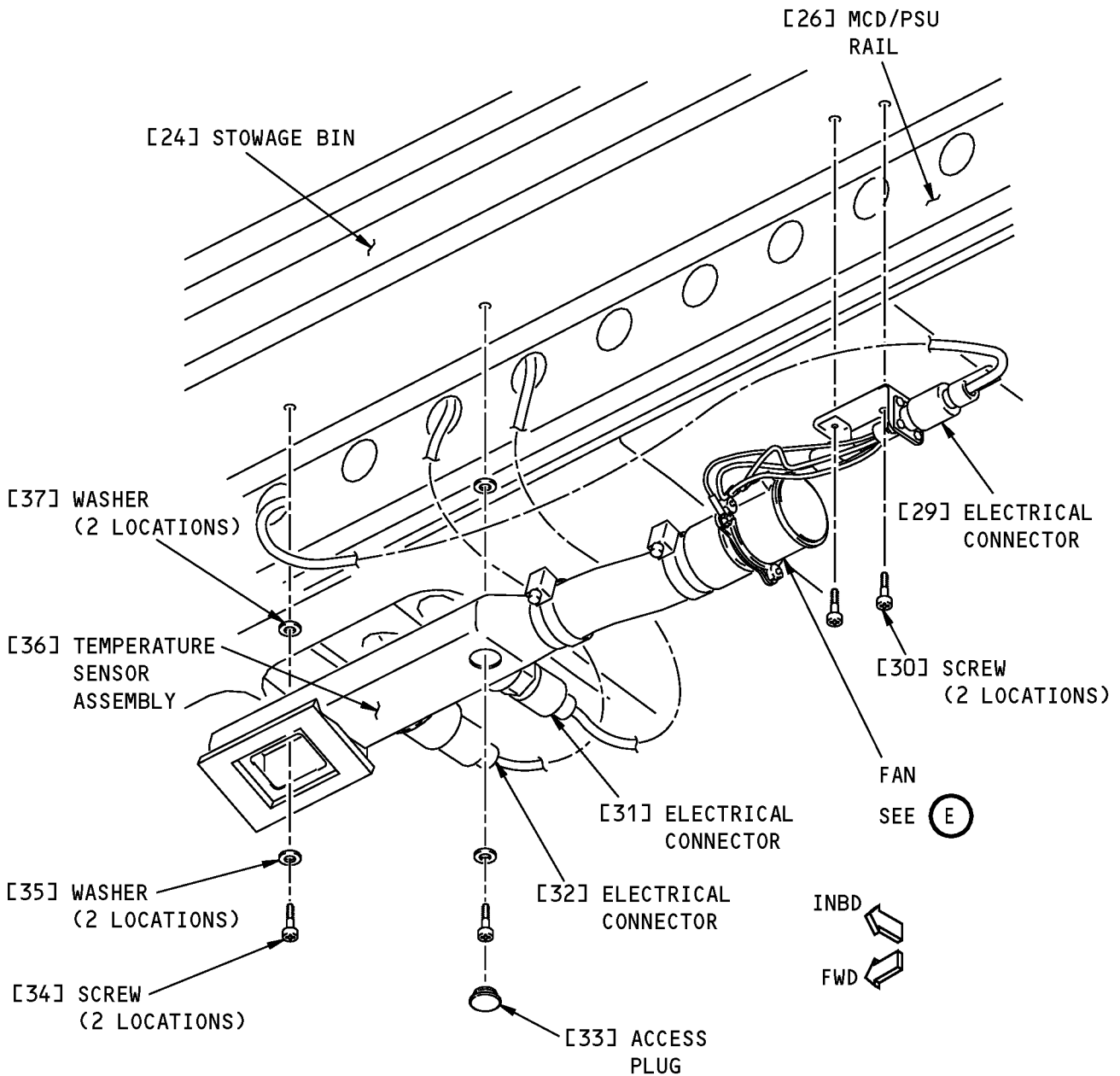
**Passenger Compartment - Cabin Temperature Sensor Fan Installation  
Figure 402 (Sheet 2 of 4)/21-61-11-990-802**

EFFECTIVITY  
HAP 101-999

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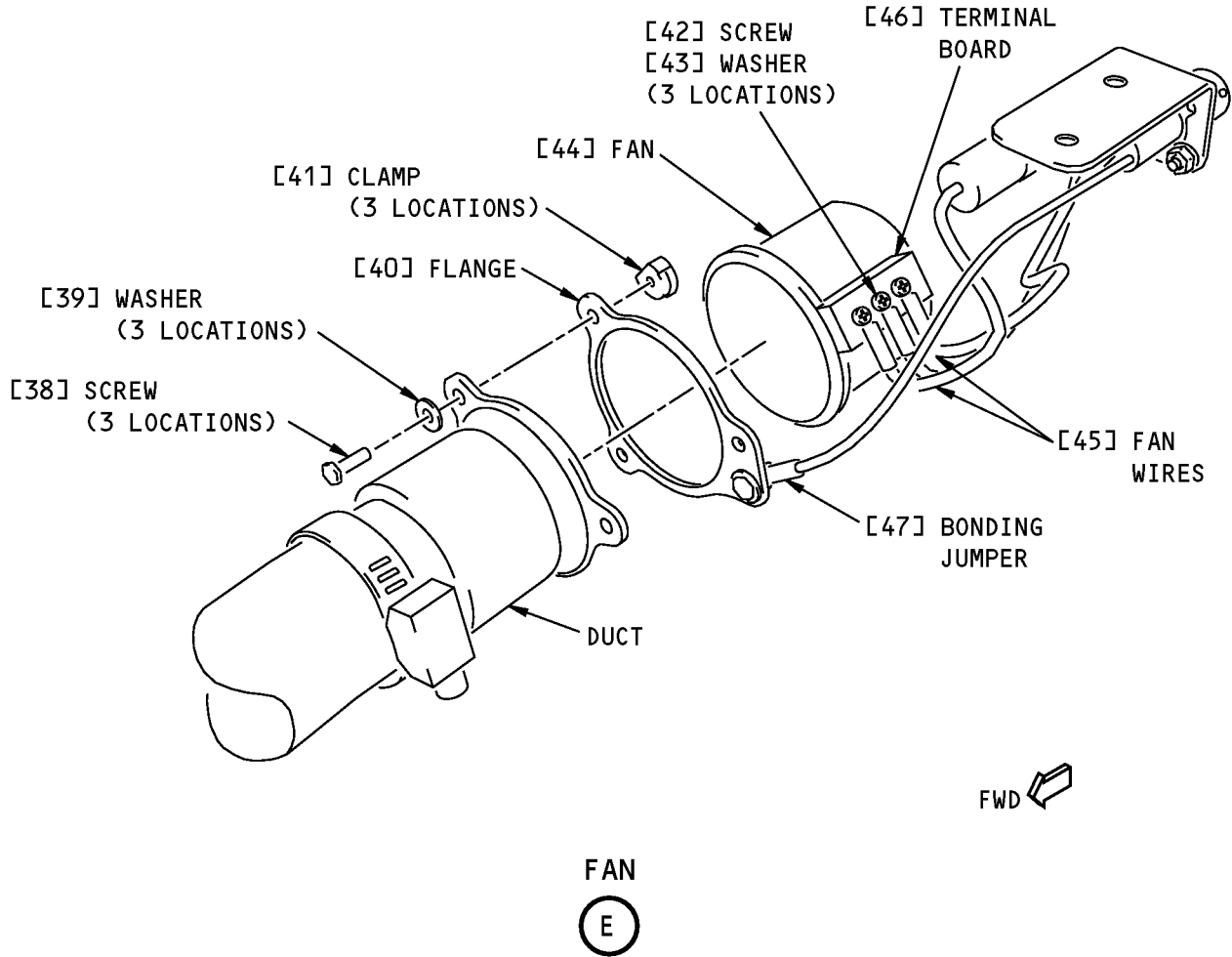
**CABIN TEMPERATURE SENSOR FAN**

**D**

**Passenger Compartment - Cabin Temperature Sensor Fan Installation  
Figure 402 (Sheet 3 of 4)/21-61-11-990-802**

EFFECTIVITY  
HAP 101-999

**21-61-11**



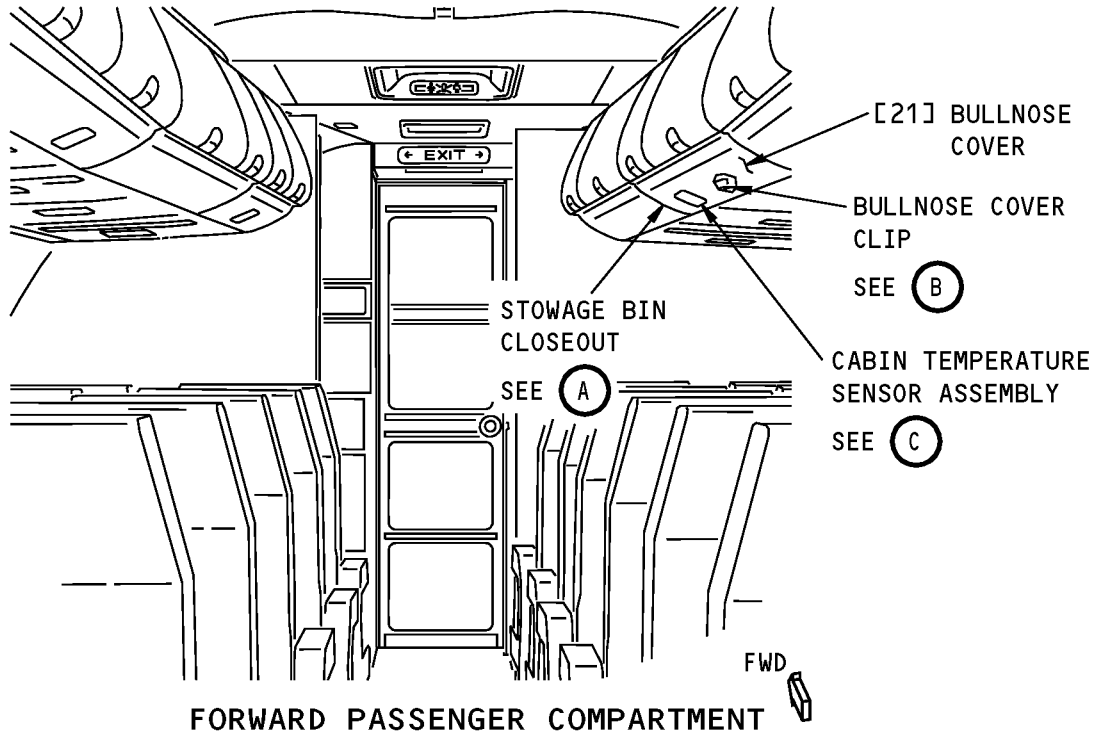
**Passenger Compartment - Cabin Temperature Sensor Fan Installation  
Figure 402 (Sheet 4 of 4)/21-61-11-990-802**

EFFECTIVITY  
HAP 101-999

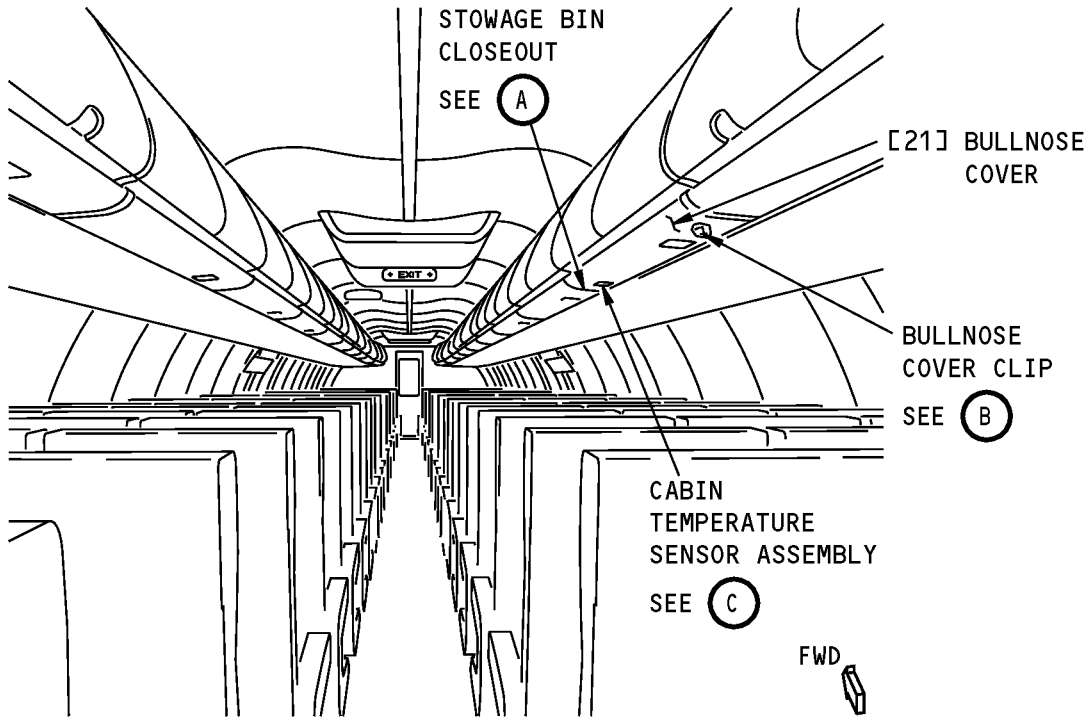
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**FORWARD PASSENGER COMPARTMENT**



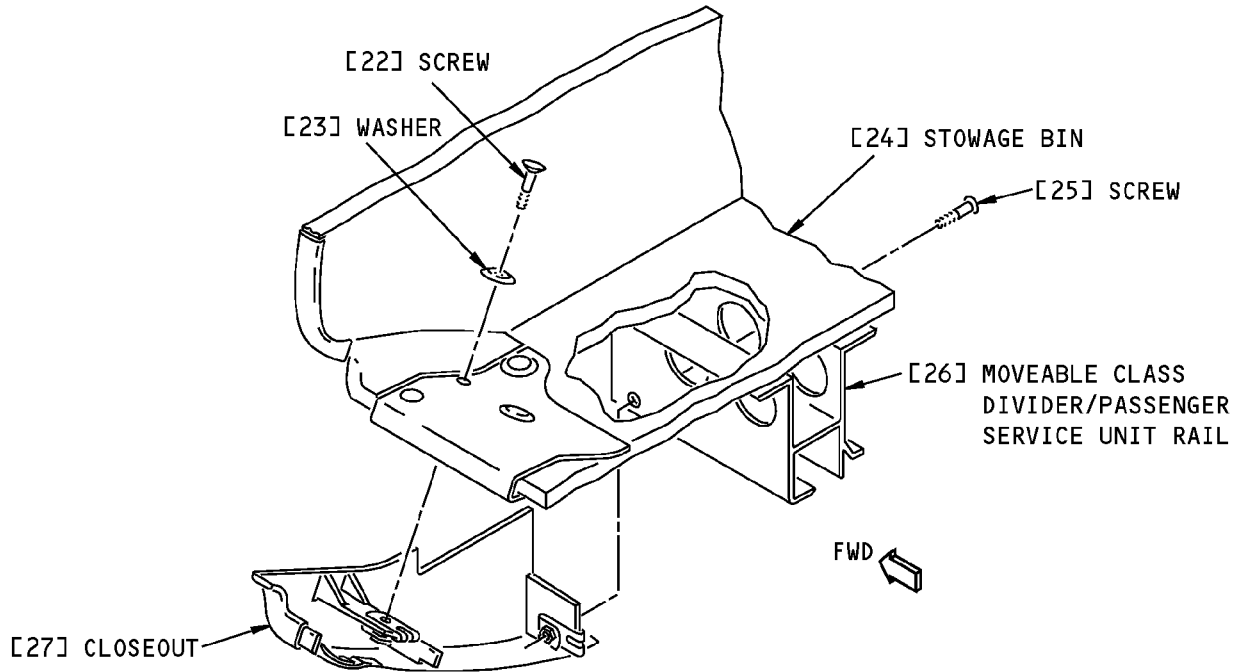
**AFT PASSENGER COMPARTMENT**

**Passenger Cabin Temperature Sensor Fan Installation  
Figure 403 (Sheet 1 of 5)/21-61-11-990-807**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

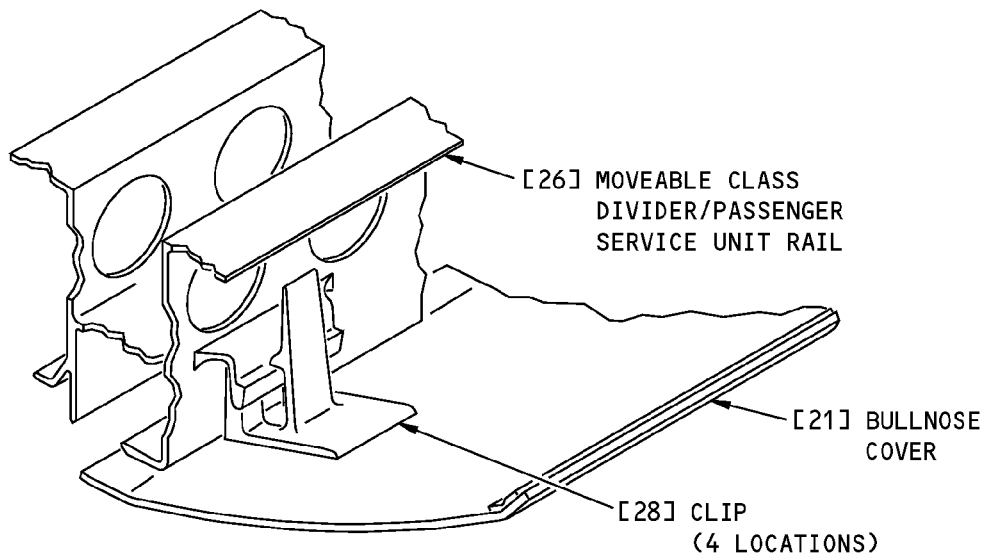
**21-61-11**





**STORAGE BIN CLOSEOUT**

(A)



**BULLNOSE COVER CLIP**

(B)

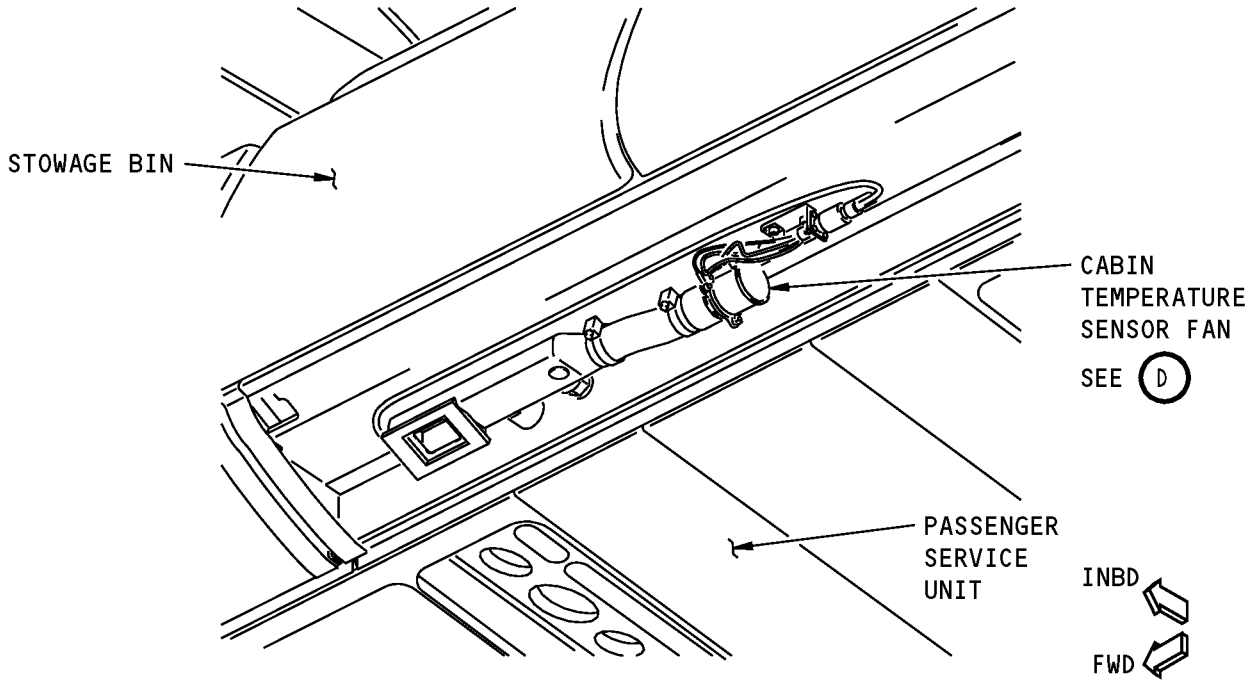
**Passenger Cabin Temperature Sensor Fan Installation  
Figure 403 (Sheet 2 of 5)/21-61-11-990-807**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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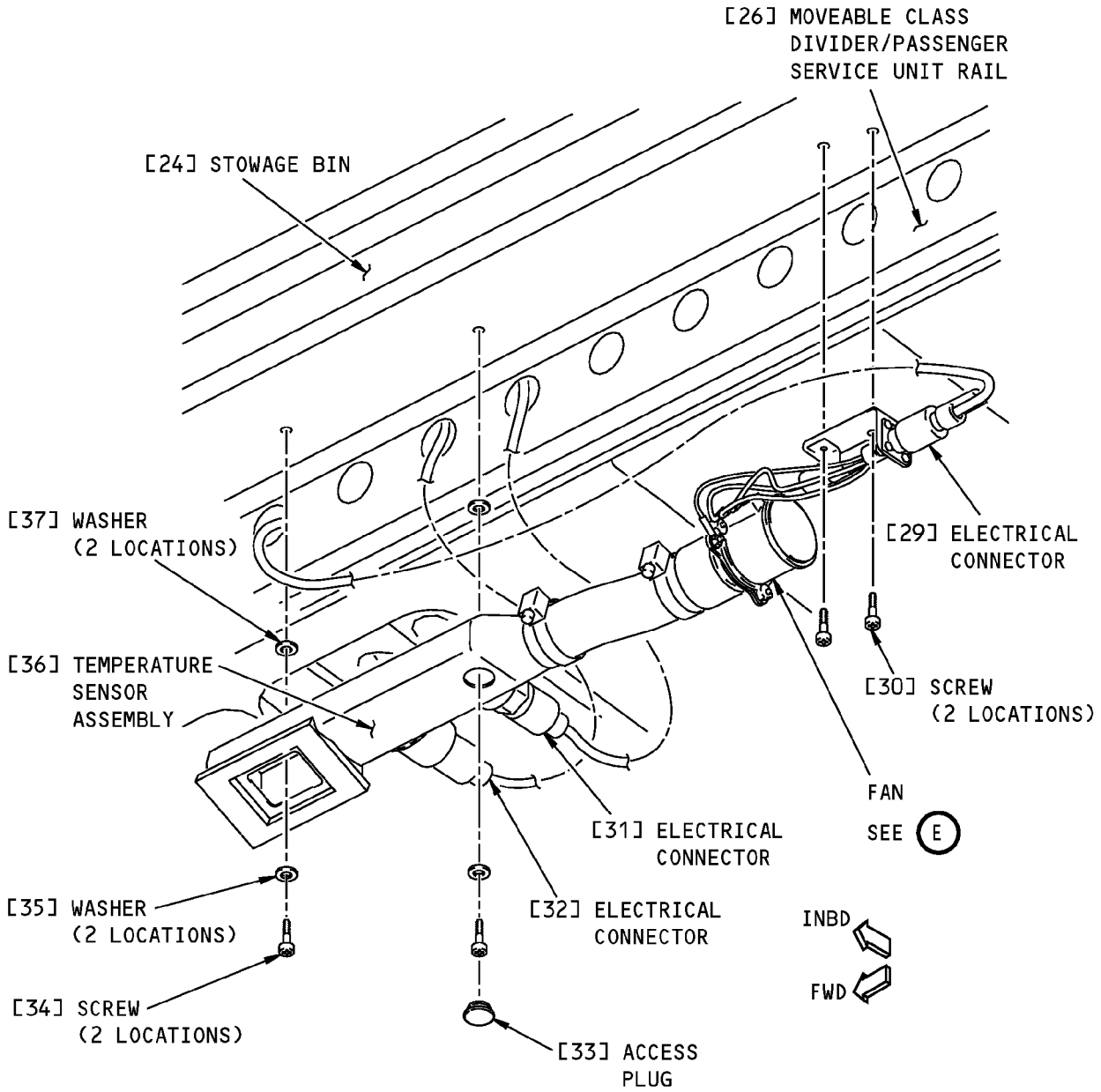
**CABIN TEMPERATURE SENSOR ASSEMBLY  
(BULLNOSE COVER REMOVED)**

(C)

**Passenger Cabin Temperature Sensor Fan Installation  
Figure 403 (Sheet 3 of 5)/21-61-11-990-807**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**CABIN TEMPERATURE SENSOR FAN**

(D)

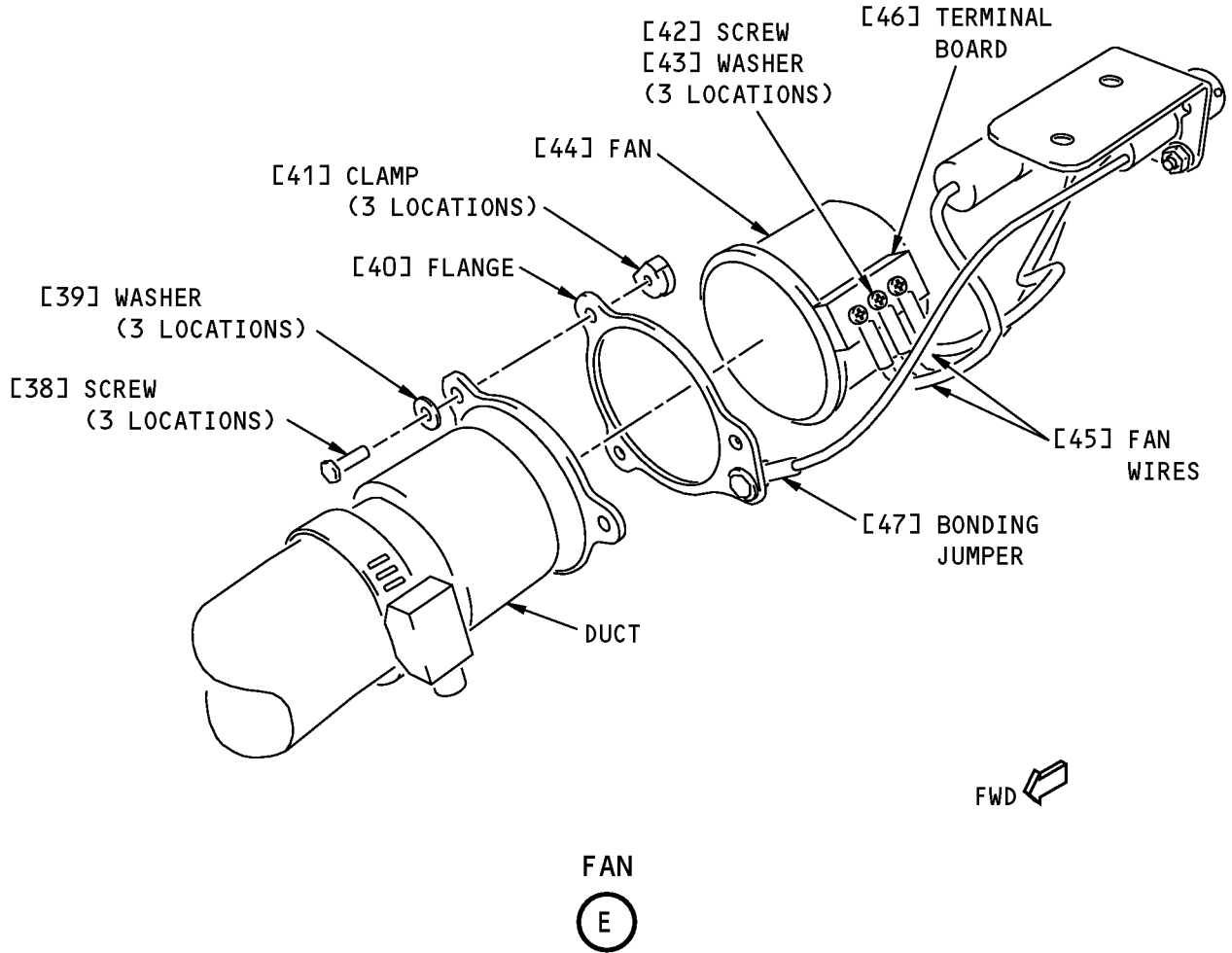
**Passenger Cabin Temperature Sensor Fan Installation**  
**Figure 403 (Sheet 4 of 5)/21-61-11-990-807**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**Passenger Cabin Temperature Sensor Fan Installation  
Figure 403 (Sheet 5 of 5)/21-61-11-990-807**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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## TASK 21-61-11-400-801

### 3. Cabin Temperature Sensor Fan Installation

(Figure 401, Figure 402 or Figure 403)

#### A. References

Reference	Title
24-22-00-860-812	Remove Electrical Power (P/B 201)
25-11-21-400-801	Flight Compartment Ceiling Panel Installation (P/B 201)

#### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Fan	21-61-51-02-090	HAP 031-054, 101-999
		21-61-51-05-070	HAP 001-013, 015-026, 028-030
44	Fan	21-61-11-12-145	HAP 001-013, 015-026, 028-030
		21-61-11-17-140	HAP 001-013, 015-026, 028-030
		21-61-11-19-145	HAP 031-054, 101-999
		21-61-11-20-150	HAP 031-054

#### 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 <b>HAP 001-013, 015-026, 028-054</b>
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

#### HAP ALL

#### 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 Ceiling Panel Installation, TASK 25-11-21-400-801.

#### HAP 101-999

- (e) Connect the electrical connectors [1] and [2] (D510 and D2512) to the temperature sensor and the fan.

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HAP 101-999 (Continued)

HAP 001-013, 015-026, 028-054

- (f) Connect the electrical connectors [1] and [2] (D10958 and D10956) to the temperature sensor and the fan.

HAP ALL

- (g) 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 or Figure 403)

SUBTASK 21-61-11-420-002

- (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 clamps [41], washers [39] and screws [38] to attach the fan [44] to the temperature sensor assembly.
  - (c) Use the screws [42] and the washers [43] to install the fan wires [45] to the terminal board [46].

NOTE: Use the tags on the fan wires [45] to put the fan wires [45] in the correct locations.

- (d) Put the temperature sensor assembly [36] in its position below the overhead stowage bin [24].
  - 1) Put the washers [37] in position on the top of the temperature sensor assembly [36].
- (e) Install the screws [30].
- (f) Install the washers [35] and the screws [34].
- (g) Install the access plug [33].
- (h) Install the electrical connectors [29], [31] and [32].
- (i) Do these steps to install the bullnose cover [21]:
  - 1) Make sure you engage the clips [28] on the MCD/PSU rail [26] as you put the bullnose cover [21] in its position.
  - 2) Move the closeouts [27] over the edges of the bullnose cover [21].
  - 3) Install the washers [23] and the screws [22].
  - 4) Install the screws [25].
- (j) Lift the PSU to its closed position.

SUBTASK 21-61-11-860-004

- (2) Do this step for the installation of the fan for the flight compartment zone:

HAP 101-999

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT

<p>EFFECTIVITY</p> <p>HAP ALL</p>
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**HAP 101-999 (Continued)**

**HAP ALL**

SUBTASK 21-61-11-860-021

(3) Do this step for the installation of the fan for the flight compartment zone:

**HAP 001-013, 015-026, 028-054**

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01163	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT FLT DK

**HAP 101-999**

SUBTASK 21-61-11-860-022

(4) Do this step for the installation of the fan for the passenger compartment zone:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-11-860-012

(5) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-11-860-013

(6) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01170	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT AFT PASS

**HAP ALL**

SUBTASK 21-61-11-710-001

(7) 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.

<p><b>EFFECTIVITY</b> <b>HAP ALL</b></p>	
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## AIRCRAFT MAINTENANCE MANUAL

2) Remove the paper.

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** —————

EFFECTIVITY  
HAP ALL

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# AIRCRAFT MAINTENANCE MANUAL

## 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.

### HAP 101-999

#### TASK 21-61-12-000-801

### 2. Trim Air Duct Pressure Seal Removal

(Figure 401, Figure 402)

#### A. References

Reference	Title
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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
821	Forward Cargo Door

#### D. Prepare for Removal

SUBTASK 21-61-12-860-005

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

SUBTASK 21-61-12-860-006

- (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 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 21-61-12-010-002

- (3) To get access to trim the air duct pressure seal in the ECS pack bay, do this step:
  - (a) Open these access panels:

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door

EFFECTIVITY	
HAP ALL	

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## AIRCRAFT MAINTENANCE MANUAL

### HAP 101-999 (Continued)

#### E. Trim Air Duct Pressure Seal Removal

SUBTASK 21-61-12-020-006

- (1) To remove the trim air duct [1] aft of the pressure seal [3], do these steps:(Figure 401)
  - (a) Support the trim air duct [1] to be removed.
  - (b) Remove the V-band couplings [2] at each end of the duct section.
  - (c) Remove trim air duct [1].
  - (d) Install covers on the adjacent duct openings to keep out unwanted materials.

SUBTASK 21-61-12-020-002

- (2) To remove the trim air duct pressure seal [3], do these steps:(Figure 401)
  - (a) Remove the twelve bolts [6] and washers [7], and the two seal ring halves [5], to disconnect the pressure seal [3] from the pressure bulkhead.
  - (b) Remove the clamp [4] from the pressure seal [3].
  - (c) Remove the pressure seal [3] from the trim air duct [11].

SUBTASK 21-61-12-020-010

- (3) If it is necessary to remove the trim air duct [11] that penetrates through the pressure bulkhead, do these steps:(Figure 402)
  - (a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
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 [11] and remove the aft coupling [12] adjacent to the hot air check valve [13].
    - 1) Remove the trim air duct [11].
    - 2) Install covers on the adjacent duct openings to keep out unwanted materials.

————— **END OF TASK** —————

EFFECTIVITY  
HAP ALL

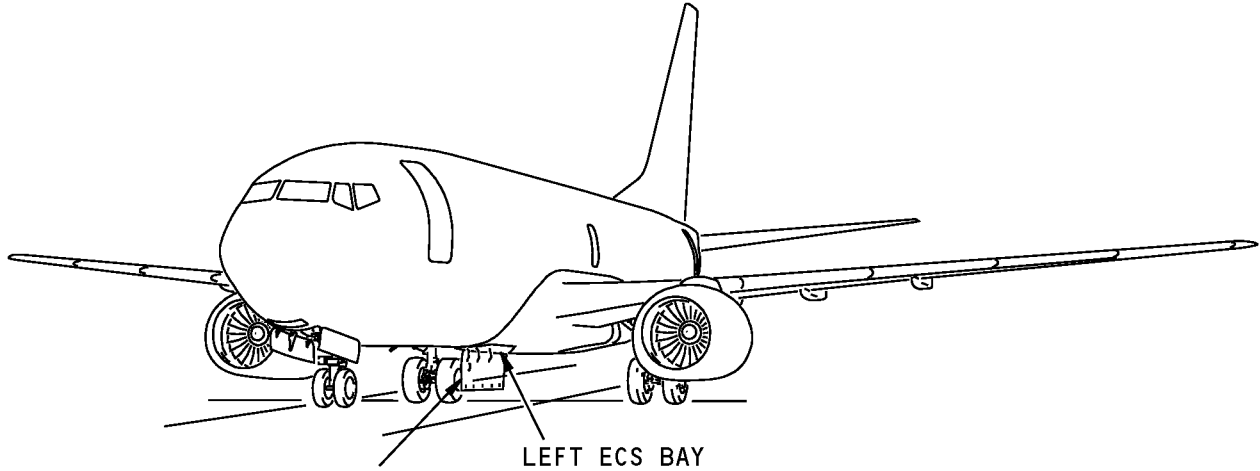
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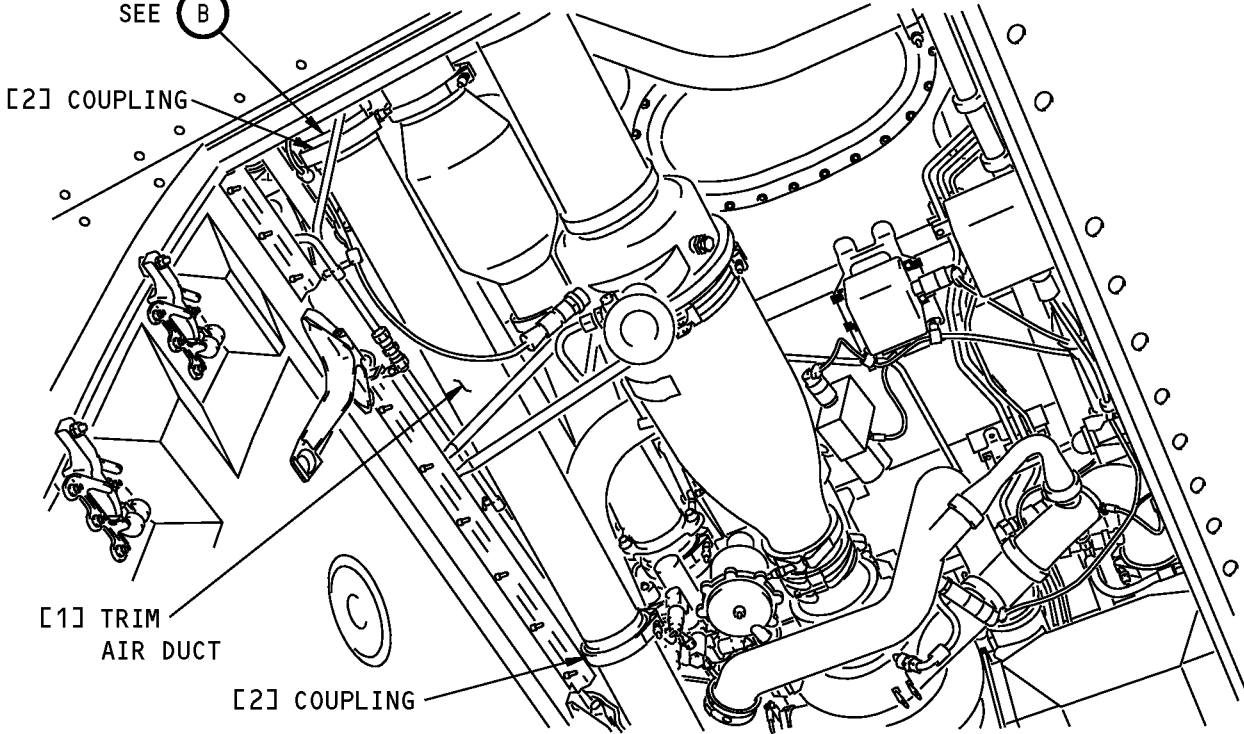
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AIRCRAFT MAINTENANCE MANUAL**



LEFT (RIGHT) ECS ACCESS DOOR, 192CL (192CR) SEE (A)

TRIM AIR PRESSURE SEAL SEE (B)



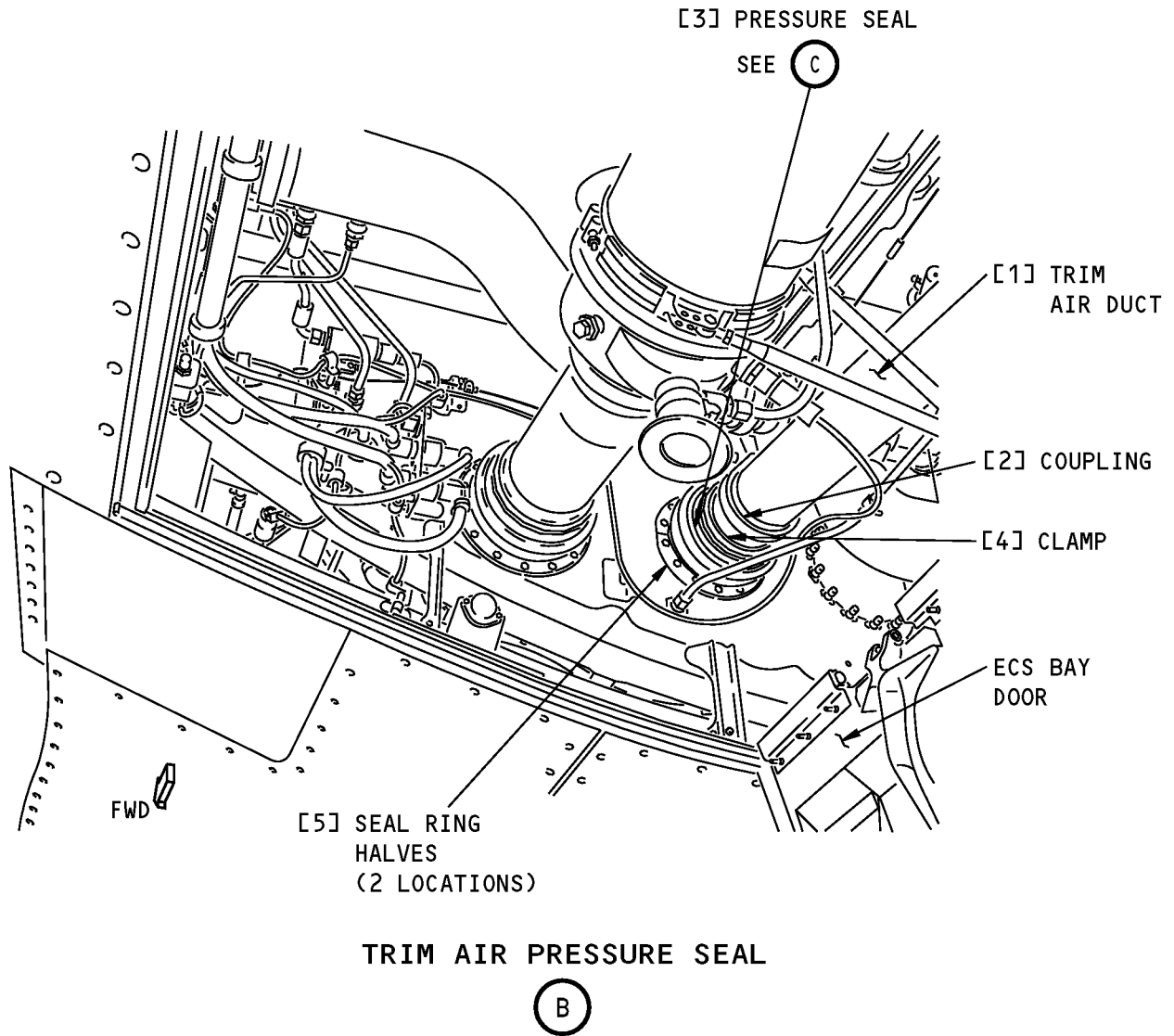
LEFT ECS BAY (RIGHT ECS BAY IS OPPOSITE)

(A)

**Trim Air Duct Pressure Seal Installation  
Figure 401 (Sheet 1 of 3)/21-61-12-990-801**

EFFECTIVITY  
HAP 101-999

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**NOTE:** LEFT ECS BAY SHOWN  
RIGHT ECS BAY OPPOSITE

**Trim Air Duct Pressure Seal Installation  
Figure 401 (Sheet 2 of 3)/21-61-12-990-801**

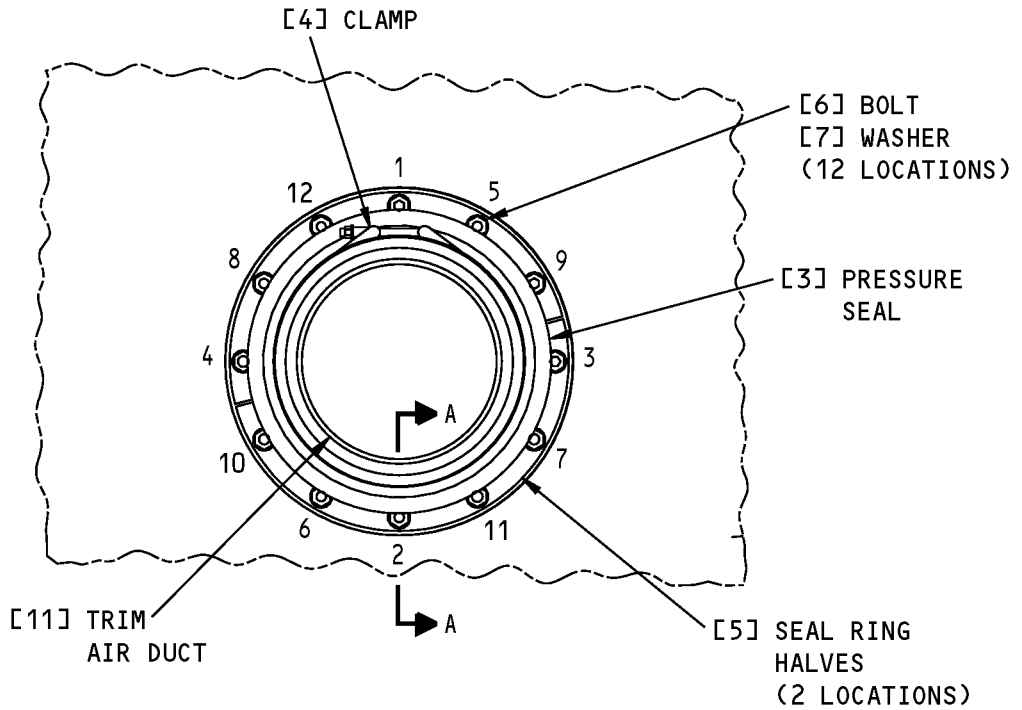
EFFECTIVITY  
HAP 101-999

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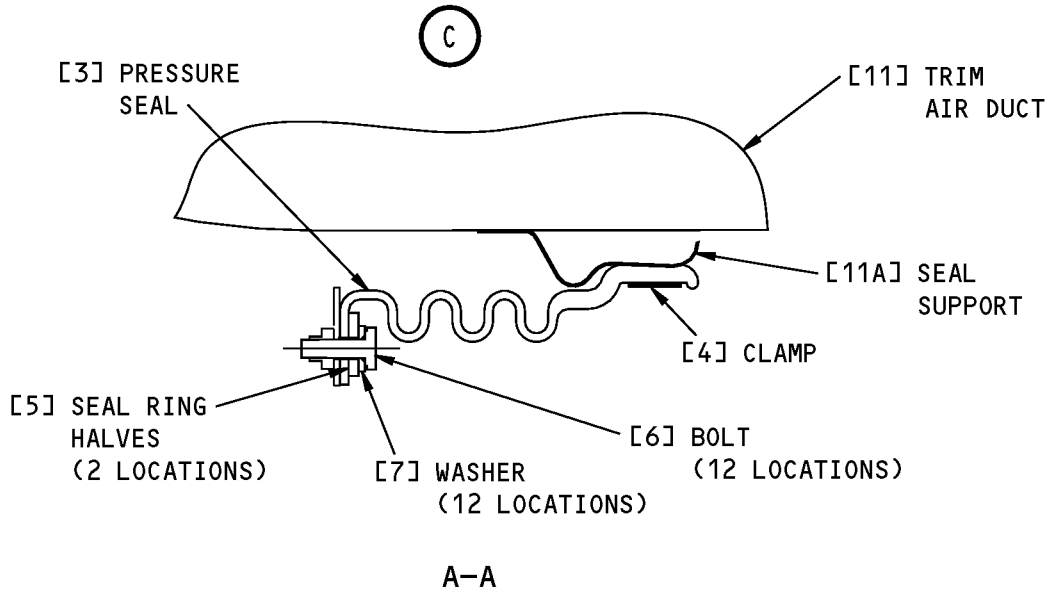
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**TRIM AIR PRESSURE SEAL  
(BOLT TORQUE SEQUENCE)**

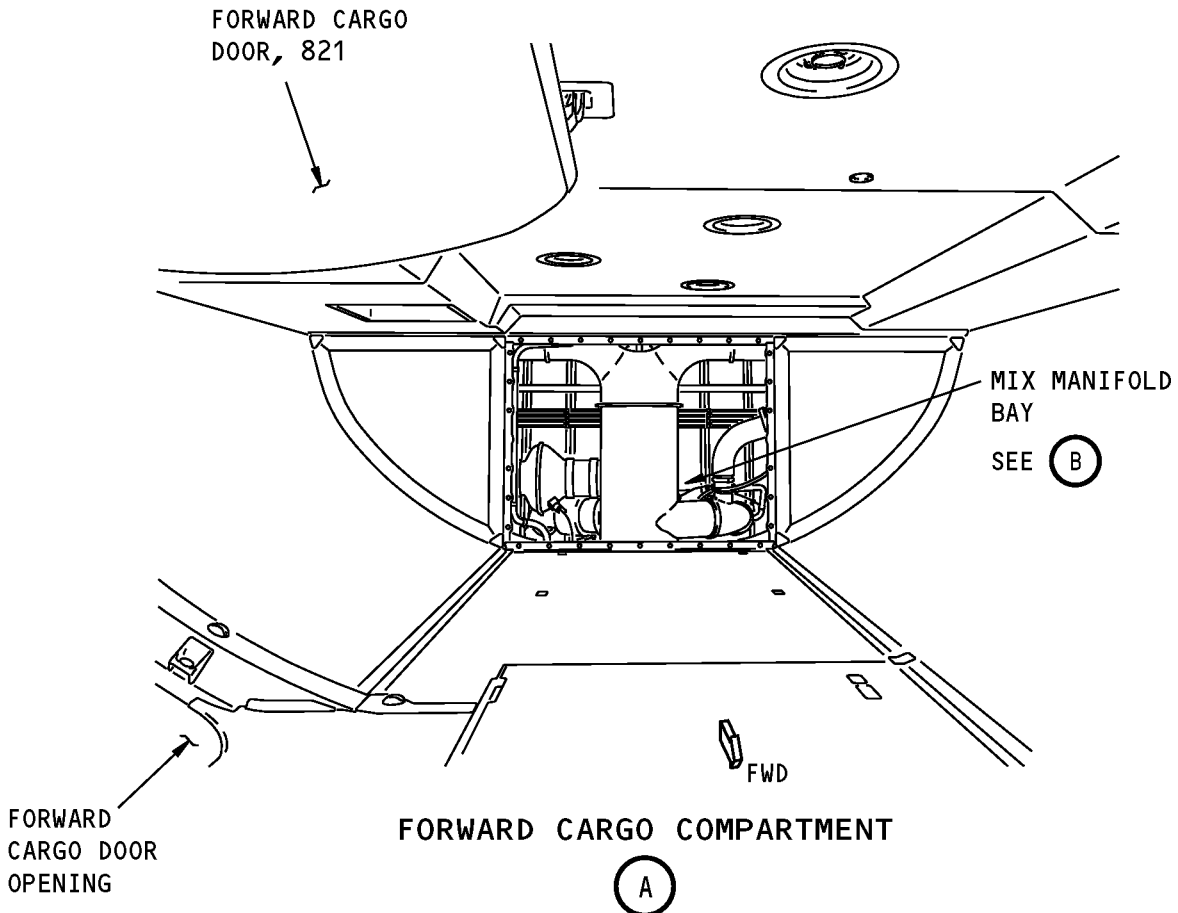
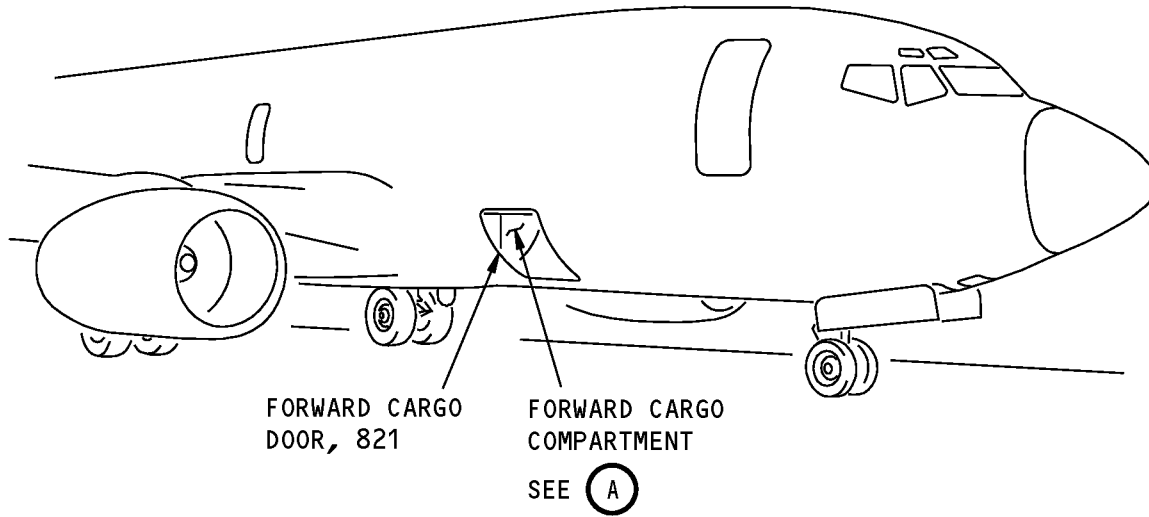


**Trim Air Duct Pressure Seal Installation  
Figure 401 (Sheet 3 of 3)/21-61-12-990-801**

EFFECTIVITY  
HAP 101-999

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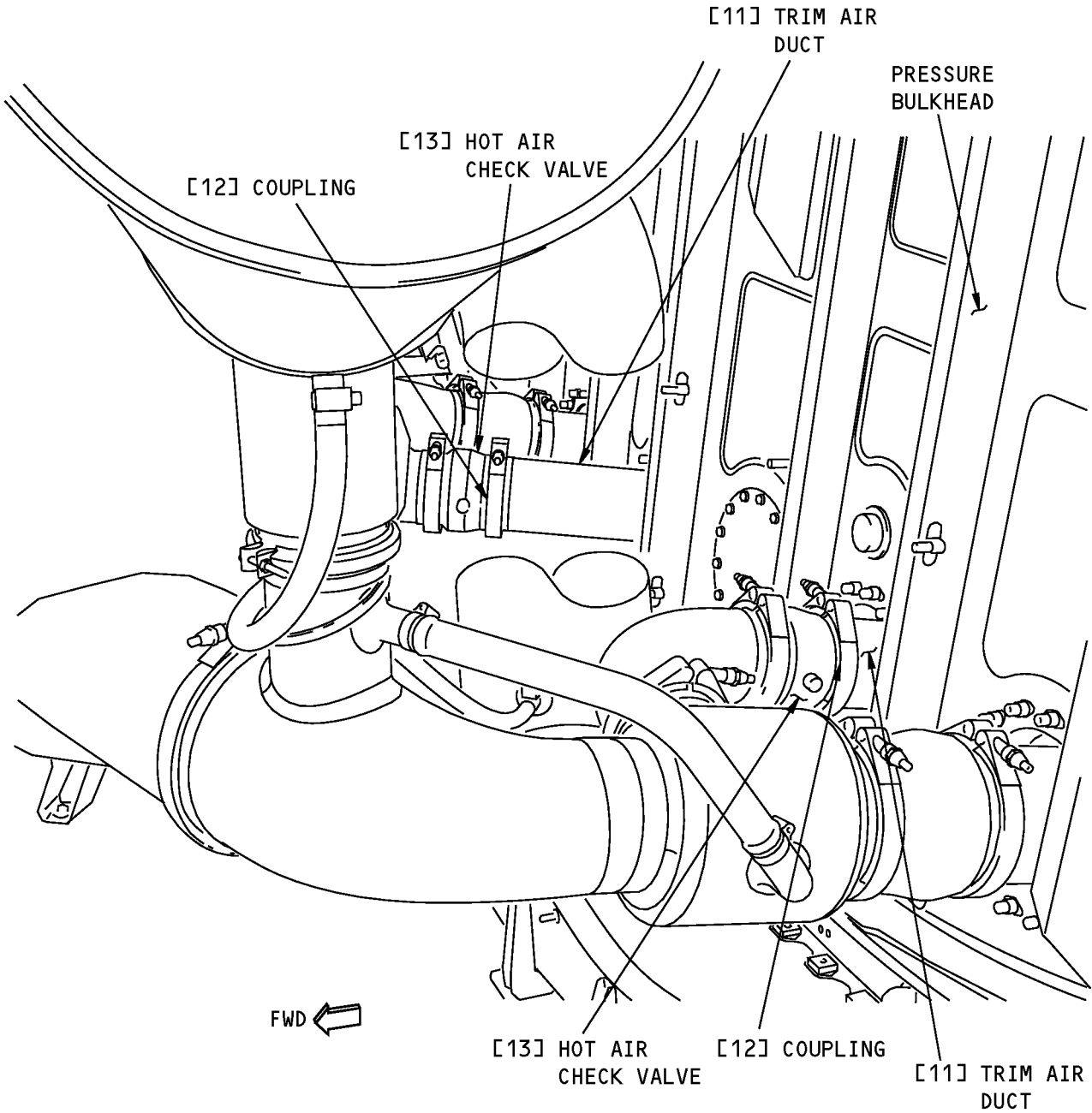
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**Hot Air Check Valve / Trim Air Duct Installation  
Figure 402 (Sheet 1 of 2)/21-61-12-990-802**

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**MIX MANIFOLD BAY**

**(B)**

**Hot Air Check Valve / Trim Air Duct Installation  
Figure 402 (Sheet 2 of 2)/21-61-12-990-802**

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# AIRCRAFT MAINTENANCE MANUAL

HAP 101-999 (Continued)

## TASK 21-61-12-400-801

### 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)
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 - Aliphatic Naphtha (For Acrylic Plastics)	TT-N-95 Type II, ASTM D-3735 Type III
D00010	Compound - Thread Antiseize, High Temperature	MIL-PRF-907F
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	Air Conditioning Access Door
192CR	Air Conditioning Access Door
821	Forward Cargo Door

#### E. Trim Air Duct Pressure Seal Installation

SUBTASK 21-61-12-020-014

- (1) Remove the covers from the duct openings and make sure there is no unwanted materials inside the duct.

SUBTASK 21-61-12-420-012

- (2) If you removed the trim air duct [11] that penetrates through the pressure bulkhead, do these steps to reinstall it: (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).

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### HAP 101-999 (Continued)

- (c) Slide the trim air duct [11] through the pressure bulkhead hole.
- (d) Support the trim air duct [11] while you install the aft coupling [12] to connect the trim air duct [11] to the hot air check valve [13].
- (e) Tighten the coupling [12] to 60–65 inch-pounds(6.78–7.34 Newton-meters).

SUBTASK 21-61-12-100-001

- (3) Use a clean wiper and solvent, B00083 to clean the pressure seal support [11A] area on the trim air duct [11] that penetrates through the pressure bulkhead.

SUBTASK 21-61-12-420-001

- (4) Slide the pressure seal [3] onto the trim air duct [11] section.

SUBTASK 21-61-12-420-002

- (5) Install the trim air duct section [1] aft of the pressure seal [3].
  - (a) Loosely install the couplings [2] to connect the trim air duct section [1].
  - (b) Do not tighten the couplings [2] until the trim air duct section [1] and [11] are aligned.

SUBTASK 21-61-12-420-004

- (6) For installation of the pressure seal [3], do the following steps:
  - (a) Push the pressure seal [3] to the mating surface of the pressure bulkhead.
  - (b) Apply antiseize compound, D00010 to the threads of the bolts [6].
  - (c) Install the two seal ring halves [5] on the pressure seal [3] with the twelve bolts [6] and washers [7].
  - (d) Tighten the bolts [6] to 30–35 inch-pounds (3.39–3.95 Newton-meters) in the sequence shown in Figure 401.
  - (e) Install the clamp [4] loosely to the pressure seal [3].
  - (f) Tighten the clamp [4] to 20-30 inch-pounds (2.26-3.39 Newton-meters).

SUBTASK 21-61-12-420-005

- (7) Tighten the couplings [2] to 60–65 inch-pounds (6.78–7.34 Newton-meters).

#### F. Trim Air Duct Leak Test

SUBTASK 21-61-12-860-012

- (1) 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 21-61-12-860-014

- (2) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.

SUBTASK 21-61-12-860-021

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

SUBTASK 21-61-12-790-001

- (4) 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:

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## HAP 101-999 (Continued)

- 1) Do this task : Remove Conditioned Air Supplied by a Cooling Pack, TASK 21-00-00-800-804.
- 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 60–65 inch-pounds (6.78–7.34 Newton-meters).
- 6) Do the trim air leak test again.

### G. Put the Airplane to its Usual Condition

SUBTASK 21-61-12-860-022

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

SUBTASK 21-61-12-860-015

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

SUBTASK 21-61-12-410-002

- (3) Install the aft bulkhead liner in the forward cargo compartment (TASK 25-52-17-400-801).

SUBTASK 21-61-12-410-003

- (4) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door
821	Forward Cargo Door

————— END OF TASK —————

## HAP 001-013, 015-026, 028-054

### TASK 21-61-12-000-802

#### 4. Trim Air Duct Pressure Seal Removal

(Figure 403)(Figure 404)

##### A. References

<u>Reference</u>	<u>Title</u>
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

<u>Zone</u>	<u>Area</u>
125	Air Conditioning Distribution Bay - Left
126	Air Conditioning Distribution Bay - Right
192	Lower Wing-To-Body Fairing - Under Wing Box

##### C. Access Panels

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door

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(Continued)

Number	Name/Location
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:

- (a) Open these access panels:

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning 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 404):

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**HAP 001-013, 015-026, 028-054 (Continued)**

(a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
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** —————

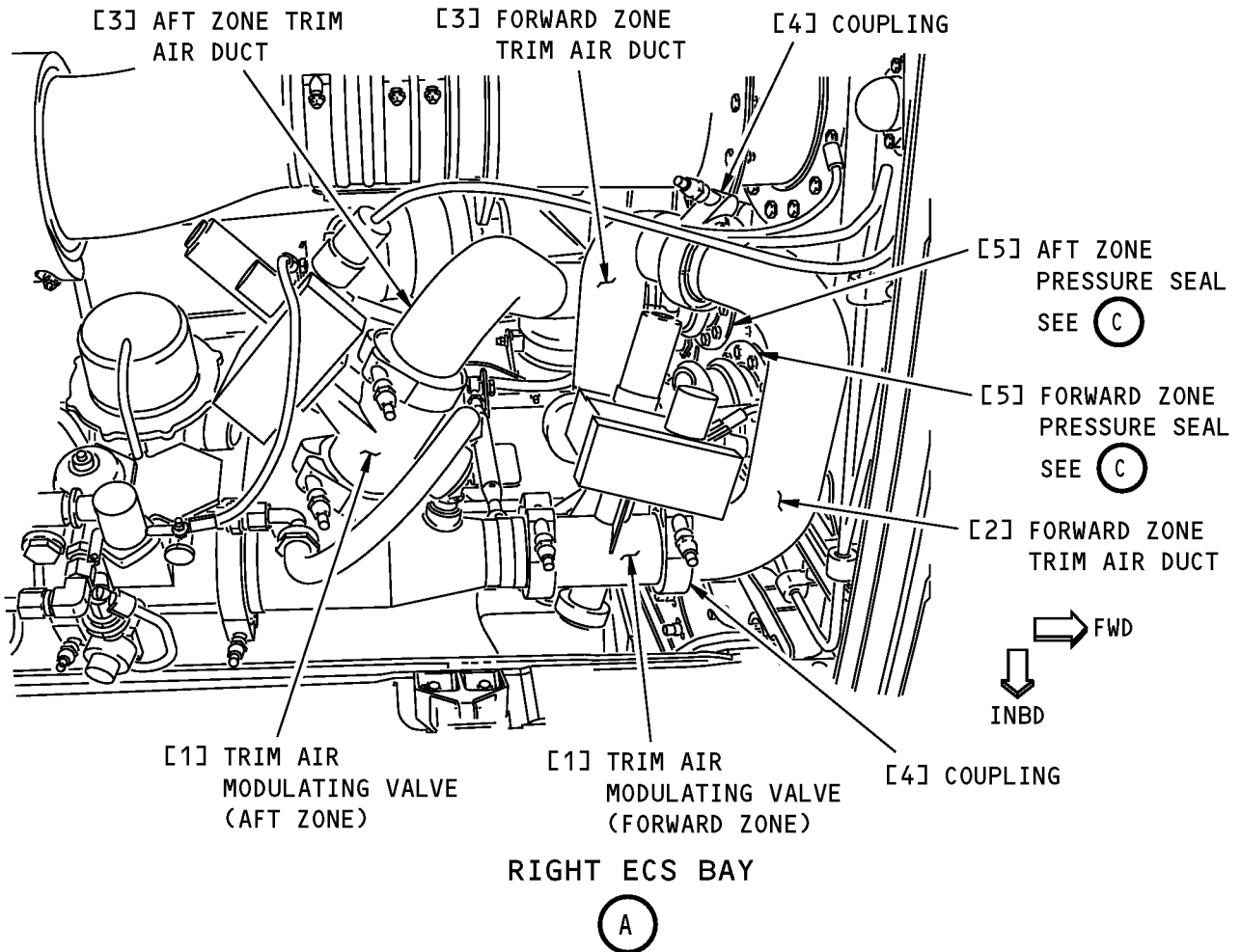
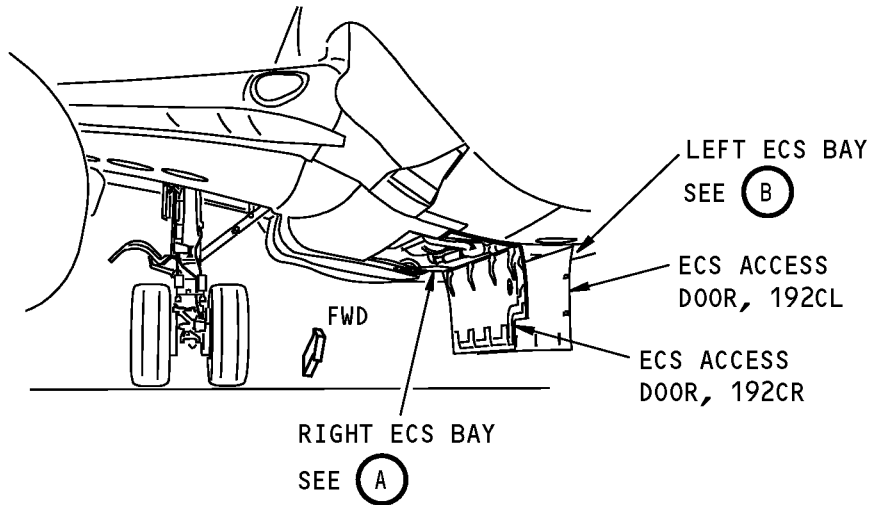
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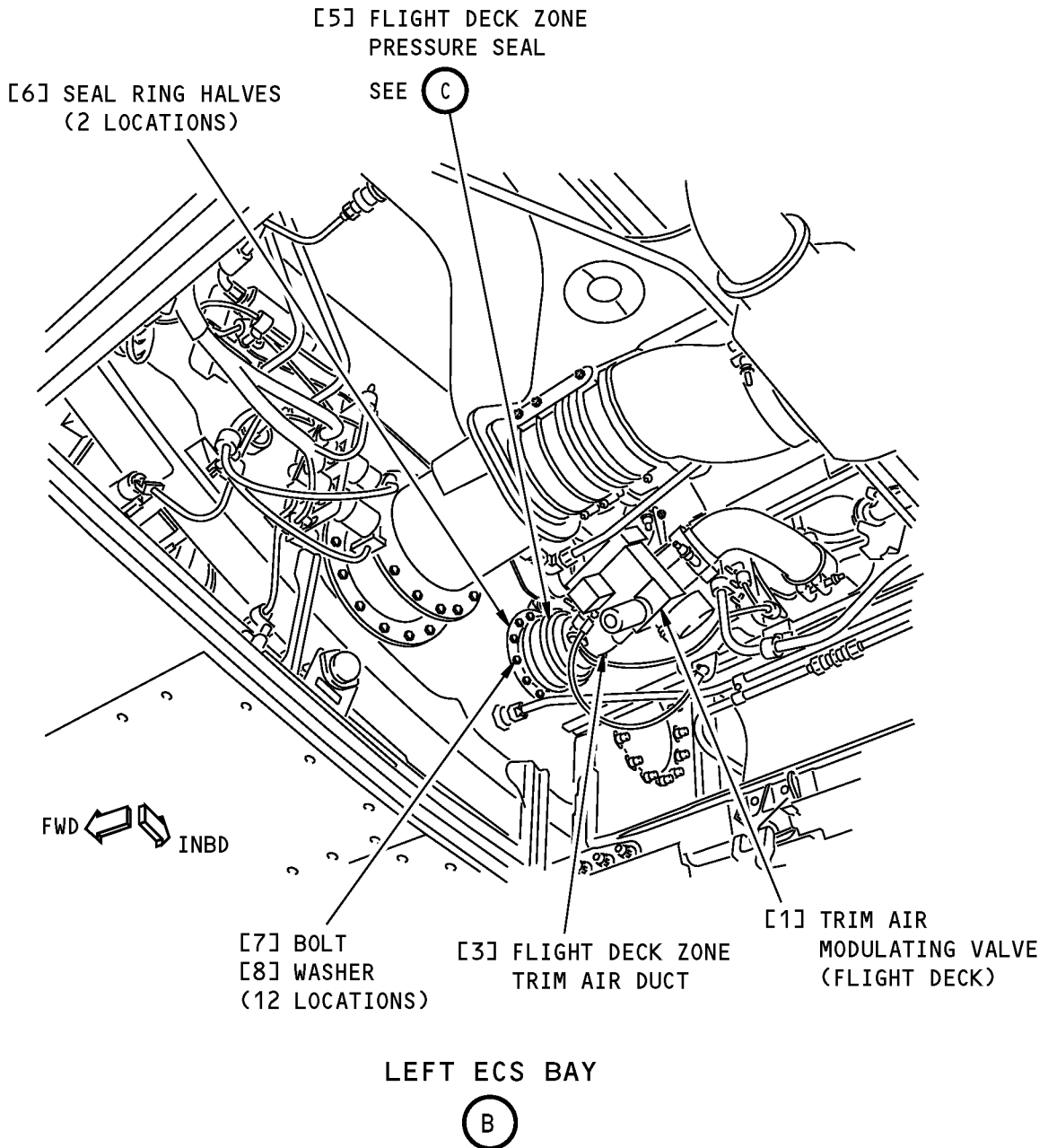
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**Trim Air Duct Pressure Seal Installation  
Figure 403 (Sheet 1 of 3)/21-61-12-990-803**

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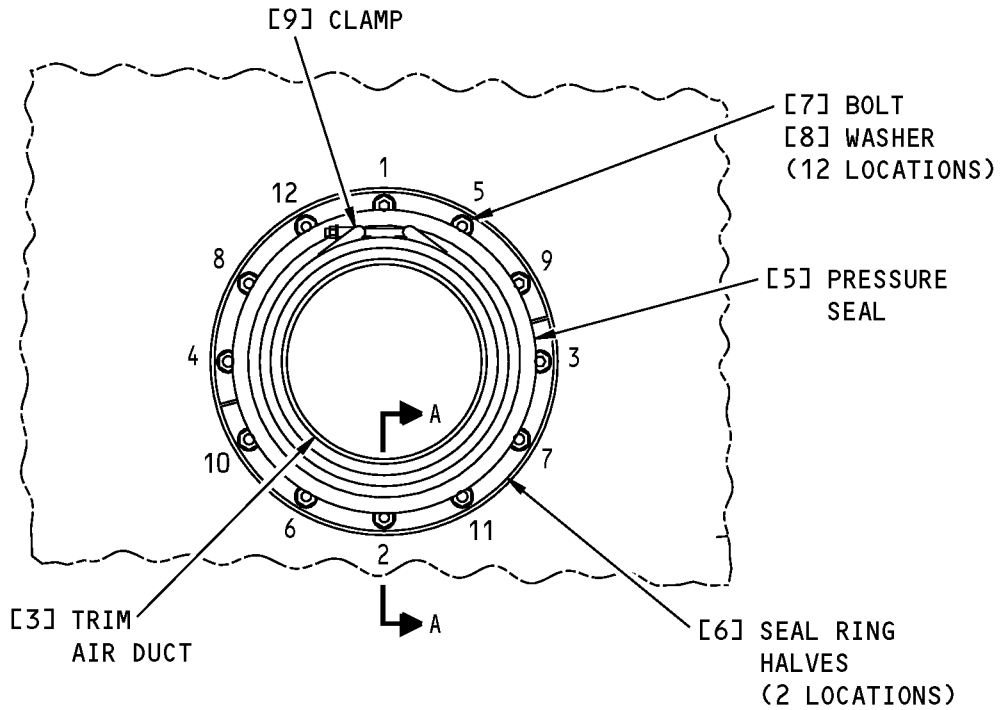


**Trim Air Duct Pressure Seal Installation  
Figure 403 (Sheet 2 of 3)/21-61-12-990-803**

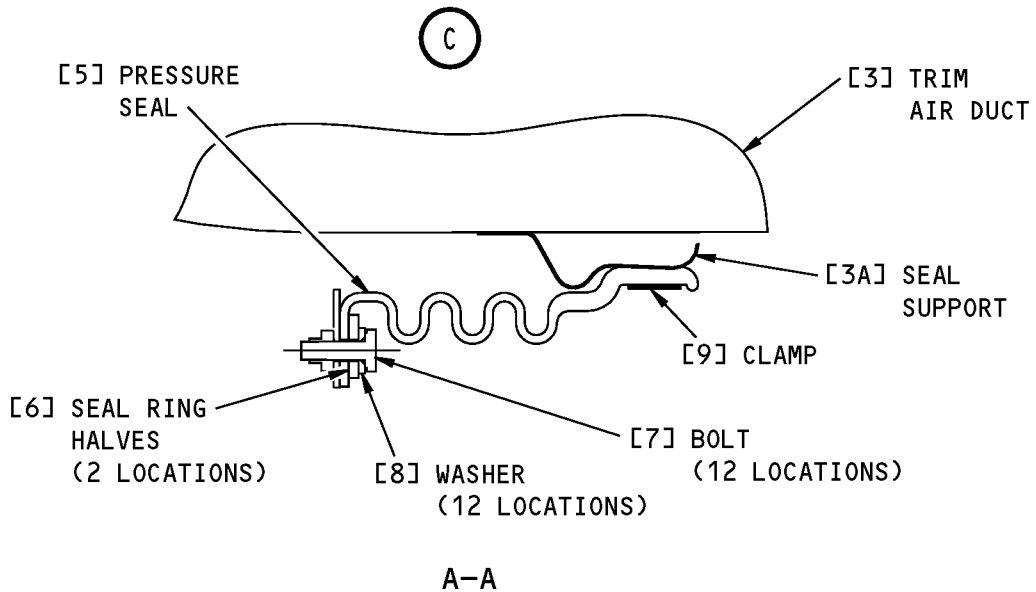
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**TRIM AIR PRESSURE SEAL  
(BOLT TORQUE SEQUENCE)**



**Trim Air Duct Pressure Seal Installation  
Figure 403 (Sheet 3 of 3)/21-61-12-990-803**

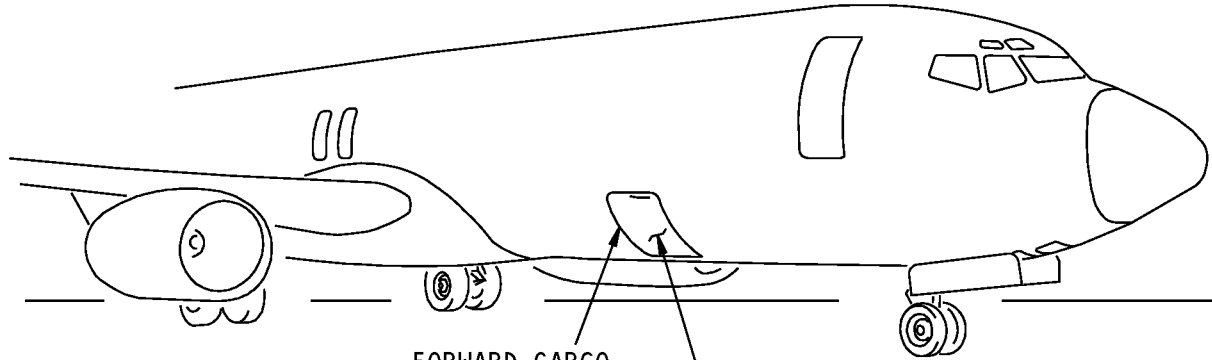
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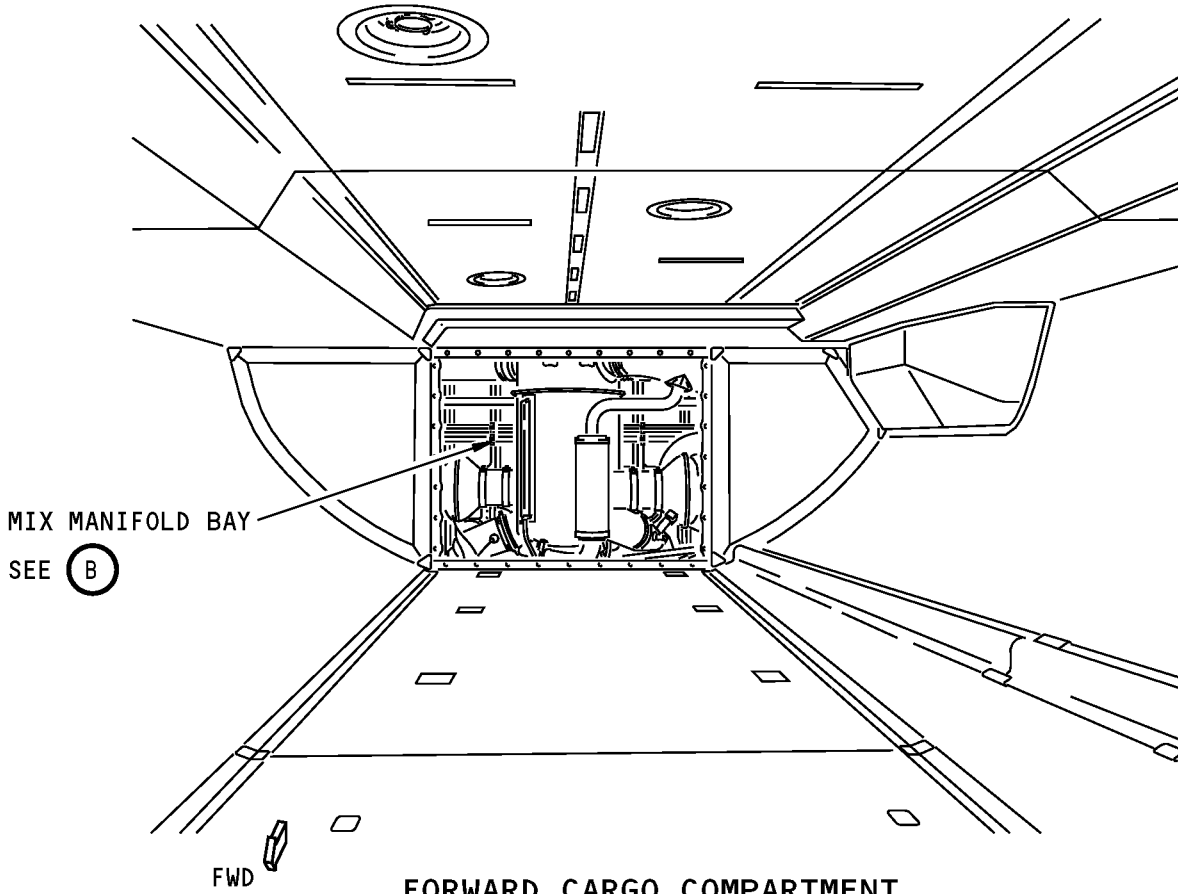
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FORWARD CARGO  
DOOR, 821

FORWARD CARGO  
COMPARTMENT

SEE (A)



MIX MANIFOLD BAY

SEE (B)

FWD

FORWARD CARGO COMPARTMENT

(A)

**Trim Air Duct Installation  
Figure 404 (Sheet 1 of 2)/21-61-12-990-804**

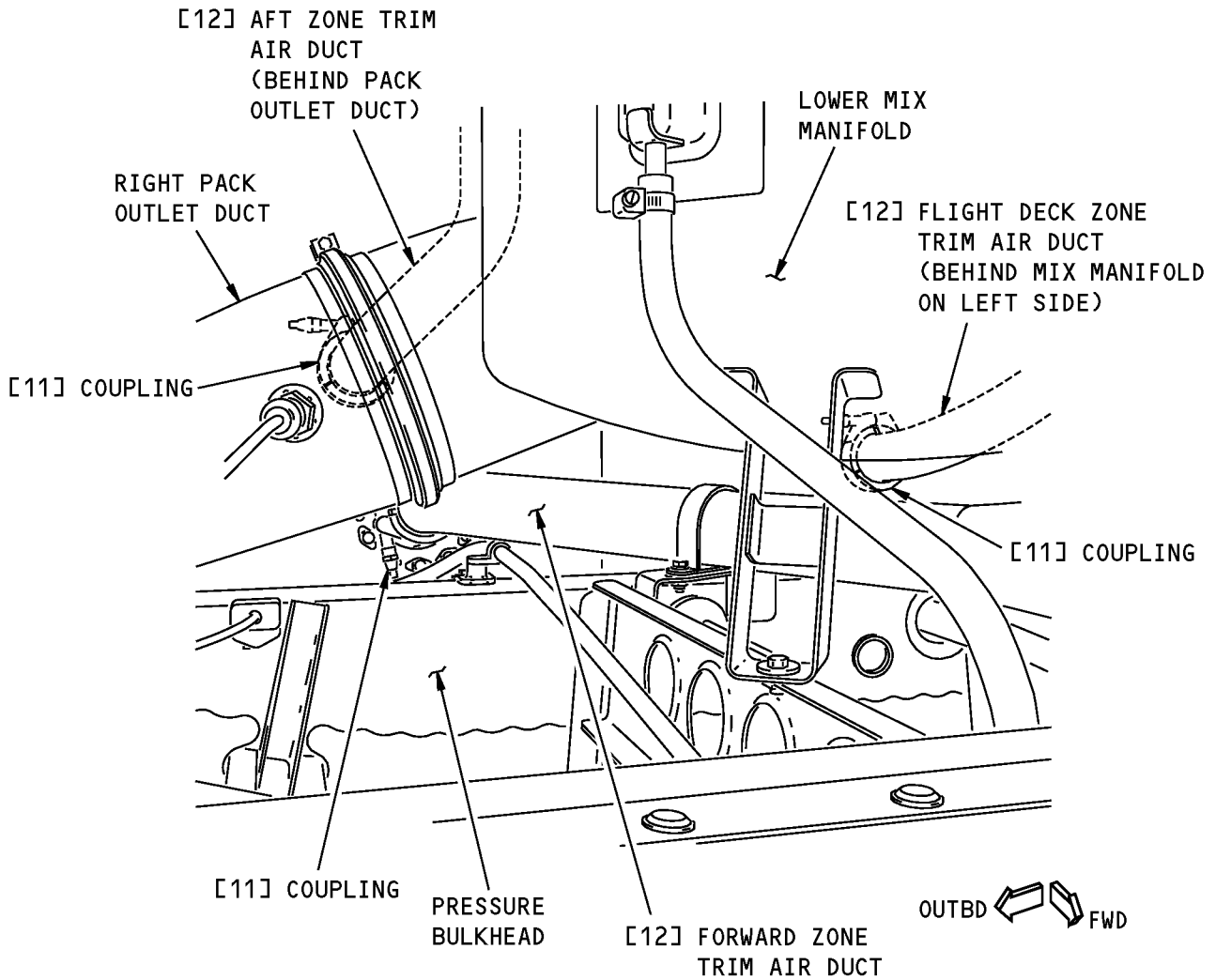
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**MIX MANIFOLD BAY**

(B)

**Trim Air Duct Installation**  
**Figure 404 (Sheet 2 of 2)/21-61-12-990-804**

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## TASK 21-61-12-400-802

### 5. Trim Air Duct Pressure Seal Installation

(Figure 403),(Figure 404)

#### 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 - Aliphatic Naphtha (For Acrylic Plastics)	TT-N-95 Type II, ASTM D-3735 Type III
D00010	Compound - Thread Antiseize, High Temperature	MIL-PRF-907F
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	Air Conditioning Access Door
192CR	Air Conditioning 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 403):

- (a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
821	Forward Cargo Door

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- (b) Remove the aft bulkhead liner in the forward cargo compartment (TASK 25-52-17-000-801).
- (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 403) .

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 403):

- (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 403.
- (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 Snoot 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door
821	Forward Cargo Door

————— **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

<u>Zone</u>	<u>Area</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

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** —————

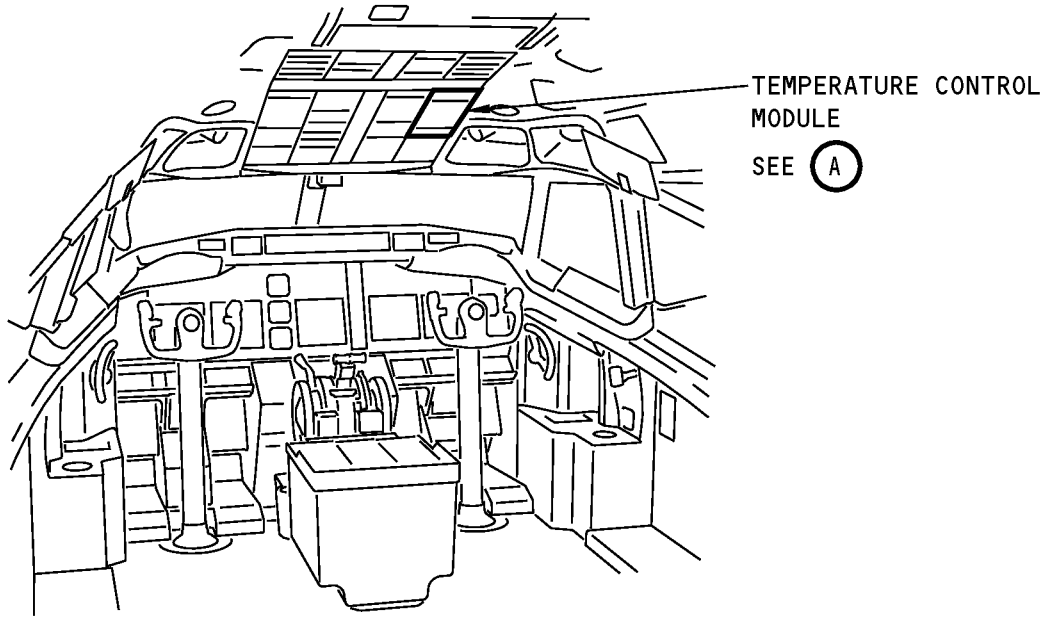
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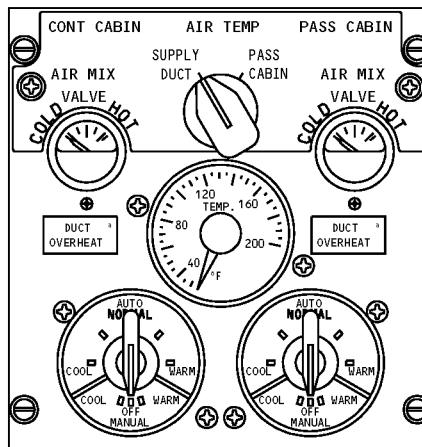
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AIRCRAFT MAINTENANCE MANUAL**



**FLIGHT COMPARTMENT**



1/4-TURN  
FASTENER  
(4 LOCATIONS)

**[1] TEMPERATURE CONTROL MODULE**

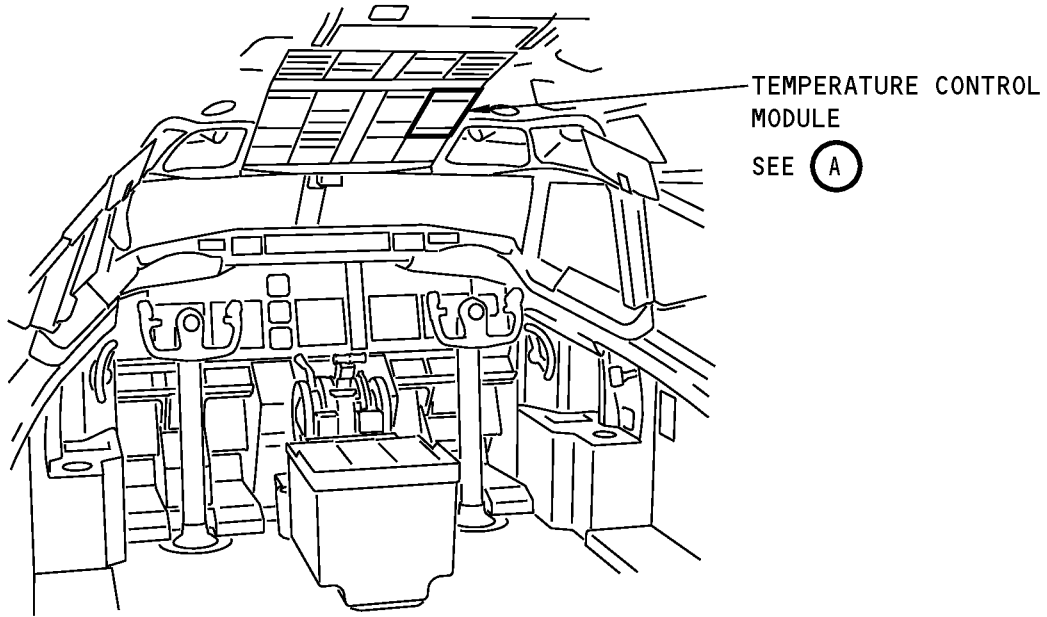
(A)

**Temperature Control Module Installation  
Figure 401 (Sheet 1 of 2)/21-61-15-990-801**

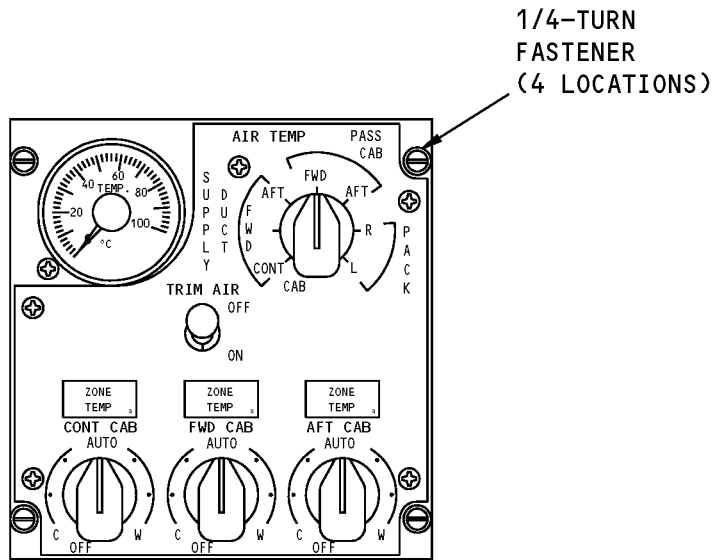
EFFECTIVITY  
HAP 101-999

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**737-600/700/800/900  
AIRCRAFT MAINTENANCE MANUAL**



**FLIGHT COMPARTMENT**



**[1] TEMPERATURE CONTROL MODULE**

(A)

**Temperature Control Module Installation  
Figure 401 (Sheet 2 of 2)/21-61-15-990-801**

EFFECTIVITY  
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737-600/700/800/900

### AIRCRAFT MAINTENANCE MANUAL

#### 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)
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)

#### B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Module	21-61-05-07-005	HAP 101-999
		21-61-07-02-015	HAP 101-999
		21-61-07-02-405	HAP 029-040, 042
		21-61-07-03-010	HAP 029-054
		21-61-20-02-050	HAP 001-013, 015-026, 028
		21-61-33-01-005	HAP 101-999

#### 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT

## 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	1	C01273	PRESSURIZATION CONTROL LCD LTG
F	6	C01269	PRESSURIZATION CONTROL MANUAL

## HAP 101-999

SUBTASK 21-61-15-710-001

(3) Do this test of the temperature control module:

- (a) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.
- (b) Set the LIGHTS switch on the P2-1 panel momentarily to the TEST position and make sure these lights come on and then go off:
  - 1) CONT CABIN DUCT OVERHEAT
  - 2) PASS CABIN DUCT OVERHEAT
- (c) Make sure that the L and R PACK switches on the P5-10 panel are set to OFF.
- (d) Do this task: Supply Pressure to the Pneumatic System with the APU, TASK 36-00-00-860-803.
- (e) Measure the temperature of the passenger cabin with a thermometer.
- (f) Position the AIR TEMP selector on the P5-17 temperature control module to PASS CABIN.
- (g) Make sure the indication on the temperature gauge on the P5-17 panel is approximately the same as the thermometer indication.
- (h) Position the AIR TEMP selector to SUPPLY DUCT.
- (i) Make sure the indication on the temperature gauge on the P5-17 panel is approximately the same as the temperature indication for the PASS CABIN.
- (j) Move the CONT CABIN temperature selector on the P5-17 panel to MANUAL WARM.
- (k) Move the L PACK switch on the P5-10 panel to AUTO.
- (l) Make sure that the indicator needle on the CONT CABIN - AIR MIX VALVE indicator moves toward HOT.
- (m) Move the CONT CABIN temperature selector on the P5-17 temperature control module to MANUAL COOL.
- (n) Make sure that the indicator needle on the CONT CABIN - AIR MIX VALVE indicator moves towards COOL.

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**AIRCRAFT MAINTENANCE MANUAL**

**HAP 101-999 (Continued)**

- (o) Move the CONT CABIN temperature selector to MANUAL OFF.
- (p) Move the L PACK switch to OFF.
- (q) Move the R PACK switch to AUTO.
- (r) Move the PASS CABIN temperature selector to MANUAL WARM.
- (s) Make sure the PASS CABIN - AIR MIX VALVE indicator moves towards HOT.
- (t) Move the PASS CABIN temperature selector to MANUAL COOL.
- (u) Make sure the PASS CABIN - AIR MIX VALVE indicator moves toward COLD.
- (v) Move the PASS CABIN temperature selector to MANUAL OFF.
- (w) Move the R PACK switch to OFF.

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-15-710-004

- (4) 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.
  - (c) Do this task: Cabin Temperature Control and Indication - Operational Test, TASK 21-61-00-700-807-002.

**HAP ALL**

G. Put the Airplane Back to Its Usual Condition

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-15-410-004

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

**HAP ALL**

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** —————

<p>EFFECTIVITY</p> <p><b>HAP ALL</b></p>	
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# AIRCRAFT MAINTENANCE MANUAL

## 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
20-10-07-400-802	Printed Circuit Card Installation (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
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
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

SUBTASK 21-61-20-010-001

(3) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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HAP 001-013, 015-026, 028-054

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AIRCRAFT MAINTENANCE MANUAL**

**E. Pack/Zone Temperature Controller Removal**

SUBTASK 21-61-20-010-002

(1) To remove the pack/zone temperature controller [1], (TASK 20-10-07-400-802).

**END OF TASK**

**EFFECTIVITY**  
**HAP 001-013, 015-026, 028-054**

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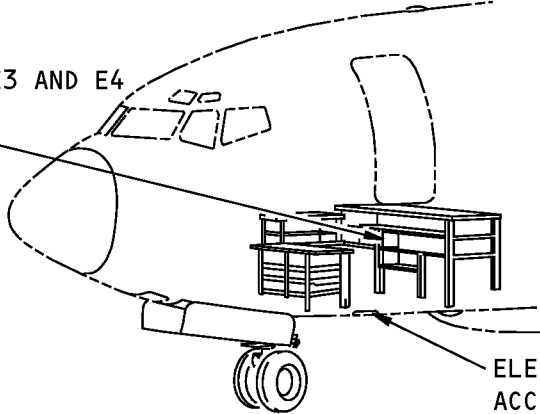
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**AIRCRAFT MAINTENANCE MANUAL**

ELECTRONIC  
EQUIPMENT  
RACKS E2, E3 AND E4

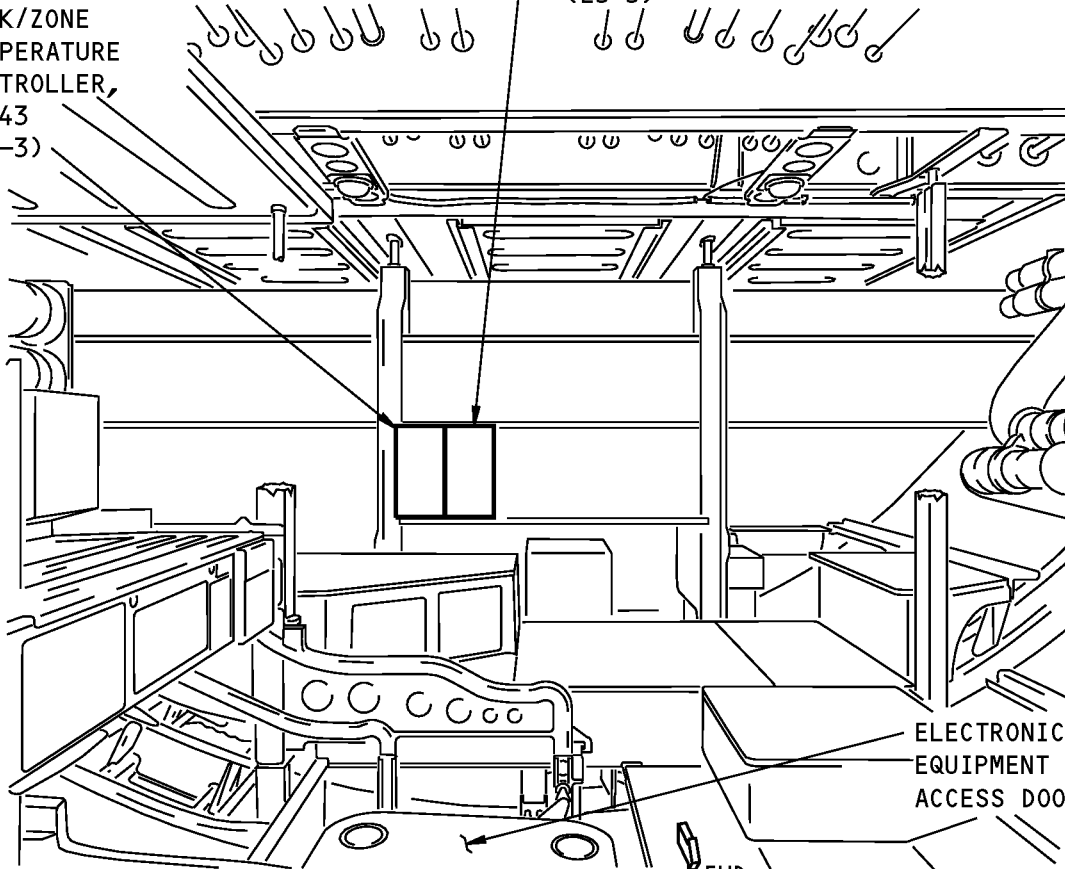
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ELECTRONIC EQUIPMENT  
ACCESS DOOR, 117A

[1] PACK/ZONE  
TEMPERATURE  
CONTROLLER,  
M1443  
(E3-3)

[1] PACK/ZONE TEMPERATURE  
CONTROLLER, M1442  
(E3-3)



ELECTRONIC  
EQUIPMENT  
ACCESS DOOR, 117A

ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4



**Pack/Zone Temperature Controller Installation**  
**Figure 401/21-61-20-990-801**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

#### TASK 21-61-20-400-801

### 3. Pack/Zone Temperature Controller Installation

(Figure 401)

#### A. References

Reference	Title
20-10-07-000-801	E/E Box Removal (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	21-60-51-01-005	HAP 012, 013, 015-026, 028-054
		21-61-20-01-005	HAP 001-011

#### 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], (TASK 20-10-07-000-801).

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
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
B	9	C01161	AIR CONDITIONING PACK CONT RIGHT DC
B	11	C01162	AIR CONDITIONING PACK CONT RIGHT AC

#### 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):

EFFECTIVITY HAP 001-013, 015-026, 028-054
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- (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:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

————— **END OF TASK** —————

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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# AIRCRAFT MAINTENANCE MANUAL

## 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	Air Conditioning Access Door
192CR	Air Conditioning 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:
  - (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
B	3	C01163	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT FLT DK

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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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01170	AIR CONDITIONING 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:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-61-21-010-002

(8) To get access to the right trim valves, open these access panels in the sepecified sequence:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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 21-61-21-020-002

(2) Do these steps to remove the bonding jumper:

(a) Remove the screw [3], the washer [4], and the nut [5] that hold the bonding jumper to the trim valve.

(b) Move the bonding jumper [1] away from the trim valve.

**NOTE:** Do the above steps two times on the trim valve for the aft passenger cabin.

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].

(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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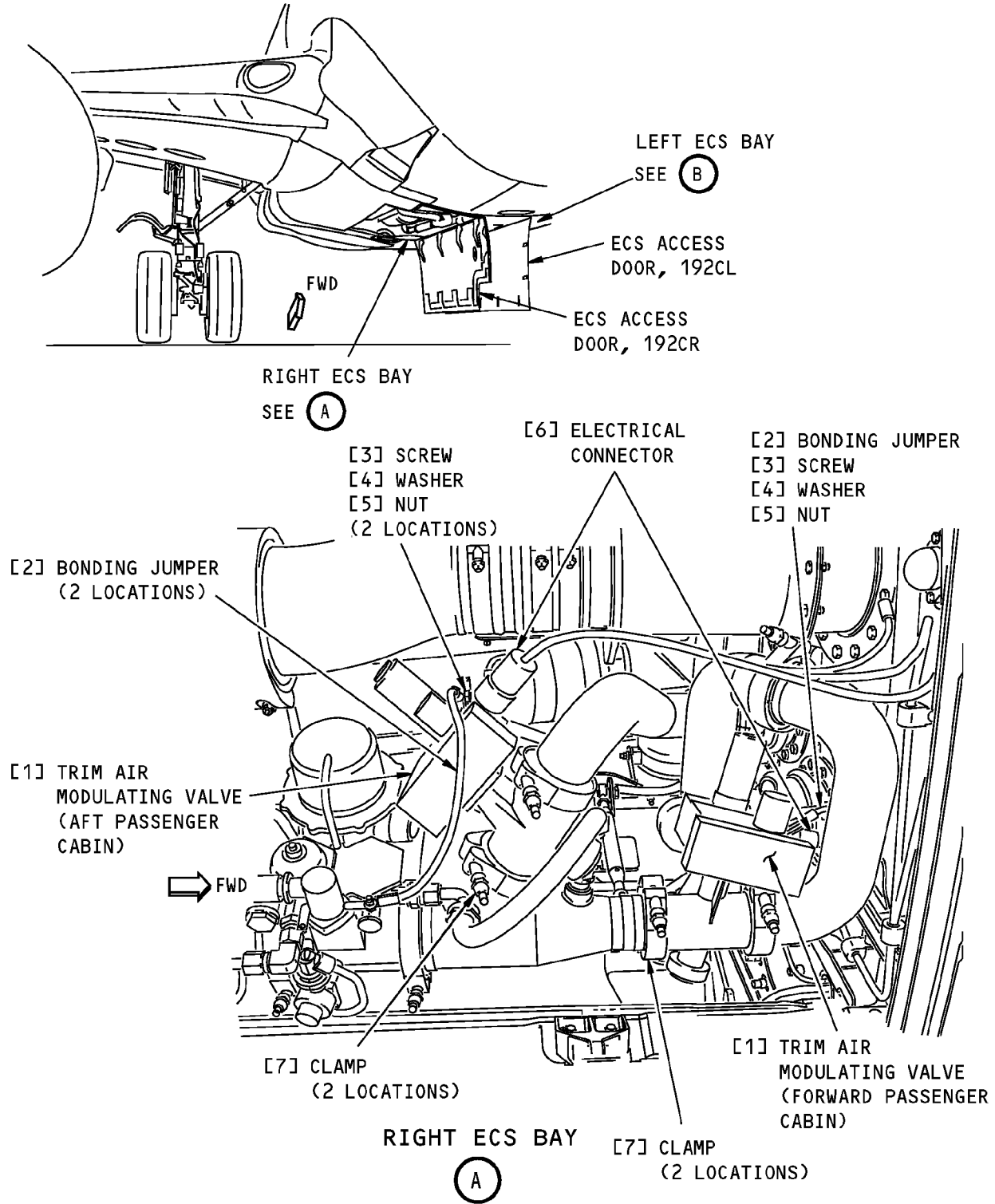
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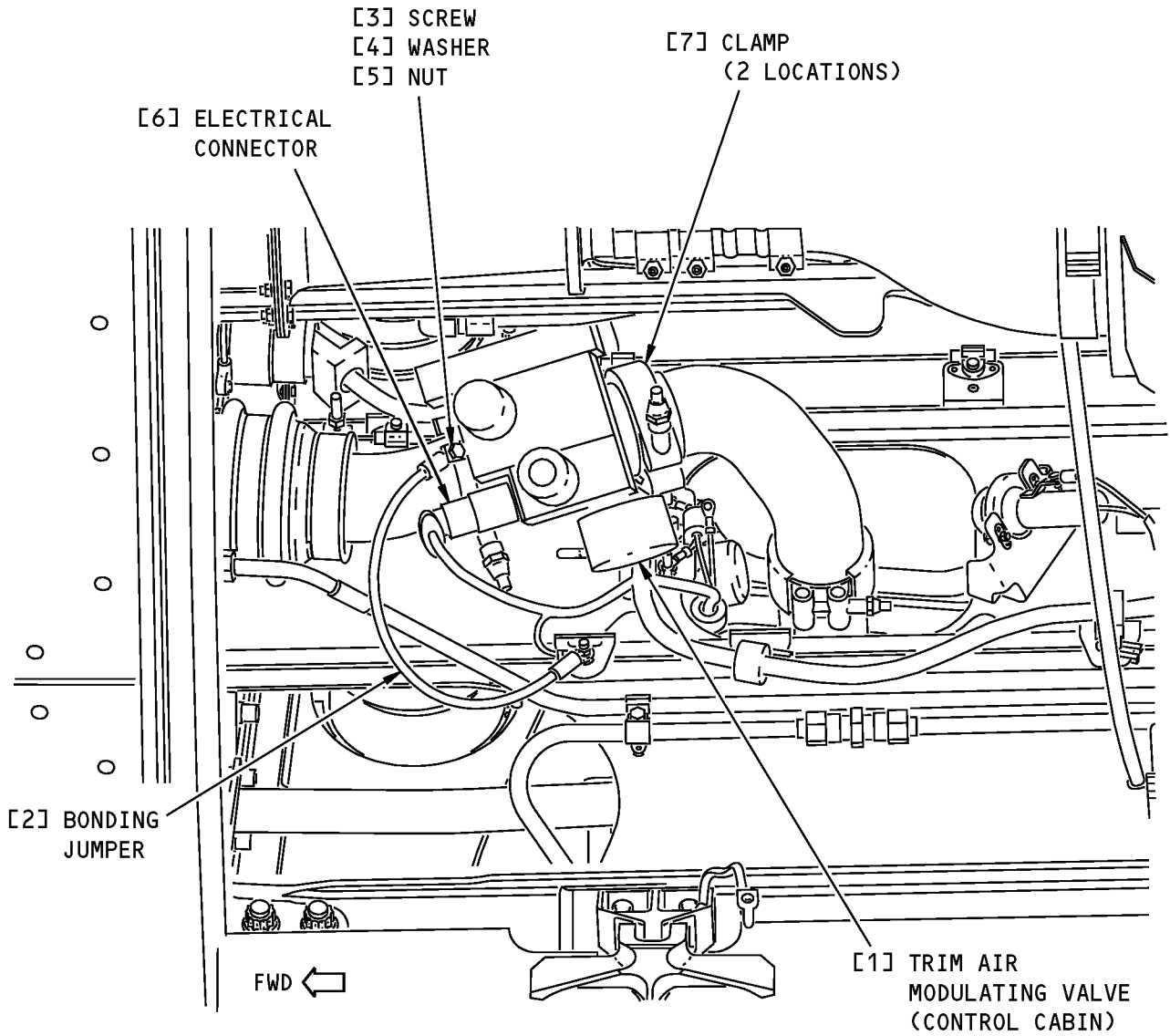
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**Zone Trim Air Modulating Valve Installation  
Figure 401 (Sheet 1 of 2)/21-61-21-990-801**

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LEFT ECS BAY

(B)

**Zone Trim Air Modulating Valve Installation**  
Figure 401 (Sheet 2 of 2)/21-61-21-990-801

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# AIRCRAFT MAINTENANCE MANUAL

## TASK 21-61-21-400-801

### 3. Zone Trim Air Modulating 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. 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
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

#### D. 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) Move the clamps [7] to the duct connections.

(c) Tighten the two clamps [7] 55 to 60 pound-inches (6.2 to 6.8 newton-meters).

SUBTASK 21-61-21-020-004

(2) Do these steps to install the bonding jumper:

(a) Put the bonding jumper [2] in its position on the trim valve.

(b) Install the screw [3], the washer [4], and the nut [5] that hold the bonding jumper to the trim valve.

**NOTE:** Do the above steps two times on the trim valve for the aft cabin.

SUBTASK 21-61-21-020-005

(3) Connect the electrical connector [6] to the trim valve [1].

#### E. 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	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT FLT DK

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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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01170	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT AFT PASS

SUBTASK 21-61-21-740-001

- (4) Do the BITE test of the pack/zone temperature controllers.

**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.
- (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.

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## AIRCRAFT MAINTENANCE MANUAL

- 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 21-61-21-010-003

- (1) If you replaced the trim air check valve for the left pack, close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning 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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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** —————

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

D633A101-HAP

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AIRCRAFT MAINTENANCE MANUAL

DUCT TEMPERATURE BULB - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the duct temperature bulb
- (2) An Installation of the duct temperature bulb.

**TASK 21-61-30-000-804-001**

2. Duct Temperature Bulb Removal

(Figure 401)

A. References

Reference	Title
25-21-45-000-801	Sculptured Ceiling Panel Removal (P/B 401)

B. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

C. Prepare for the Removal

SUBTASK 21-61-30-860-013-001

(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 21-61-30-010-011-001

(2) Remove the ceiling liner that is five windows forward of the overwing escape hatches.

NOTE: To remove the liner, do this task: Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

D. Duct Temperature Bulb Removal

SUBTASK 21-61-30-020-021-001

(1) Disconnect the electrical connector [3] from the duct temperature bulb [1].

SUBTASK 21-61-30-020-022-001

(2) Remove the duct temperature bulb [1].

SUBTASK 21-61-30-020-023-001

(3) Remove and discard the o-ring [2] from the duct temperature bulb [1].

————— **END OF TASK** —————

EFFECTIVITY
HAP 101-999

D633A101-HAP

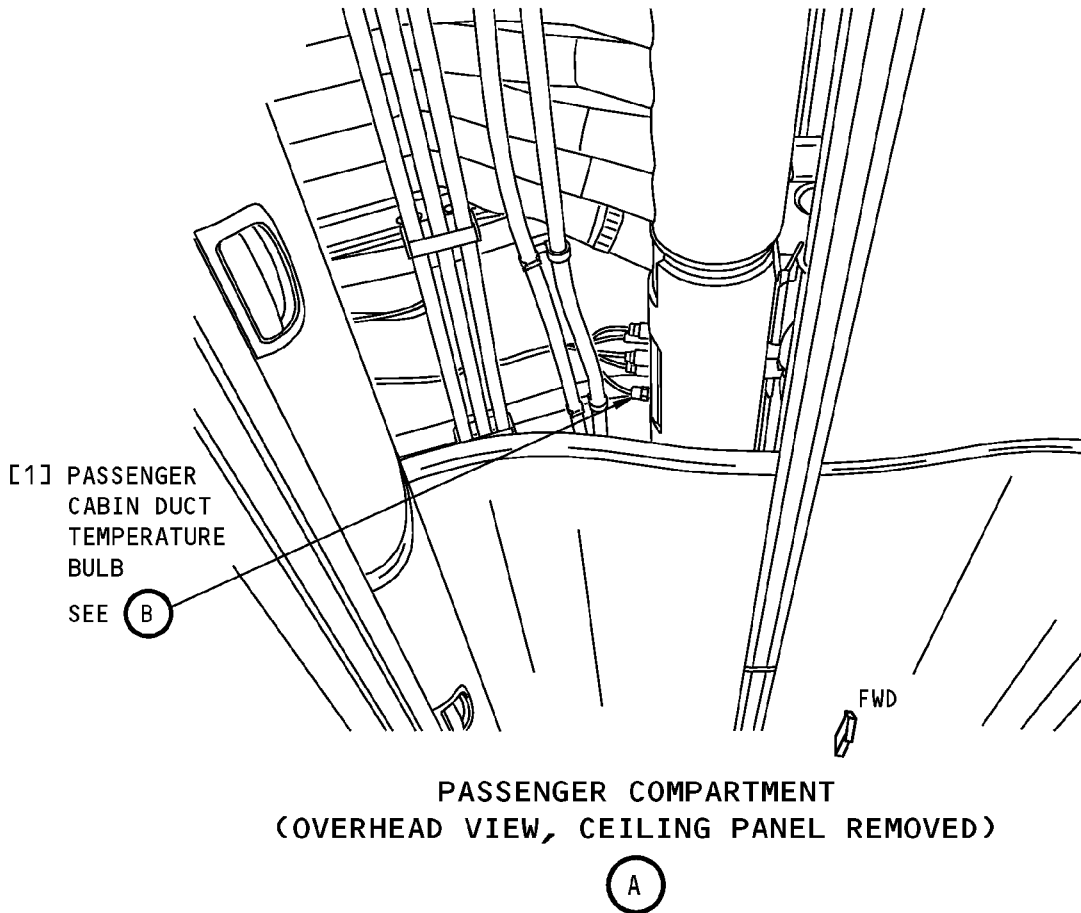
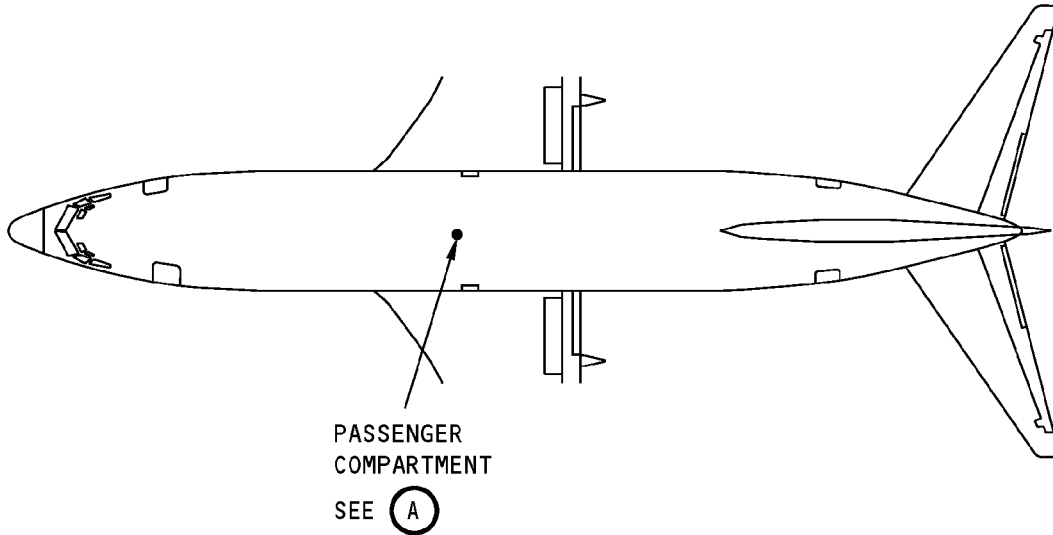
**21-61-30**

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AIRCRAFT MAINTENANCE MANUAL



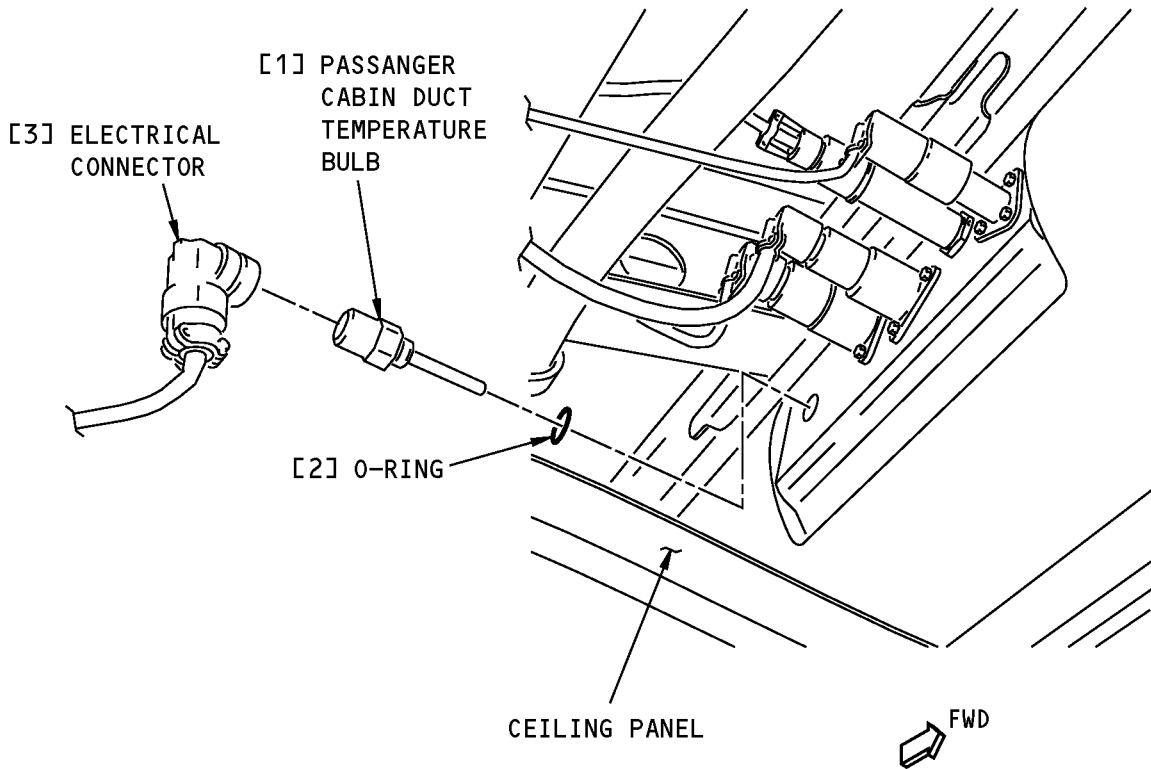
Duct Temperature Bulb Installation  
Figure 401 (Sheet 1 of 2)/21-61-30-990-806-001

EFFECTIVITY  
HAP 101-999

D633A101-HAP

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**PASSANGER CABIN DUCT TEMPERATURE BULB**

**B**

**Duct Temperature Bulb Installation**  
**Figure 401 (Sheet 2 of 2)/21-61-30-990-806-001**

EFFECTIVITY  
HAP 101-999

D633A101-HAP

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AIRCRAFT MAINTENANCE MANUAL

TASK 21-61-30-400-804-001

3. Duct Temperature Bulb Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
25-21-45-400-801	Sculptured Ceiling Panel Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D50004	Compound - Antiseize	BMS3-28

C. Location Zones

Zone	Area
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

D. Duct Temperature Bulb Installation

SUBTASK 21-61-30-020-024-001

(1) Remove the copper gasket, if installed, from the new duct temperature bulb [1].

SUBTASK 21-61-30-420-016-001

(2) Install a new o-ring [2] on the duct temperature bulb [1].

SUBTASK 21-61-30-640-006-001

(3) Put compound, D50004 on the threads of the duct temperature bulb [1].

SUBTASK 21-61-30-420-017-001

(4) Do these steps to install the duct temperature bulb [1]:

(a) Put the duct temperature bulb [1] in its position in the duct.

(b) Tighten the duct temperature bulb [1] until the o-ring [2] makes contact with the duct.

(c) Tighten the duct temperature bulb [1] an additional 3/4 turn.

SUBTASK 21-61-30-420-018-001

(5) Connect the electrical connector [3] to the duct temperature bulb [1].

E. Do a Test of the Duct Temperature Bulb

SUBTASK 21-61-30-860-014-001

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

SUBTASK 21-61-30-860-015-001

(2) Close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	8	C00076	AIR CONDITIONING TEMP IND

SUBTASK 21-61-30-860-016-001

(3) Put the AIR TEMP selector on the temperature control module on the overhead P5 panel to the SUPPLY DUCT position.

EFFECTIVITY

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## AIRCRAFT MAINTENANCE MANUAL

SUBTASK 21-61-30-710-006-001

- (4) Make sure the temperature indicator just below the AIR TEMP selector shows a temperature that is approximately the same as the ambient temperature in the cabin

F. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-30-010-012-001

- (1) Install the ceiling liner that is five windows forward of the overwing escape hatches.

NOTE: To install the liner, do this task: Sculptured Ceiling Panel Installation, TASK 25-21-45-400-801.

————— **END OF TASK** —————

EFFECTIVITY  
HAP 101-999

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# AIRCRAFT MAINTENANCE MANUAL

## 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
25-21-45-000-801	Sculptured 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:  
Sculptured Ceiling Panel Removal, TASK 25-21-45-000-801.

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].

EFFECTIVITY
HAP 001-013, 015-026, 028-054

D633A101-HAP

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## **AIRCRAFT MAINTENANCE MANUAL**

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**

EFFECTIVITY

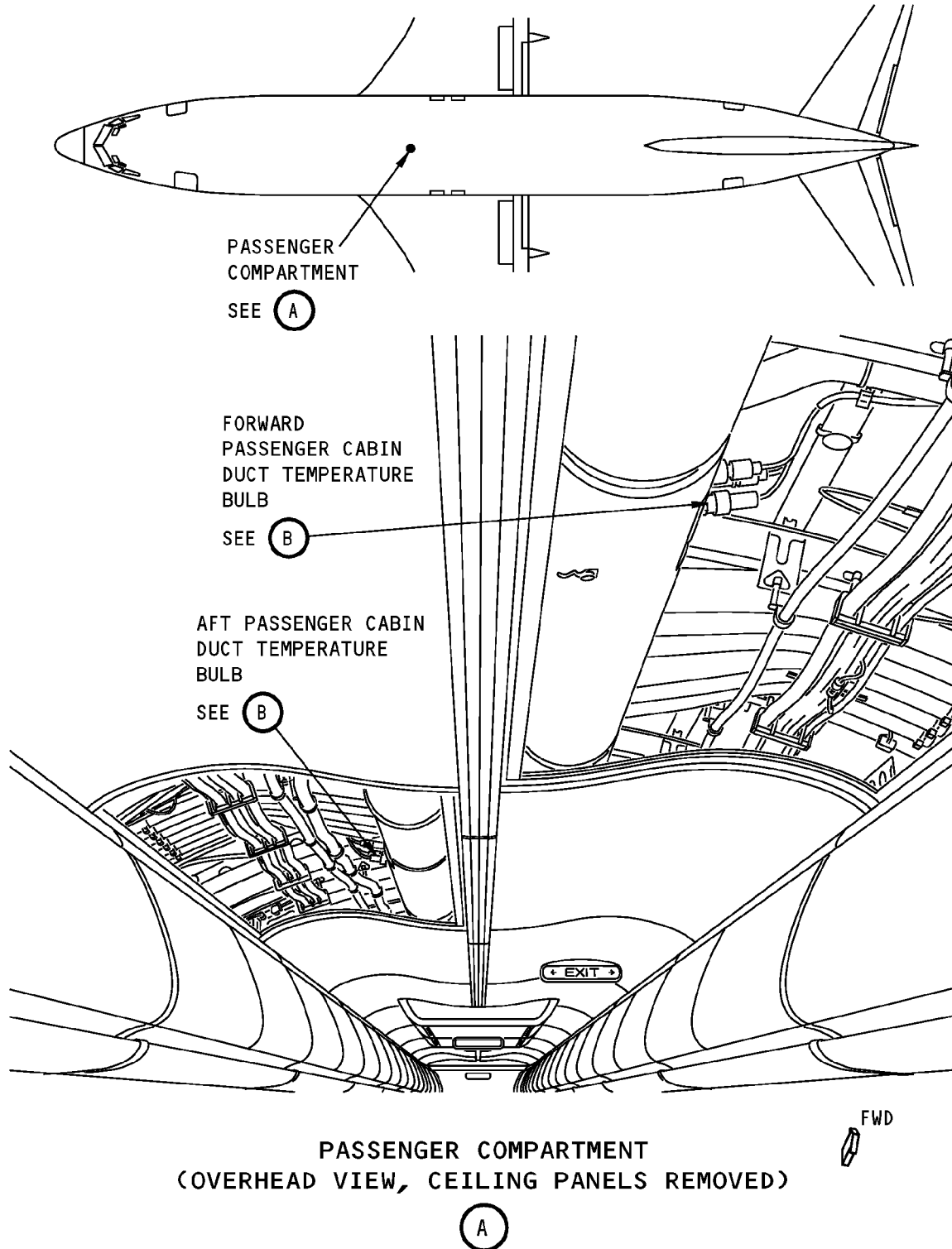
HAP 001-013, 015-026, 028-054

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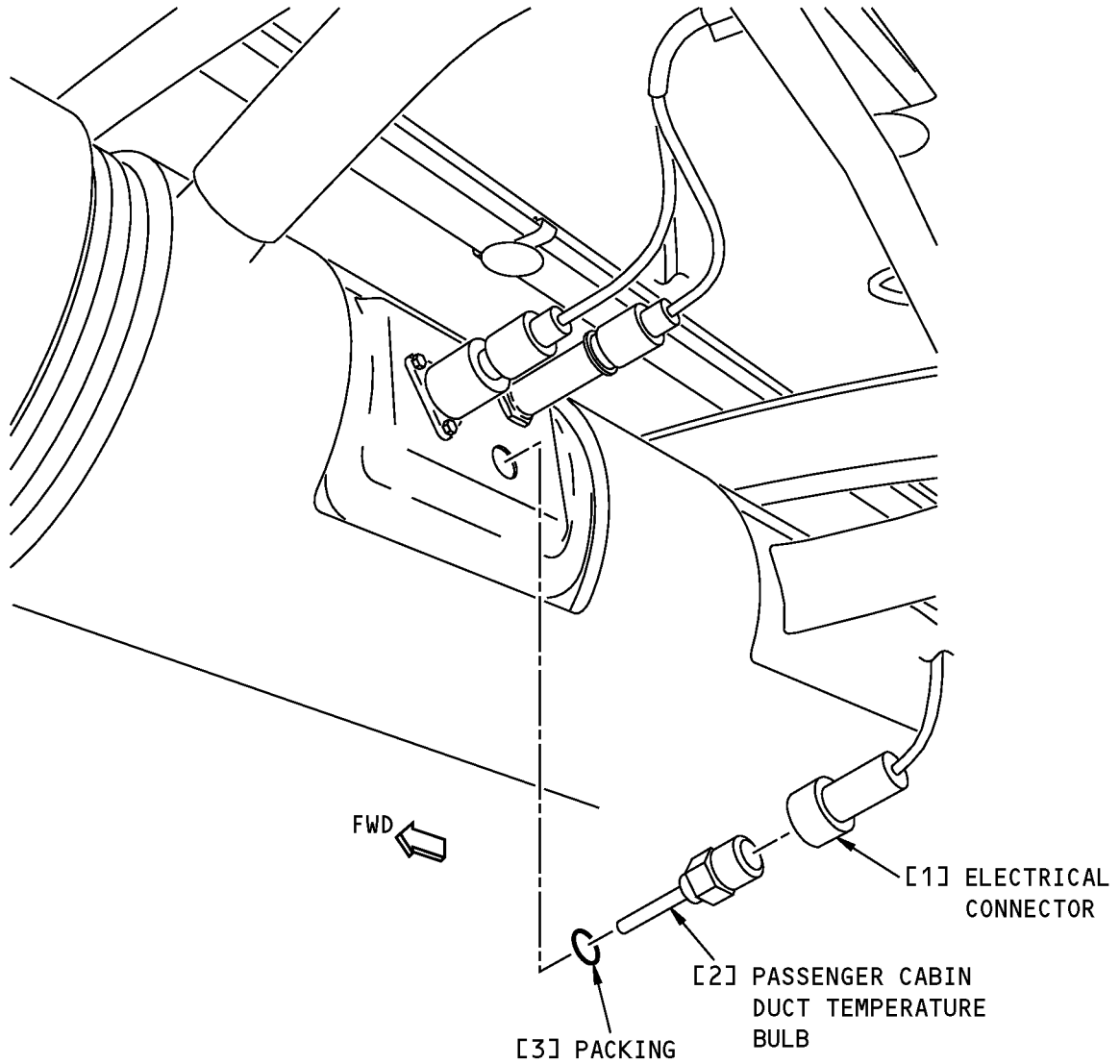
**Passenger Cabin Duct Temperature Bulb Installation**  
**Figure 401 (Sheet 1 of 2)/21-61-30-990-804-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**PASSENGER CABIN DUCT TEMPERATURE BULB  
(FORWARD CABIN BULB IS SHOWN, AFT CABIN BULB IS OPPOSITE)**

**B**

**Passenger Cabin Duct Temperature Bulb Installation  
Figure 401 (Sheet 2 of 2)/21-61-30-990-804-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

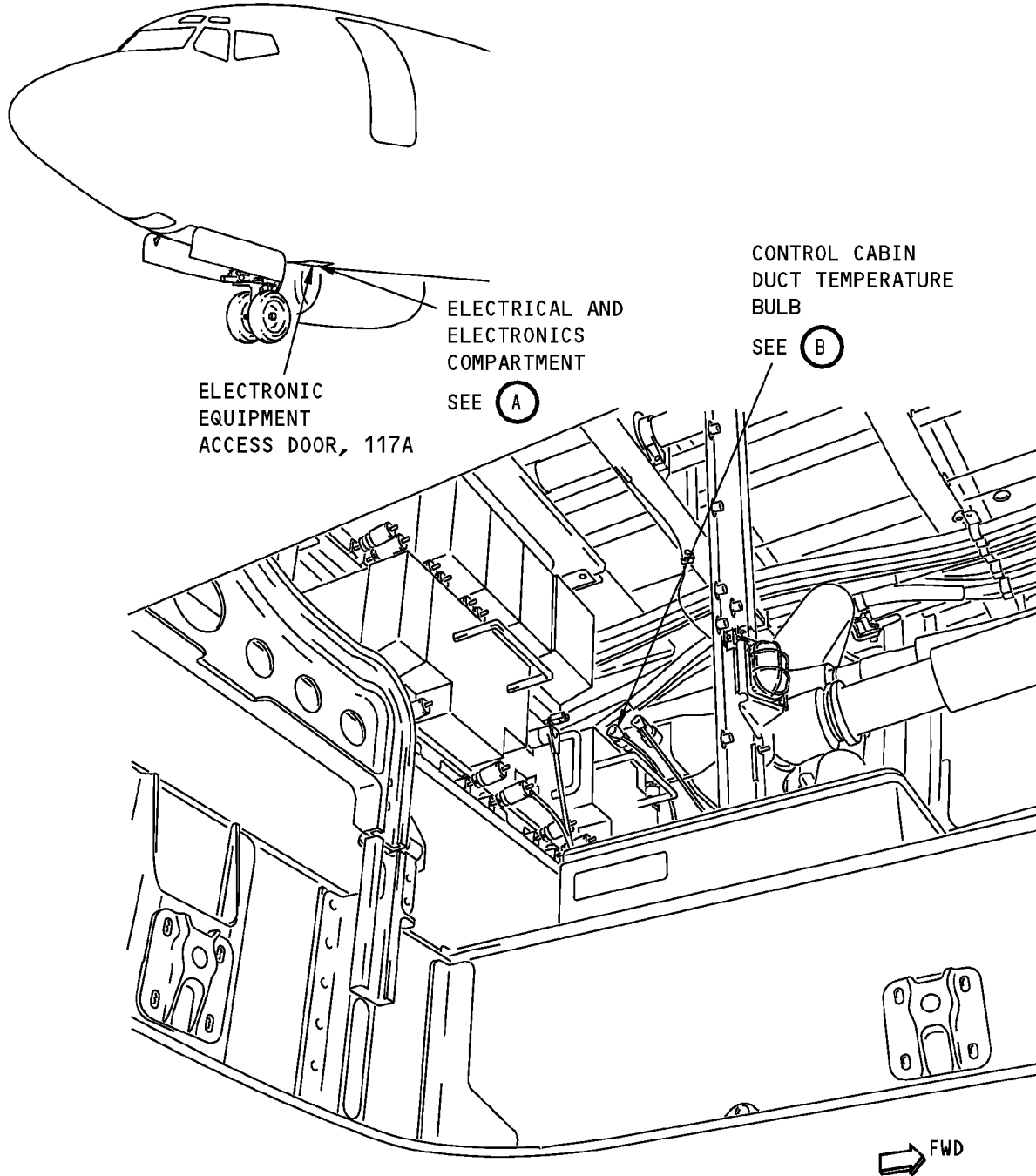
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**ELECTRICAL AND ELECTRONICS COMPARTMENT  
(VIEW THROUGH ACCESS DOOR, 117A)**

(A)

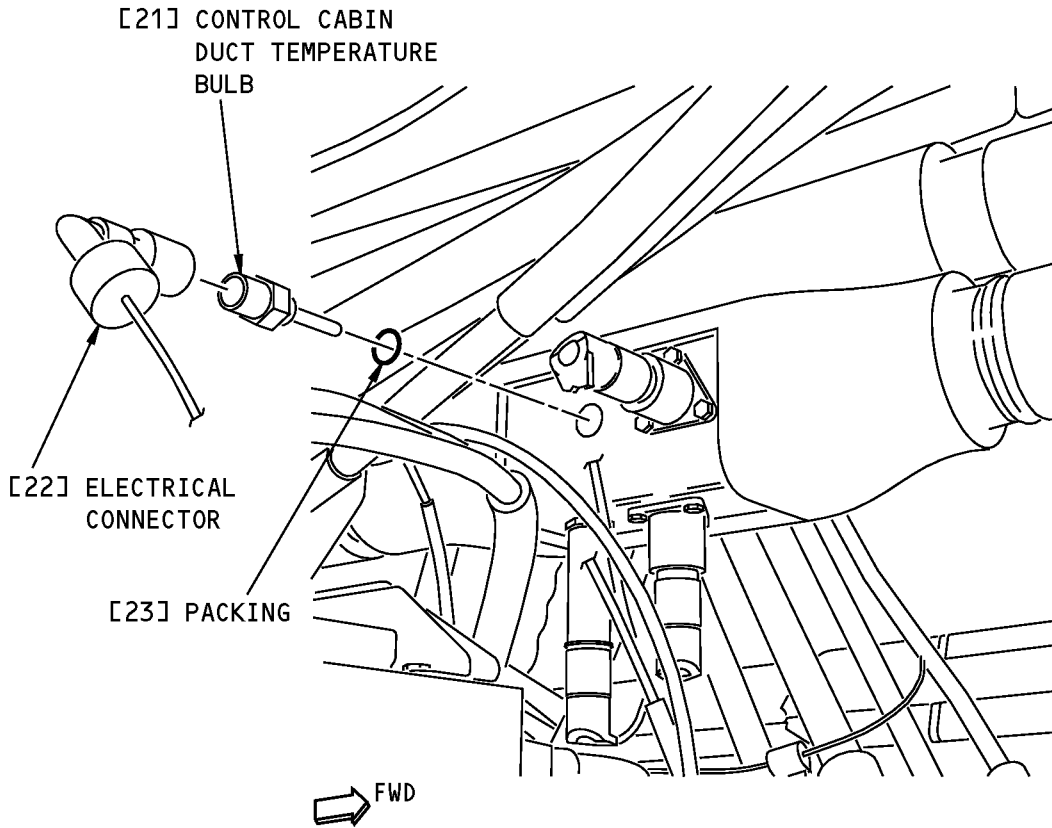
**Control Cabin Duct Temperature Bulb Installation  
Figure 402 (Sheet 1 of 2)/21-61-30-990-805-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**CONTROL CABIN DUCT TEMPERATURE BULB**

(B)

**Control Cabin Duct Temperature Bulb Installation**  
**Figure 402 (Sheet 2 of 2)/21-61-30-990-805-002**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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### AIRCRAFT MAINTENANCE MANUAL

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)
25-21-45-400-801	Sculptured 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	21-22-00-05-330	HAP 012, 013, 015-026, 028-054

##### 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].

EFFECTIVITY
HAP 001-013, 015-026, 028-054

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AIRCRAFT MAINTENANCE MANUAL

SUBTASK 21-61-30-640-005-002

(3) Put compound, D50004 on the threads of the duct temperature bulb [21].

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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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:

<u>Number</u>	<u>Name/Location</u>
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: Sculptured Ceiling Panel Installation, TASK 25-21-45-400-801.

————— END OF TASK —————

EFFECTIVITY  
**HAP 001-013, 015-026, 028-054**



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**AIRCRAFT MAINTENANCE MANUAL**

**CABIN TEMPERATURE BULB - REMOVAL/INSTALLATION**

**1. General**

A. This procedure has these tasks:

- (1) Cabin Temperature Bulb Removal
- (2) Cabin Temperature Bulb Installation.

**HAP 001-013, 015-026, 028-054**

- (3) There is a cabin temperature bulb for each of the forward and aft passenger compartment zones.

**HAP ALL**

**TASK 21-61-31-000-801**

**2. Cabin Temperature Bulb Removal**

(Figure 401 or Figure 402,)

A. Location Zones

<u>Zone</u>	<u>Area</u>
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
230	Subzone - Passenger Compartment - Body Station 360.00 to 663.75

**HAP 001-013, 015-026, 028-054**

242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right
-----	---

**HAP ALL**

B. Preparation for the Removal

**HAP 101-999**

SUBTASK 21-61-31-860-007

(1) Do this step for the removal of the cabin temperature bulb for the passenger compartment zone:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-31-860-001

(2) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-31-860-006

(3) Do this step for the removal of the temperature bulb for the aft passenger compartment zone:

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## AIRCRAFT MAINTENANCE MANUAL

HAP 001-013, 015-026, 028-054 (Continued)

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01170	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT AFT PASS

### HAP ALL

SUBTASK 21-61-31-860-002

- (4) Find the cabin temperature bulb for the passenger compartment behind the bullnose cover below the overhead stowage bin on the right forward side of the aisle.

#### C. Cabin Temperature Bulb Removal

(Figure 401 or Figure 402)

SUBTASK 21-61-31-020-001

- (1) Remove the cabin temperature bulb [18] in the passenger compartment as follows:

- (a) Lower the PSU at each end of the bullnose cover [1]:

NOTE: The PSUs must be lowered to get access to the fasteners that retain the closeouts for the bullnose cover.

- 1) Release the latches that hold the PSUs in position:

- a) Put a blunt-ended metal rod, approximately 1/16-inch (1.58 mm) diameter, into the access holes in the bottom of the PSU until the latch releases.

- 2) Lower the PSU.

- (b) Remove the bullnose cover [1] to get access to the temperature sensor assembly [9] as follows:

- 1) Do these steps to loosen the closeouts [7] at the ends of the bullnose cover [1]:

- a) Open the stowage bin [4] door and remove the screws [2] and the washers [3].

- b) Remove the screws [5] through the applicable hole in the MCD/PSU rail [6].

- c) Move the closeouts [7] to the adjacent bins to release them from the edges of the bullnose cover [1].

- 2) Push inboard on the clips [8] to release the bullnose cover [1] from the MCD/PSU rail [6].

NOTE: The notches in the outboard flange of the MCD/PSU rail [6] show the locations of the clips [8].

- 3) Turn the bullnose cover [1] inboard to remove it.

- (c) Disconnect the electrical connectors [10], [12] and [14].

- (d) Remove the access plug [13].

- (e) Remove the screws [15] and the washers [16].

- (f) Remove the screws [11].

- (g) Remove the temperature sensor assembly [9] and the washers [17].

- (h) Remove the lockwire [19].

EFFECTIVITY  
HAP ALL

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**AIRCRAFT MAINTENANCE MANUAL**

- (i) Remove the temperature bulb [18] and the lockwire washer [20].

————— **END OF TASK** —————

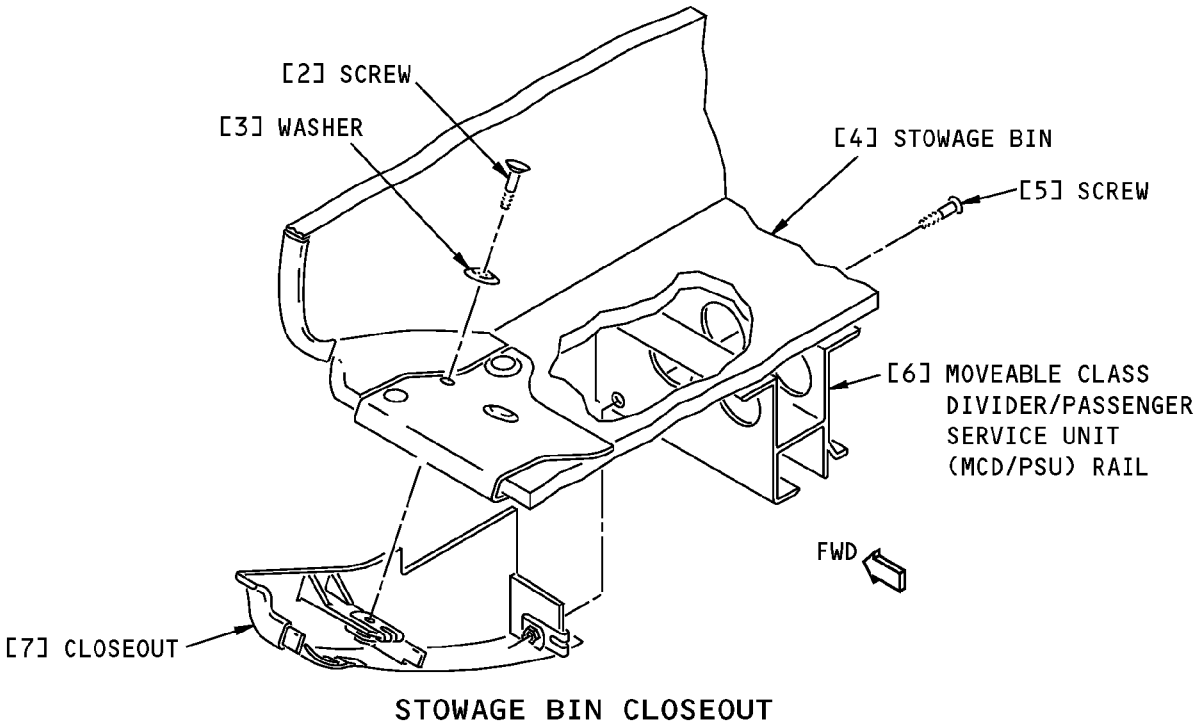
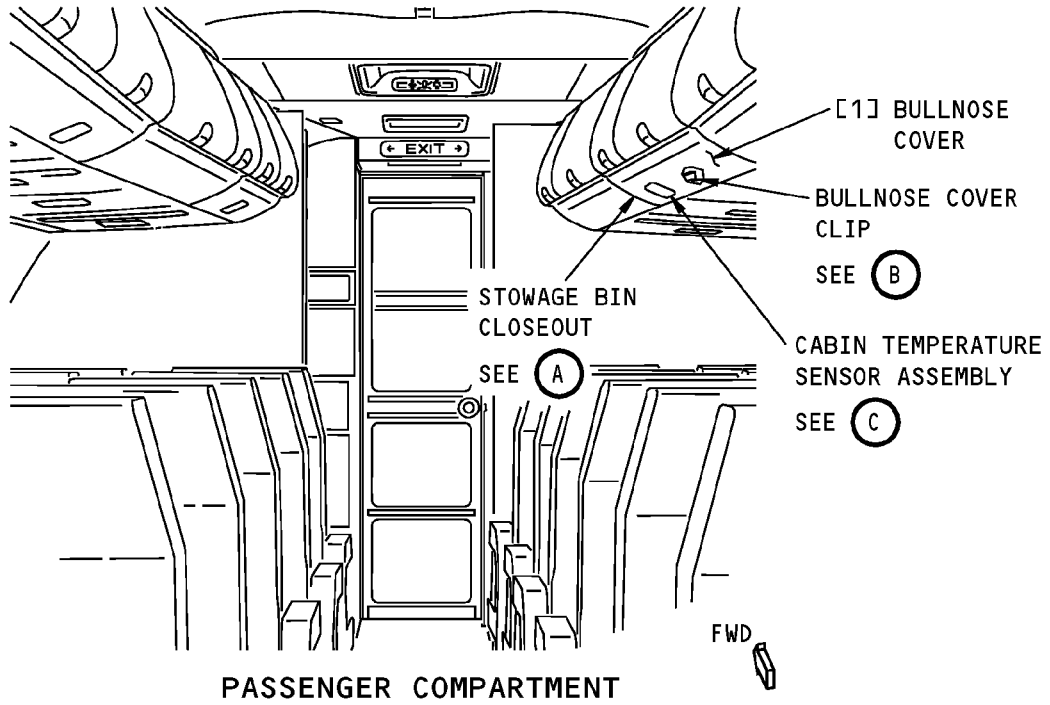
EFFECTIVITY  
HAP ALL

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(A)

**Cabin Temperature Bulb Installation  
Figure 401 (Sheet 1 of 4)/21-61-31-990-801**

EFFECTIVITY  
HAP 101-999

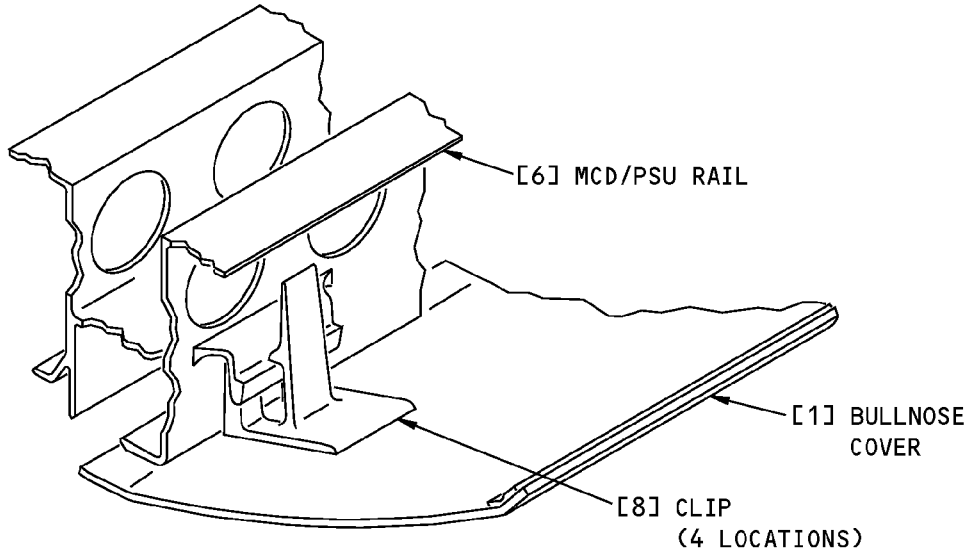
**21-61-31**

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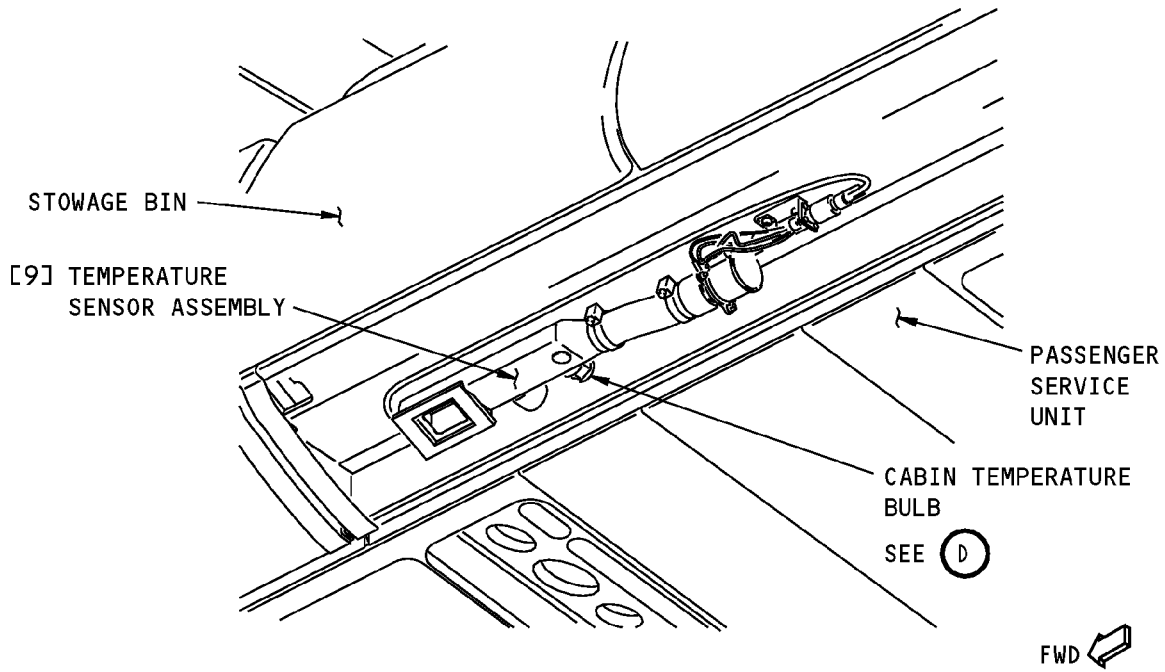


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AIRCRAFT MAINTENANCE MANUAL**



**BULLNOSE COVER CLIP**

**(B)**



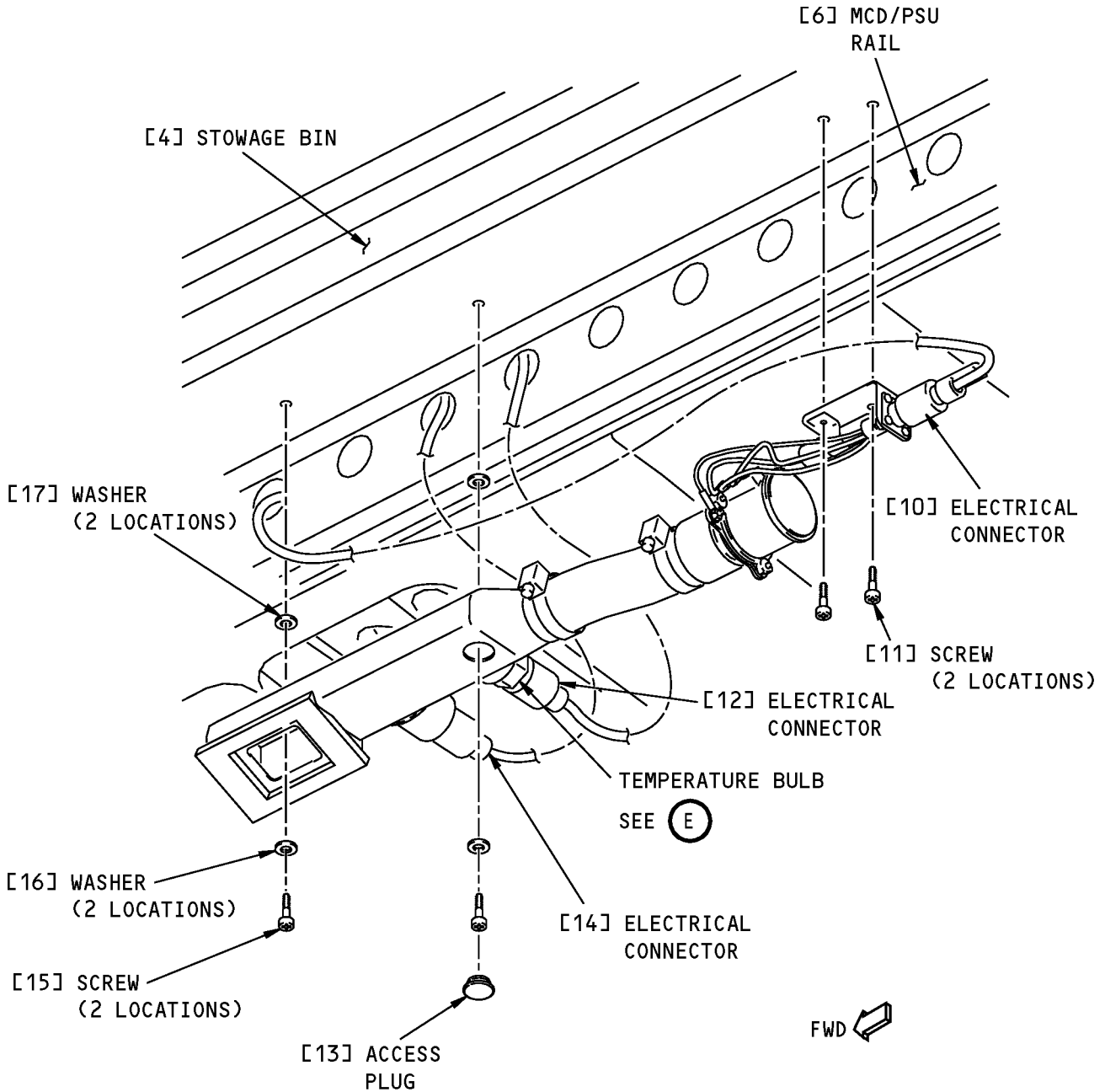
**CABIN TEMPERATURE SENSOR ASSEMBLY  
(BULLNOSE COVER REMOVED)**

**(C)**

**Cabin Temperature Bulb Installation  
Figure 401 (Sheet 2 of 4)/21-61-31-990-801**

EFFECTIVITY  
HAP 101-999

D633A101-HAP



**CABIN TEMPERATURE BULB**

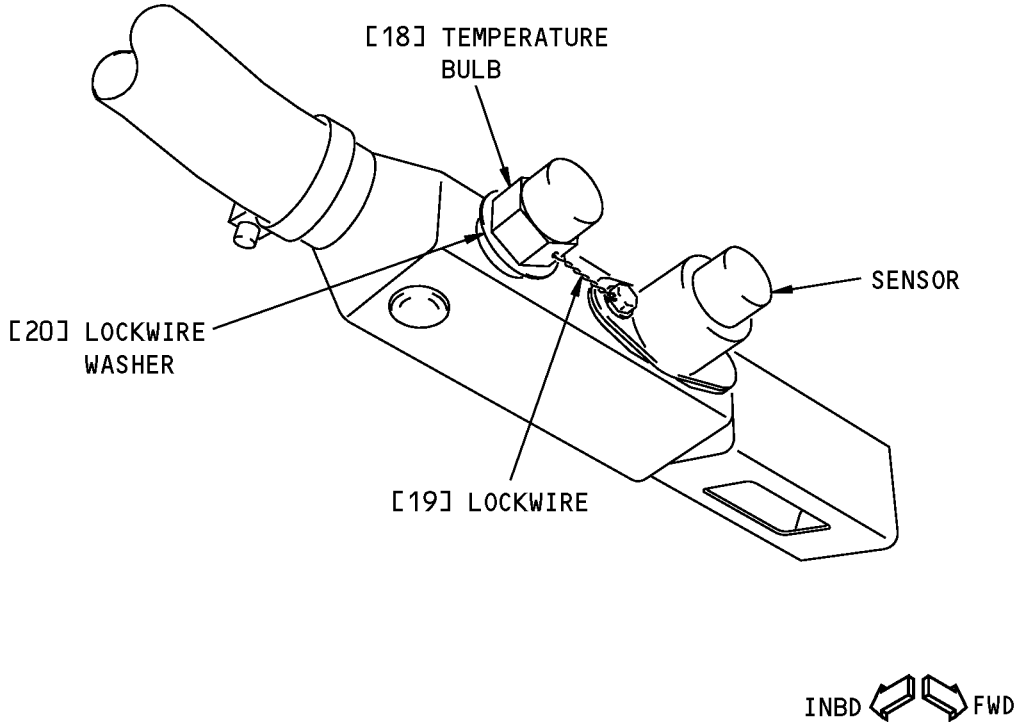
(D)

**Cabin Temperature Bulb Installation  
Figure 401 (Sheet 3 of 4)/21-61-31-990-801**

EFFECTIVITY  
HAP 101-999

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**21-61-31**



TEMPERATURE BULB

(E)

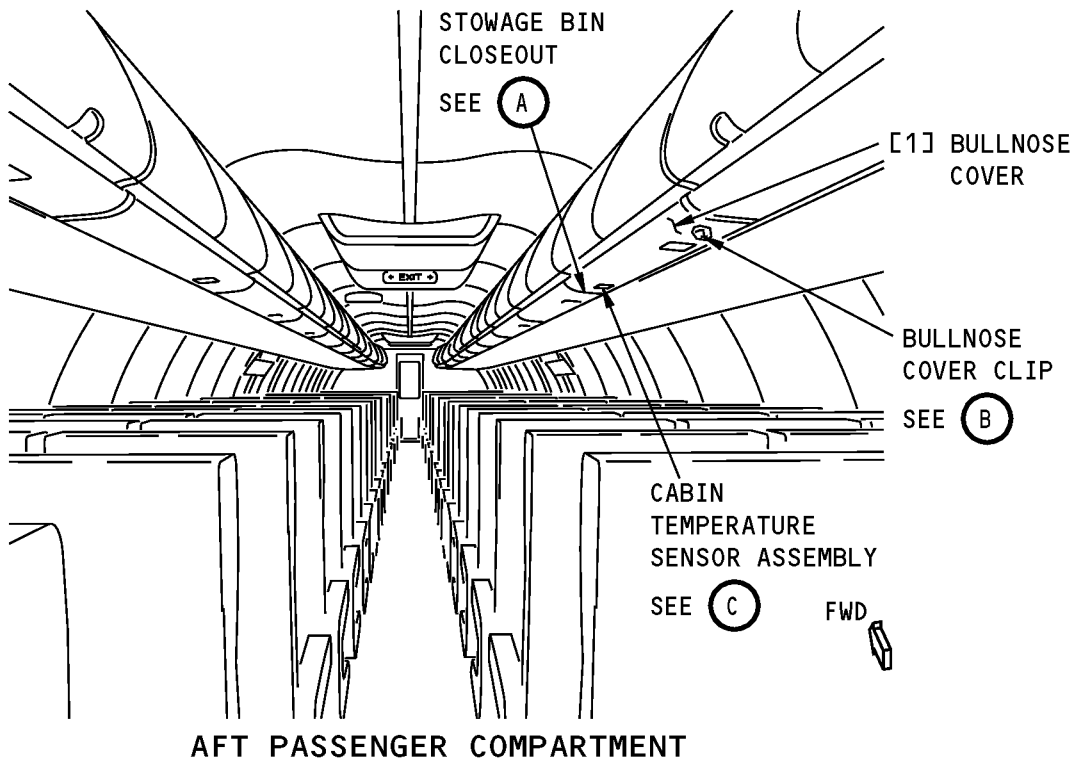
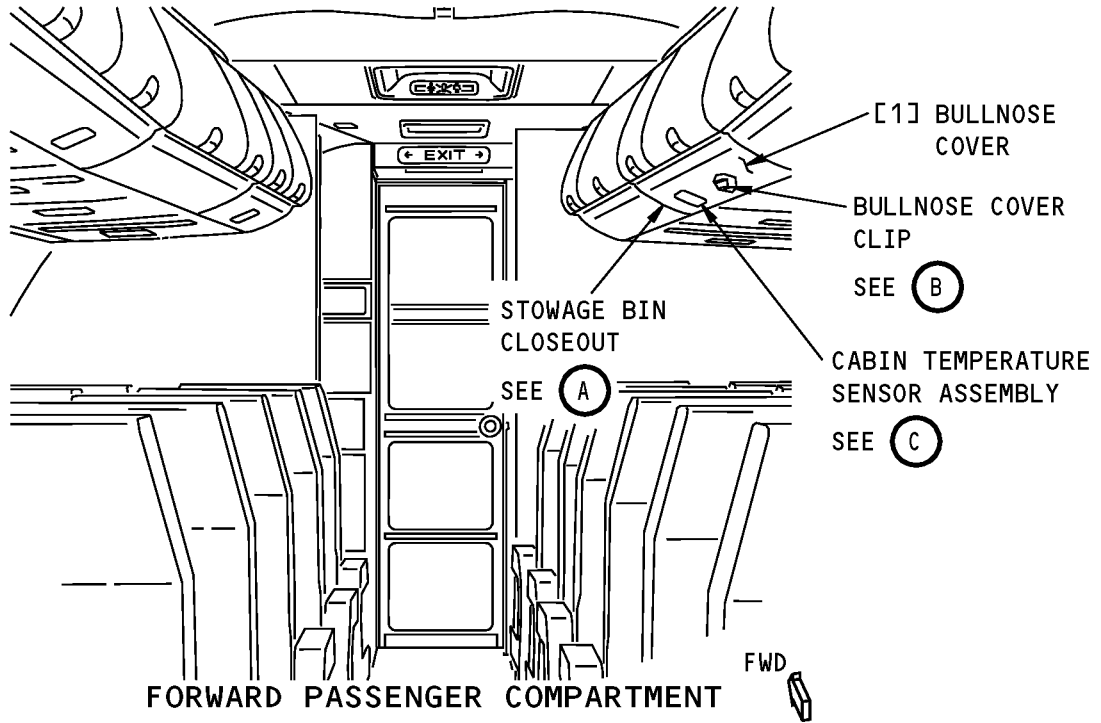
**Cabin Temperature Bulb Installation  
Figure 401 (Sheet 4 of 4)/21-61-31-990-801**

EFFECTIVITY  
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**AIRCRAFT MAINTENANCE MANUAL**

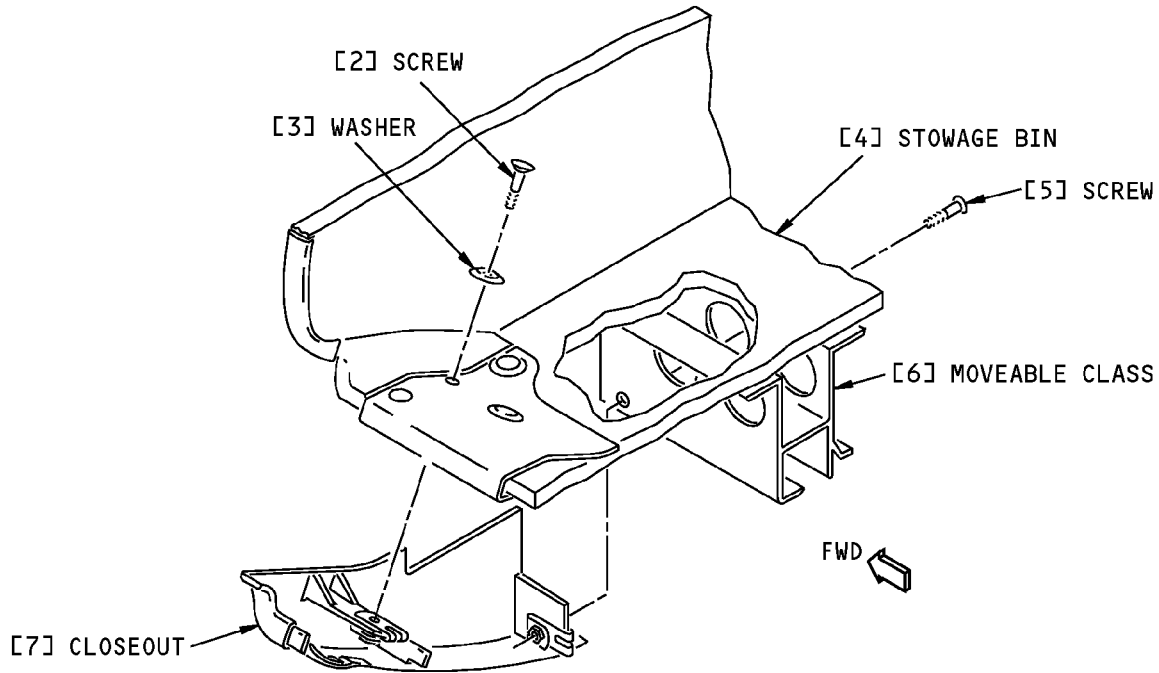


**Cabin Temperature Bulb Installation**  
**Figure 402 (Sheet 1 of 5)/21-61-31-990-803**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

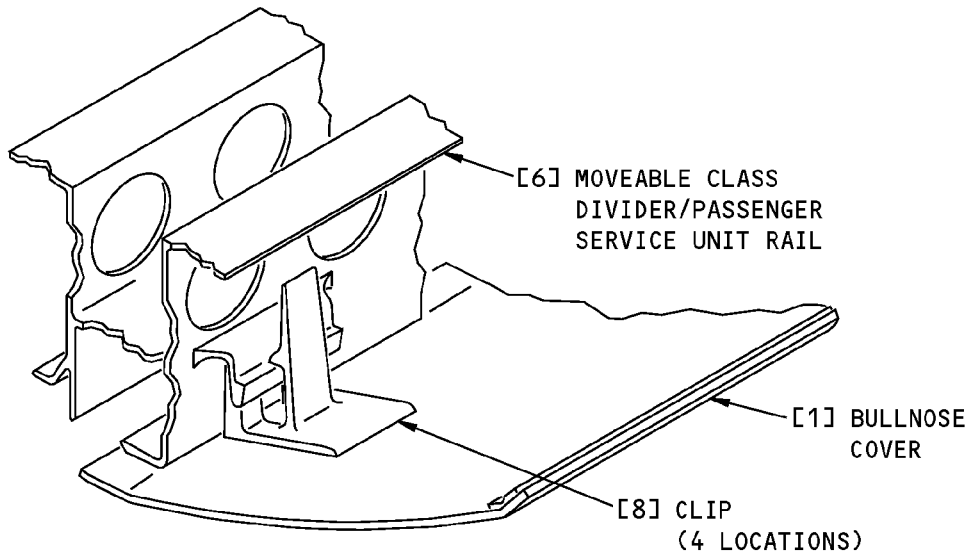
**21-61-31**

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AIRCRAFT MAINTENANCE MANUAL**



**STOWAGE BIN CLOSEOUT**

(A)



**BULLNOSE COVER CLIP**

(B)

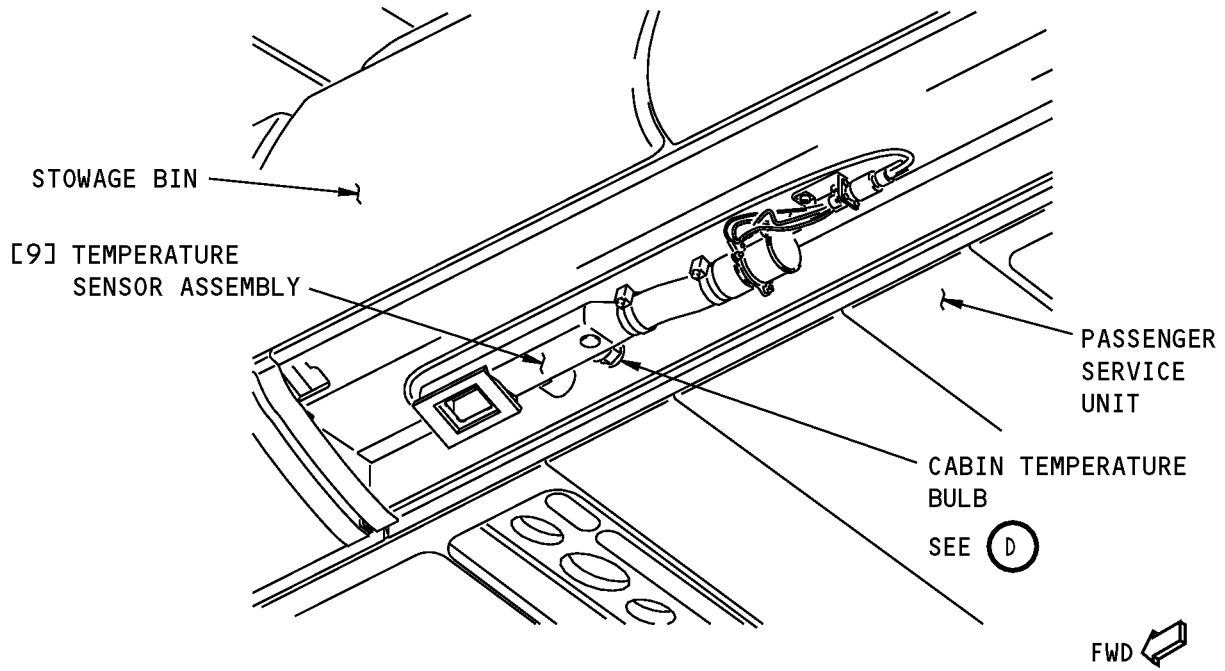
**Cabin Temperature Bulb Installation  
Figure 402 (Sheet 2 of 5)/21-61-31-990-803**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**CABIN TEMPERATURE SENSOR ASSEMBLY  
(BULLNOSE COVER REMOVED)**

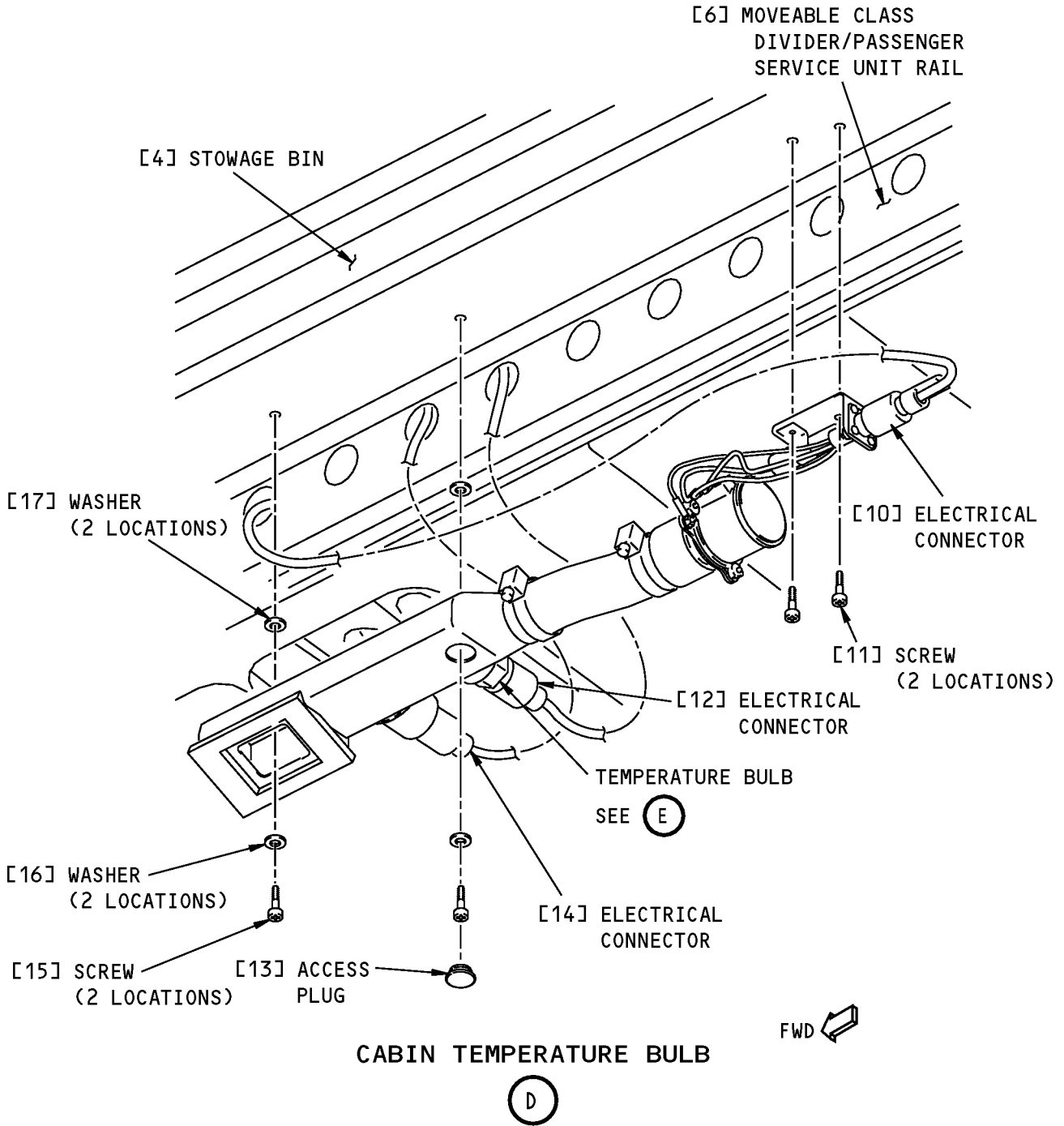
(C)

**Cabin Temperature Bulb Installation  
Figure 402 (Sheet 3 of 5)/21-61-31-990-803**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

D633A101-HAP

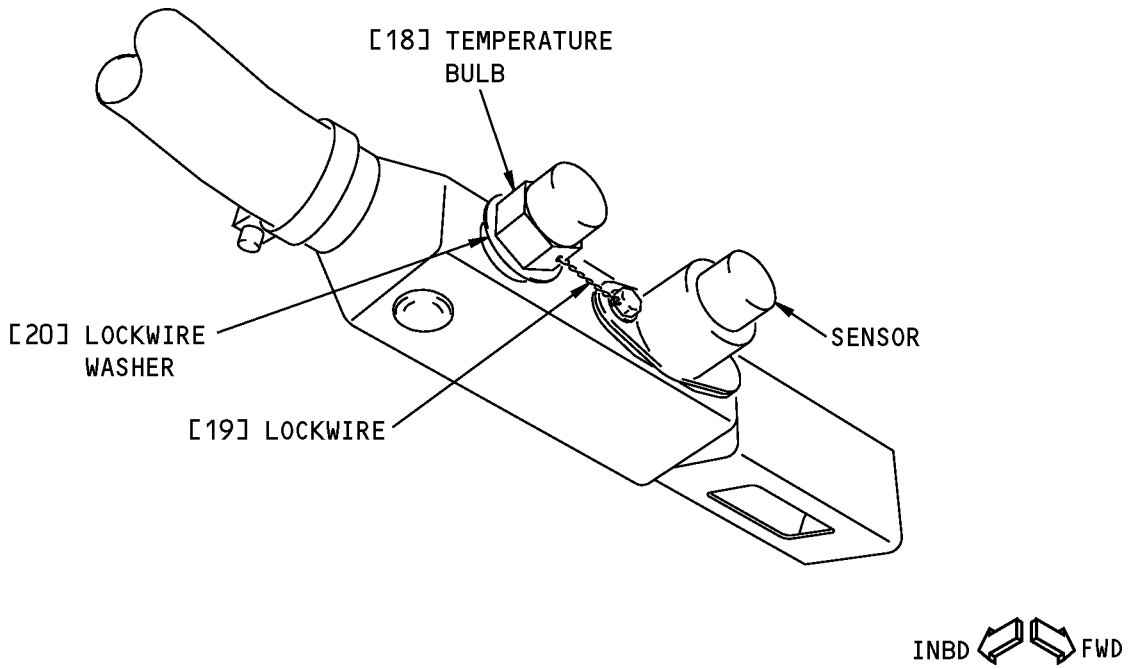
**21-61-31**



**Cabin Temperature Bulb Installation**  
**Figure 402 (Sheet 4 of 5)/21-61-31-990-803**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

**21-61-31**



TEMPERATURE BULB

(E)

**Cabin Temperature Bulb Installation  
Figure 402 (Sheet 5 of 5)/21-61-31-990-803**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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737-600/700/800/900

# AIRCRAFT MAINTENANCE MANUAL

**TASK 21-61-31-400-801**

## 3. Cabin Temperature Bulb Installation

(Figure 401 or Figure 402,)

### A. References

Reference	Title
20-10-44-400-801	Lockwires Installation (P/B 401)
24-22-00-860-812	Remove Electrical Power (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
<b>HAP 001-013, 015-026, 028-054</b>	
242	Aft Passenger Compartment - Station 663.75 to Aft Pressure Bulkhead - Right

### **HAP ALL**

### C. Cabin Temperature Bulb Installation

SUBTASK 21-61-31-420-001

- (1) Install the cabin temperature bulb [18] in the passenger compartment as follows:
  - (a) Install the temperature bulb [18] and the lockwire washer [20] on the temperature sensor assembly [9].
  - (b) Install the lockwire [19]. To install the lockwire, do this task: Lockwires Installation, TASK 20-10-44-400-801.
  - (c) Put the temperature sensor assembly [9] in its position below the overhead stowage bin.
    - 1) Put the washers [17] in position on the top of the temperature sensor assembly [9].
  - (d) Install the screws [11].
  - (e) Install the washers [16] and the screws [15].
  - (f) Install the access plug [13].
  - (g) Install the electrical connectors [10], [12] and [14].
  - (h) Do these steps to install the bullnose cover [1]:
    - 1) Make sure you engage the clips [8] on the MCD/PSU rail [6] as you put the bullnose cover [1] in its position.
    - 2) Move the closeouts [7] over the edges of the bullnose cover [1].
    - 3) Install the washers [3] and the screws [2].
    - 4) Install the screws [5].
  - (i) Lift the PSU to its closed position.

### **HAP 101-999**

SUBTASK 21-61-31-860-011

- (2) Do this step for the installation of the cabin temperature bulb for the passenger compartment zone:

<b>EFFECTIVITY</b> <b>HAP ALL</b>
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### AIRCRAFT MAINTENANCE MANUAL

#### HAP 101-999 (Continued)

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

#### HAP 001-013, 015-026, 028-054

SUBTASK 21-61-31-860-015

- (3) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01167	A/C ZONE TEMP VALVE/FAN CONT FWD PASS

SUBTASK 21-61-31-860-016

- (4) 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01170	AIR CONDITIONING ZONE TEMP VALVE/FAN CONT AFT PASS

#### HAP ALL

##### D. Cabin Temperature Bulb Test

SUBTASK 21-61-31-740-001

- (1) 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 gauge indication are approximately the same.

##### E. 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 —————

EFFECTIVITY <b>HAP ALL</b>	
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AIRCRAFT MAINTENANCE MANUAL

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 or Figure 402)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Cabin Temperature Indicator Removal

SUBTASK 21-61-32-010-001

(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 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.

SUBTASK 21-61-32-020-010

(2) 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.

NOTE: Do not remove the clamp tension screw.

- (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** —————

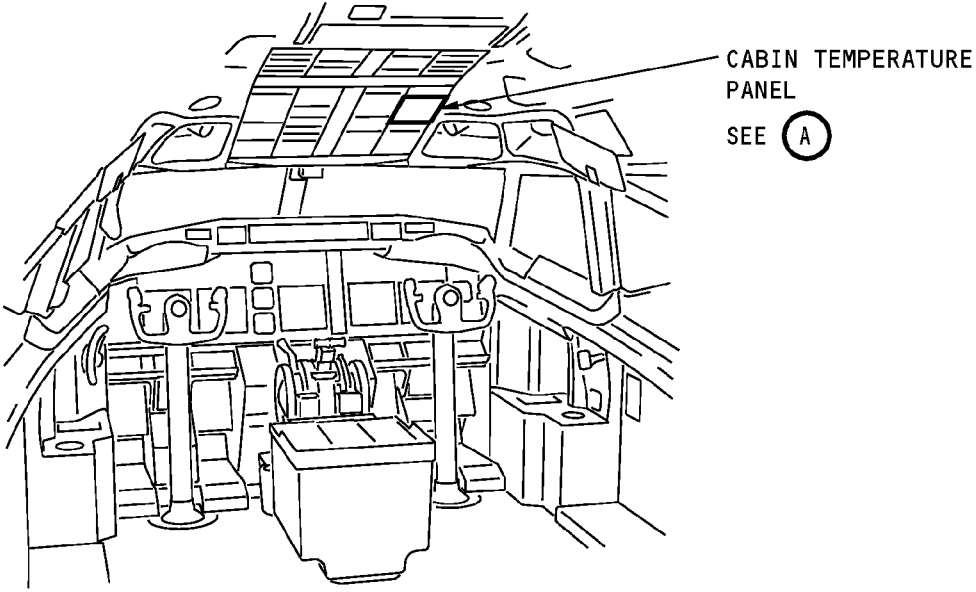
EFFECTIVITY
HAP ALL

**21-61-32**

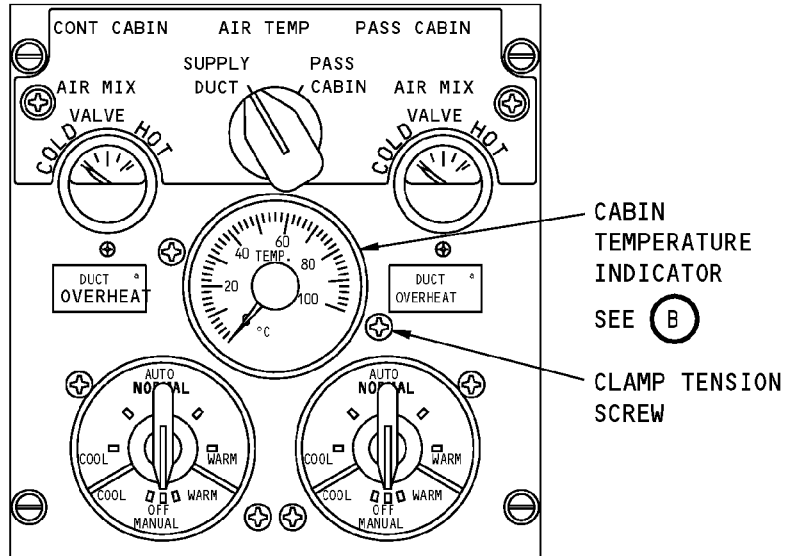
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**AIRCRAFT MAINTENANCE MANUAL**



**FLIGHT COMPARTMENT**



**CABIN TEMPERATURE PANEL**

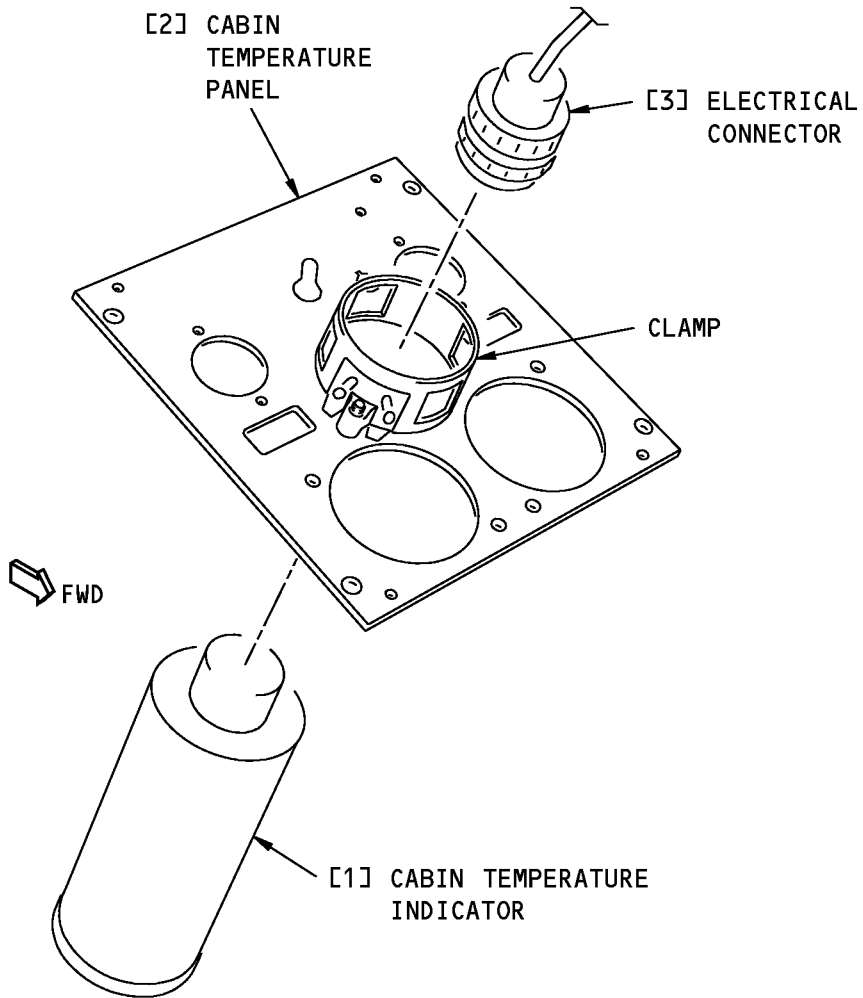
(A)

**Cabin Temperature Indicator Installation  
Figure 401 (Sheet 1 of 2)/21-61-32-990-801**

EFFECTIVITY  
HAP 101-999

D633A101-HAP

**21-61-32**



**CABIN TEMPERATURE INDICATOR**

(B)

G23518 S0006563647\_V2

**Cabin Temperature Indicator Installation  
Figure 401 (Sheet 2 of 2)/21-61-32-990-801**

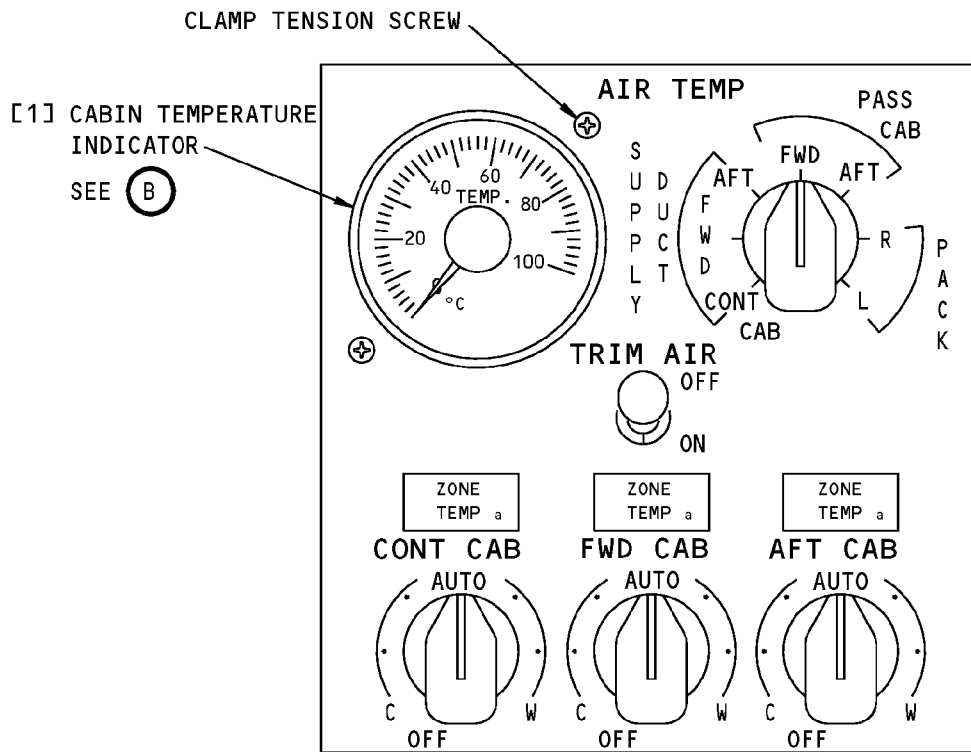
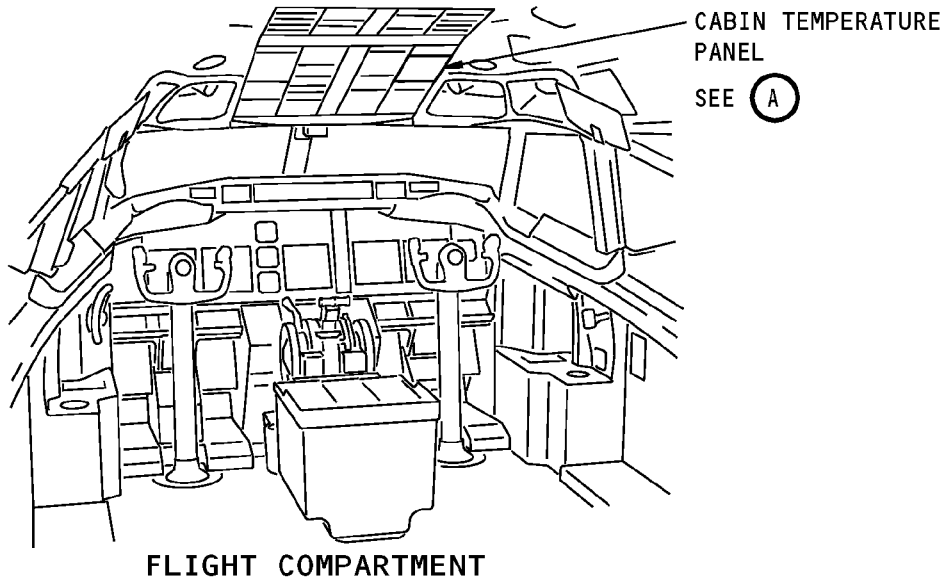
EFFECTIVITY  
HAP 101-999

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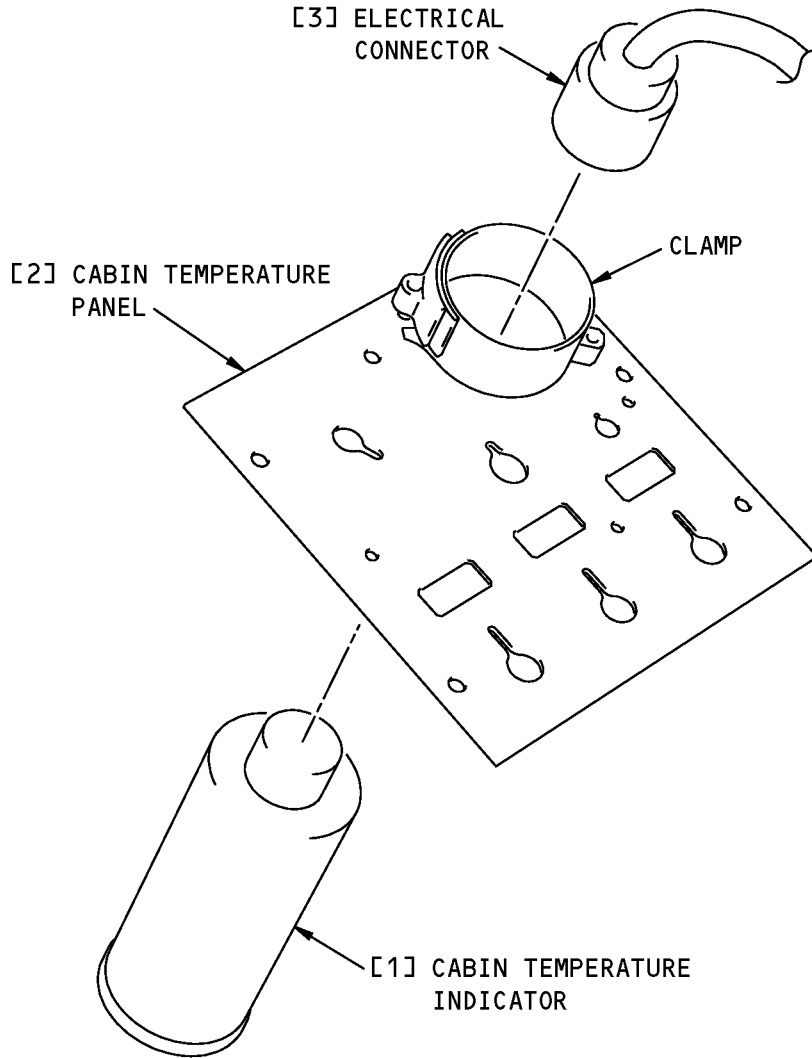
**CABIN TEMPERATURE PANEL**

(A)

**Cabin Temperature Indicator Installation  
Figure 402 (Sheet 1 of 2)/21-61-32-990-804**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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**CABIN TEMPERATURE INDICATOR  
(EXAMPLE)**

**B**

**Cabin Temperature Indicator Installation  
Figure 402 (Sheet 2 of 2)/21-61-32-990-804**

EFFECTIVITY  
HAP 001-013, 015-026, 028-054

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TASK 21-61-32-400-801

3. Cabin Temperature Indicator Installation

(Figure 401 or Figure 402, )

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	21-61-32-01-050	HAP 001-013, 015-026, 028
		21-61-32-10-010	HAP 101-999
		21-61-32-10A-010	HAP 029-054
		31-11-94-04X-555	HAP 101-999
		31-11-94-07Q-205	HAP 037, 039-054
		31-11-94-12-205	HAP 031-036, 038
		31-11-94-12K-555	HAP 029, 030
		31-11-94-52A-660	HAP 001-013, 015-026, 028

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).

**NOTE:** 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.

E. Cabin Temperature Indicator Test

SUBTASK 21-61-32-860-001

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

**HAP 101-999**

SUBTASK 21-61-32-710-006

- (2) Put the AIR TEMP switch on the P5-17 panel in the PASS CABIN position.

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**HAP 101-999 (Continued)**

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-32-710-001

- (3) Put the AIR TEMP switch on the P5-17 panel in the FWD PASS CABIN position.

**HAP 101-999**

SUBTASK 21-61-32-710-008

- (4) Hold a thermometer near the inlet of the passenger cabin temperature sensor assembly for one minute.

**HAP 001-013, 015-026, 028-054**

SUBTASK 21-61-32-710-002

- (5) Hold a thermometer near the inlet of the forward passenger cabin temperature sensor assembly for one minute.

**HAP ALL**

SUBTASK 21-61-32-970-001

- (6) Make a note of the temperature that shows on the thermometer.

SUBTASK 21-61-32-710-003

- (7) 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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HAP ALL

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# AIRCRAFT MAINTENANCE MANUAL

## AIR MIX VALVE POSITION INDICATOR - REMOVAL/INSTALLATION

### 1. General

- A. This procedure has these tasks:
  - (1) Air mix valve position indicator removal.
  - (2) Air mix valve position indicator installation.
- B. There are two air mix valve position indicators installed in the P5-17 Cabin Temperature Panel. One indicator shows the position of the mix valve that controls the flight cabin temperature. The other indicator shows the position of the mix valve that controls the passenger cabin temperature.
- C. The removal and installation procedure is the same for the two air mix valve position indicators.

### **TASK 21-61-33-000-801**

### 2. Air Mix Valve Position Indicator Removal

(Figure 401)

#### A. Location Zones

Zone	Area
212	Flight Compartment - Right

#### B. Prepare for the Removal

SUBTASK 21-61-33-840-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	7	C00124	AIR CONDITIONING MIX VALVE POS IND

SUBTASK 21-61-33-010-001

- (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 move downward when the fasteners are loose.
  - (b) Release the safety latch and carefully lower the P5 forward overhead panel to the open position.

#### C. Air Mix Valve Position Indicator Removal

SUBTASK 21-61-33-020-004

- (1) Disconnect the electrical connector [1] from the air mix valve position indicator [3].

SUBTASK 21-61-33-020-001

**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) Turn the clamp tension screw in the counterclockwise direction to loosen the clamp that holds the indicator to the P5-17 panel.

**NOTE:** Do not remove the clamp tension screw.

EFFECTIVITY <b>HAP 101-999</b>	
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SUBTASK 21-61-33-020-002

(3) Carefully pull the air mix valve position indicator [3] out of the P5-17 panel [2].

————— **END OF TASK** —————

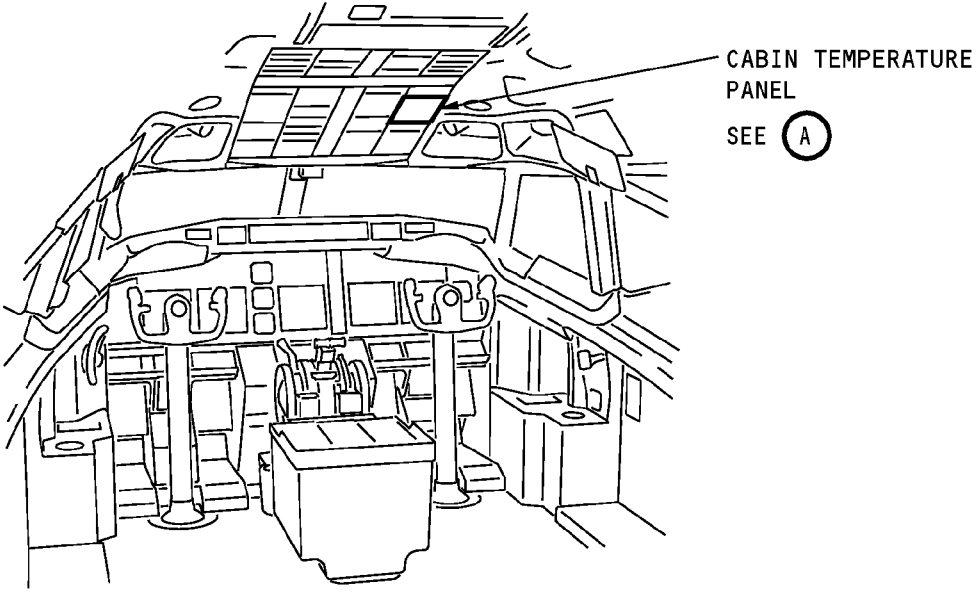
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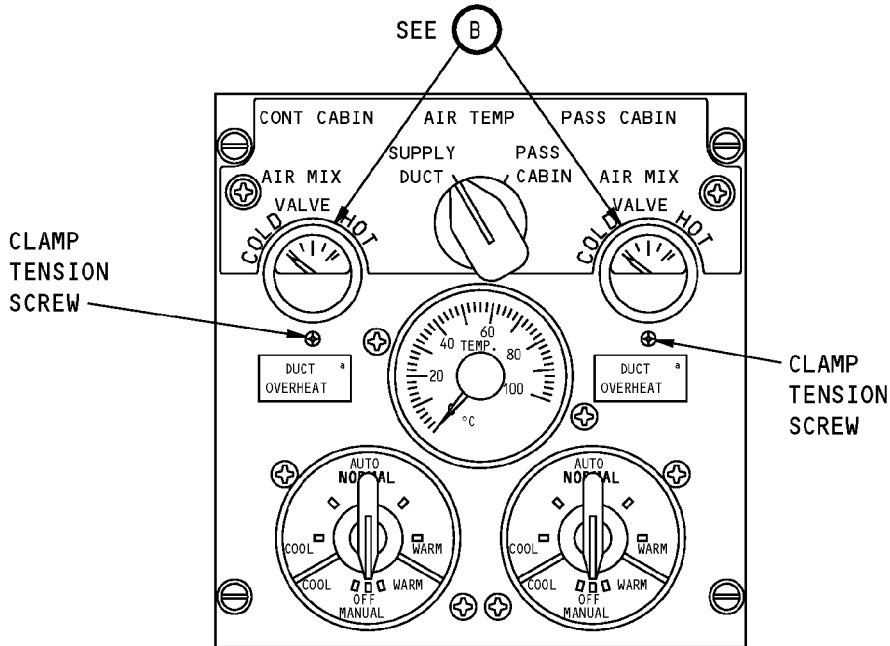
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**FLIGHT COMPARTMENT**

**AIR MIX VALVE  
POSITION INDICATOR**

SEE (B)



**CABIN TEMPERATURE PANEL**

(A)

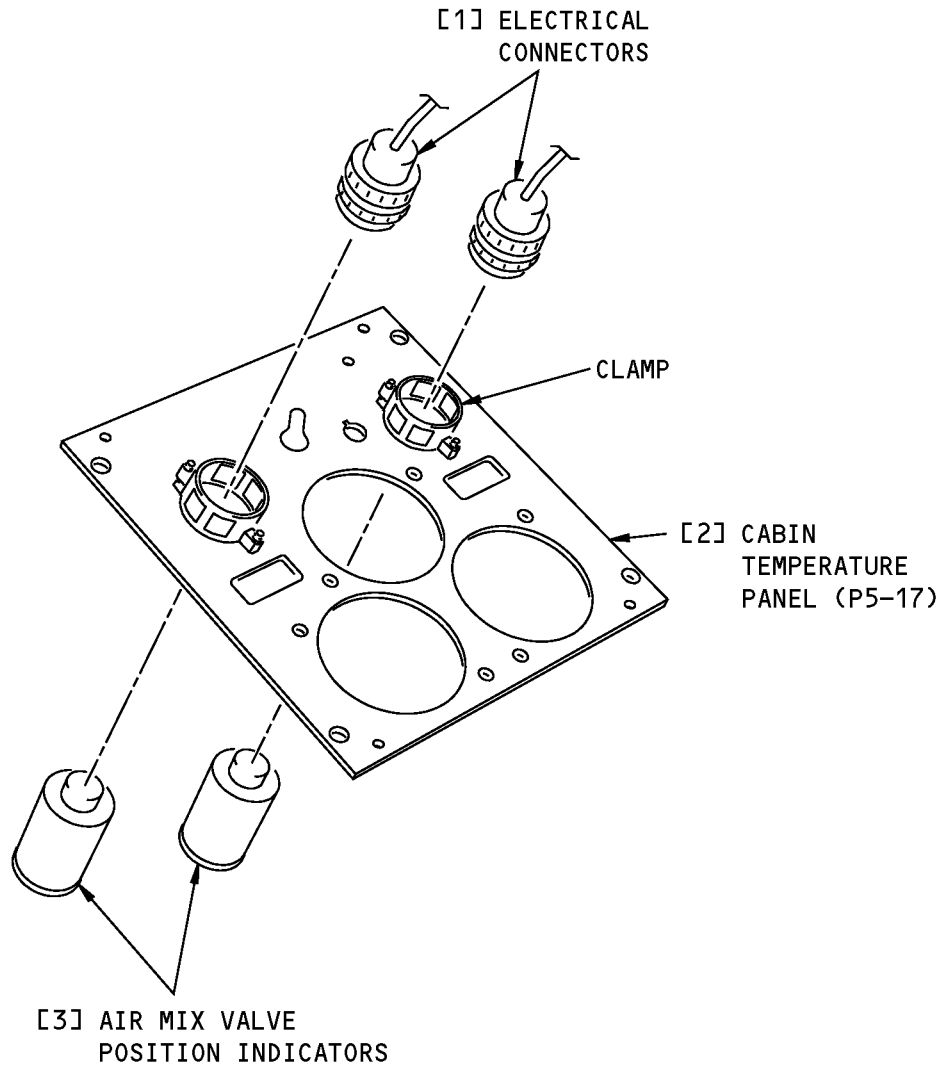
**Air Mix Valve Position Indicator Installation  
Figure 401 (Sheet 1 of 2)/21-61-33-990-801**

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**AIR MIX VALVE POSITION INDICATOR**

(B)

**Air Mix Valve Position Indicator Installation  
Figure 401 (Sheet 2 of 2)/21-61-33-990-801**

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# AIRCRAFT MAINTENANCE MANUAL

## TASK 21-61-33-400-801

### 3. Air Mix Valve Position Indicator 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)
21-61-34-820-801	Air Mix Valve Position Transmitter Adjustment (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
3	Indicator	21-61-33-01-010	HAP 101-999

#### C. Location Zones

Zone	Area
212	Flight Compartment - Right

#### D. Access Panels

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door

#### E. Air Mix Valve Position Indicator Installation

SUBTASK 21-61-33-820-001

(1) Carefully push the air mix valve position indicator [3] into its position in the P5-17 panel [2].

SUBTASK 21-61-33-420-003

(2) Tighten the clamp tension screw 5 to 8 pound-inches (0.6 to 0.9 newton-meters).

**NOTE:** Hold the indicator [3] against the panel [2] while you tighten the screw.

SUBTASK 21-61-33-420-004

(3) Connect the electrical connector [1] to the air mix valve position indicator [3].

SUBTASK 21-61-33-010-002

(4) Lift the P5 forward overhead panel to the closed position.

(a) Turn the 1/4-turn fasteners to hold the P5 forward overhead panel in place.

SUBTASK 21-61-33-860-006

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	7	C00124	AIR CONDITIONING MIX VALVE POS IND

#### F. Air Mix Valve Position Indicator Test

SUBTASK 21-61-33-860-001

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

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SUBTASK 21-61-33-860-002

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

SUBTASK 21-61-33-860-003

(3) Put the L PACK and R PACK switches on the P5-10 panel in the AUTO position.

SUBTASK 21-61-33-740-001

(4) To do a test of the control cabin mix valve position indicator, do these steps:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT
A	3	C00267	AIR CONDITIONING TEMP CONTROL MANUAL

(b) Turn the control cabin temperature selector on the P5-17 panel to the AUTO COOL position.

(c) Make sure that the control cabin AIR MIX VALVE indicator on the P5-17 panel shows COLD.

(d) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

(e) Make sure that the position indicator on the left air mix valve is in the COLD position.

NOTE: Use an inspection mirror to see the mix valve position indicator.

(f) Turn the control cabin temperature selector on the P5-17 panel to the AUTO WARM position.

(g) Make sure that the control cabin AIR MIX VALVE indicator on the P5-17 panel shows HOT.

(h) Make sure that the position indicator on the left air mix valve is in the HOT position.

NOTE: Use an inspection mirror to see the mix valve position indicator.

SUBTASK 21-61-33-740-002

(5) To do a test of the passenger cabin mix valve position indicator, do these steps:

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

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C00267	AIR CONDITIONING TEMP CONTROL MANUAL
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT

(b) Turn the passenger cabin temperature selector on the P5-17 panel to the AUTO COOL position.

(c) Make sure that the passenger cabin AIR MIX VALVE indicator on the P5-17 panel shows COLD.

(d) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

(e) Make sure that the position indicator on the right air mix valve is in the COLD position.

NOTE: Use an inspection mirror to see the mix valve position indicator.

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- (f) Turn the passenger cabin temperature selector on the P5-17 panel to the AUTO WARM position.
- (g) Make sure that the passenger cabin AIR MIX VALVE indicator on the P5-17 panel shows HOT.
- (h) Make sure that the position indicator on the right air mix valve is in the HOT position.

NOTE: Use an inspection mirror to see the mix valve position indicator.

SUBTASK 21-61-33-810-001

- (6) If the AIR MIX VALVE indicator pointer on the P5-17 panel does not agree with the position indicator on the mix valve, then, do this task: Air Mix Valve Position Transmitter Adjustment, TASK 21-61-34-820-801.

### G. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-33-410-001

- (1) If the control cabin mix valve position indicator was replaced, then do these steps:
  - (a) Put the control cabin temperature selector in the AUTO NORMAL position.
  - (b) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

SUBTASK 21-61-33-410-002

- (2) If the passenger cabin mix valve position indicator was replaced, then do these steps:
  - (a) Put the passenger cabin temperature selector in the AUTO NORMAL position.
  - (b) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

SUBTASK 21-61-33-410-003

- (3) Carefully lift the P5 forward overhead panel to the closed position.

SUBTASK 21-61-33-410-004

- (4) Tighten the 1/4-turn fasteners that hold the aft end of the P5 forward overhead panel in place.

SUBTASK 21-61-33-860-004

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

SUBTASK 21-61-33-860-005

- (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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# AIRCRAFT MAINTENANCE MANUAL

## AIR MIX VALVE POSITION TRANSMITTER - ADJUSTMENT/TEST

### 1. General

A. This procedure has these tasks:

- (1) An adjustment of the air mix valve position transmitter
- (2) An adjustment of the cabin temperature module printed circuit assembly.
- (3) The air mix valve position transmitter is a rotary potentiometer that is attached to the air mix valve. It supplies a voltage that is proportional to the position of the air mix valve to the cabin temperature module printed circuit assembly.
- (4) The printed circuit assembly is installed within the P5-17 Temperature Control module. It supplies a calibrated voltage to the air mix valve position indicator.
- (5) To do an adjustment for the COLD indication you turn the air mix valve position transmitter assembly on the valve.
- (6) To do an adjustment for the HOT indication you turn a variable resistor on the cabin temperature module printed circuit assembly.

### **TASK 21-61-34-820-801**

### 2. Air Mix Valve Position Transmitter Adjustment

(Figure 501, Figure 502)

A. References

Reference	Title
21-00-00-800-801	Supply Conditioned Air to the Airplane (P/B 201)
24-22-00-860-811	Supply 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
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door

D. Air Mix Valve Position Transmitter Adjustment

SUBTASK 21-61-34-860-001

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

SUBTASK 21-61-34-860-002

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

SUBTASK 21-61-34-740-001

- (3) To adjust the control cabin air mix valve position transmitter, do these steps:
  - (a) Put the L PACK switch, installed on the P5-10 panel, 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.

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(WARNING PRECEDES)

- (b) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

- (c) Make sure that the position indicator on the left air mix valve is in the COLD position.

NOTE: Use an inspection mirror to see the mix valve position indicator.

- (d) Look at the control cabin AIR MIX VALVE indicator, installed on the P5-17 panel.

NOTE: There are two marks at the COLD end of the indicator scale. The pointer must be aligned with the longer, rightmost COLD mark.

- (e) If the pointer is not aligned with the COLD mark on the indicator, then do these steps:

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

- 1) Make sure the cooling pack ducts are cool.
- 2) Loosen the screws [1] that hold the resistor assembly [3] to the left air mix valve.  
NOTE: Do not remove the screws [1].
- 3) Turn the resistor assembly [3] until the control cabin indicator pointer is aligned with the COLD mark.  
NOTE: If the pointer moves away from the COLD mark, then turn the resistor assembly in the other direction.
- 4) Tighten the screws [1] that hold the resistor assembly [3] to the mix valve.
- 5) Do this task: Cabin Temperature Module Printed Circuit Assembly Adjustment, TASK 21-61-34-820-802.

NOTE: The cabin temperature module printed circuit assembly must be adjusted after the air mix valve position transmitter is adjusted.

SUBTASK 21-61-34-740-002

- (4) To adjust the passenger cabin air mix valve position transmitter, do these steps:

- (a) Put the R PACK switch, installed on the P5-10 panel, 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.

- (b) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

- (c) Make sure that the position indicator on the right air mix valve is in the COLD position.

NOTE: Use an inspection mirror to see the mix valve position indicator.

- (d) Look at the passenger cabin AIR MIX VALVE indicator, installed on the P5-17 panel.

NOTE: There are two marks at the COLD end of the indicator scale. The pointer must be aligned with the longer, rightmost COLD mark.

- (e) If the pointer is not aligned with the COLD mark on the indicator, then do these steps:

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

- 1) Make sure the cooling pack ducts are cool.
- 2) Loosen the screws [1] that hold the resistor assembly [3] to the right air mix valve.

**NOTE:** Do not remove the screws [1].

- 3) Turn the resistor assembly [3] until the passenger cabin indicator pointer is aligned with the COLD mark.

**NOTE:** If the pointer moves away from the COLD mark, then turn the resistor assembly in the other direction.

- 4) Tighten the screws [1] that hold the resistor assembly [3] to the mix valve.
- 5) Do this task: Cabin Temperature Module Printed Circuit Assembly Adjustment, TASK 21-61-34-820-802.

**NOTE:** The cabin temperature module printed circuit assembly must be adjusted after the air mix valve position transmitter is adjusted.

————— **END OF TASK** —————

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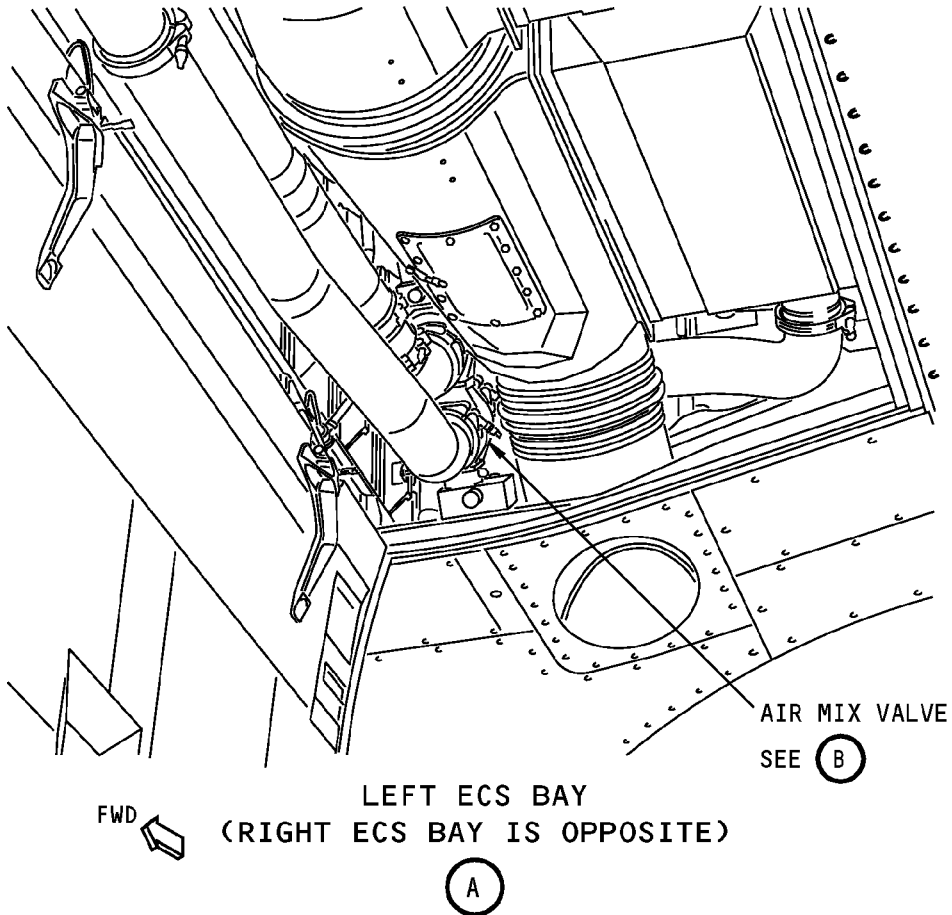
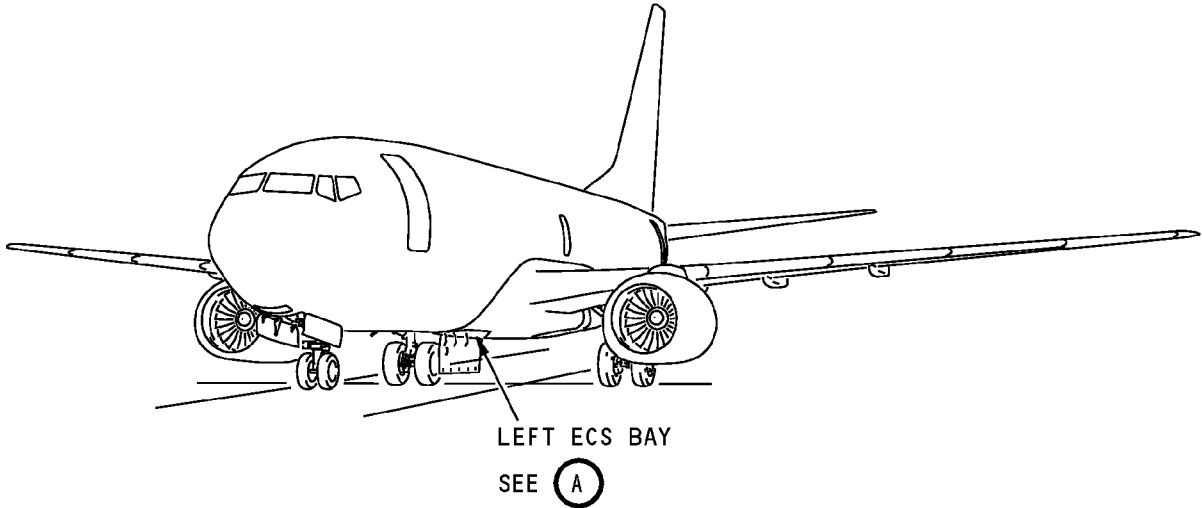
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Mix Valve Position Transmitter Adjustment  
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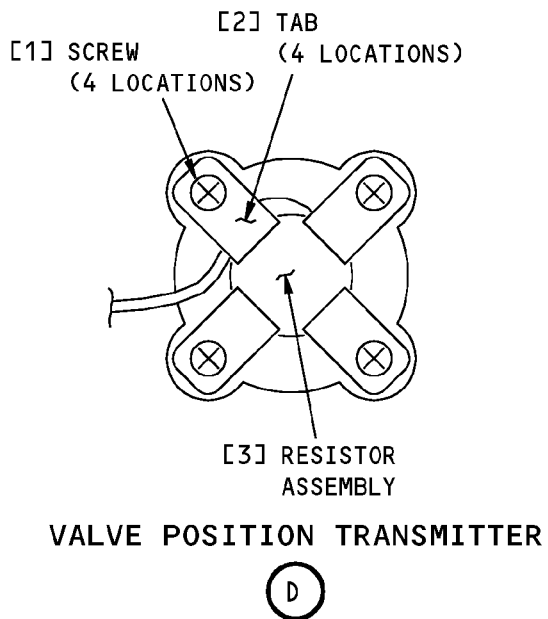
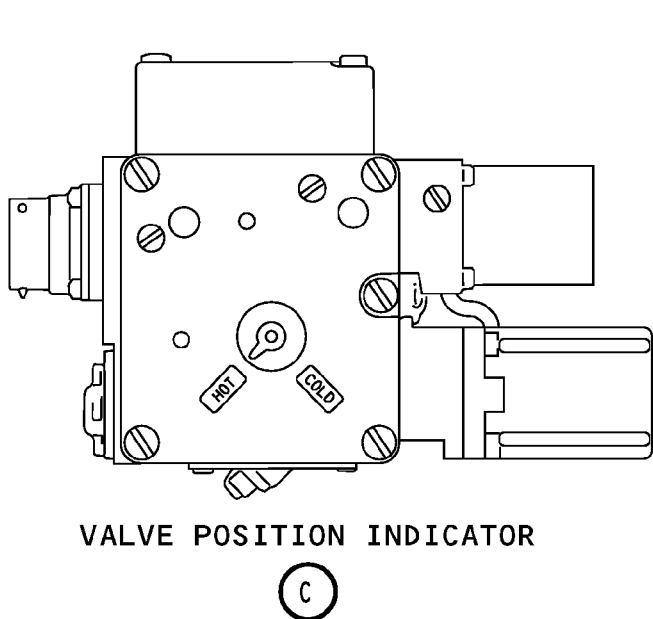
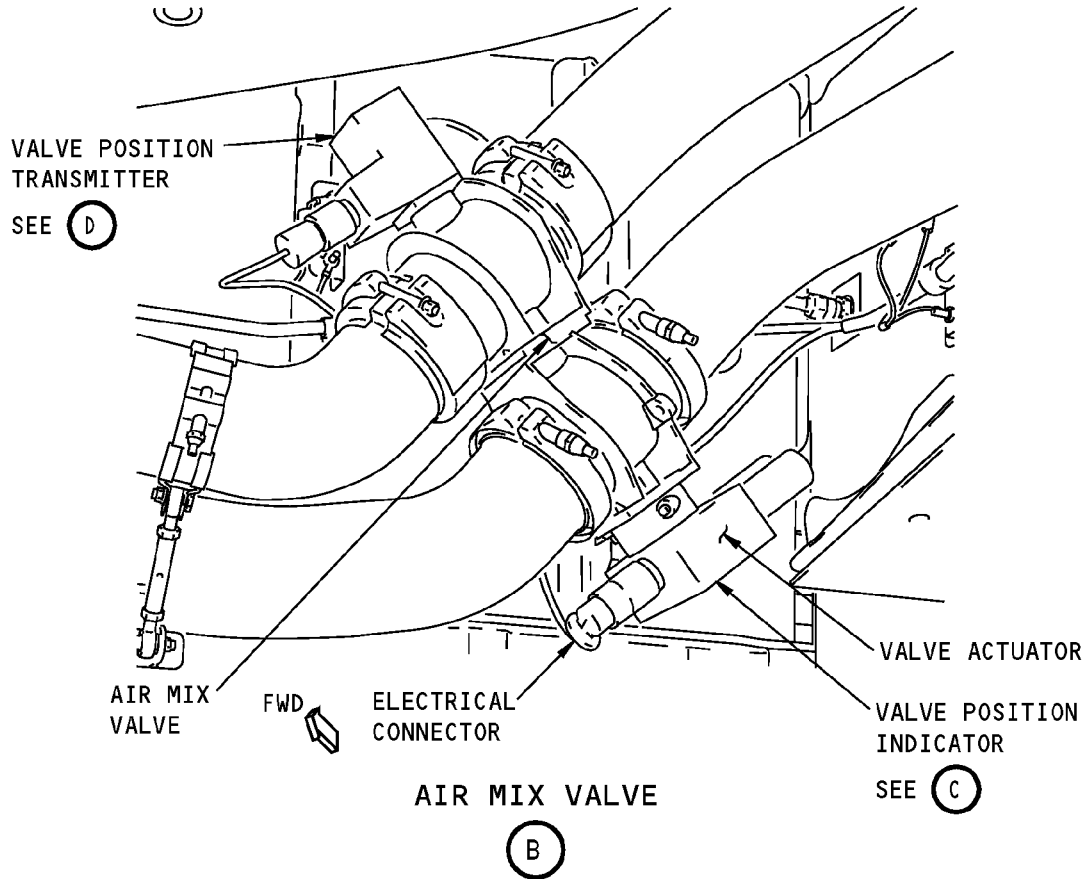
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**Mix Valve Position Transmitter Adjustment  
Figure 501 (Sheet 2 of 2)/21-61-34-990-801**

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**TASK 21-61-34-820-802**

## 3. Cabin Temperature Module Printed Circuit Assembly Adjustment

(Figure 501, Figure 502)

### A. References

Reference	Title
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)

### B. Access Panels

Number	Name/Location
192CL	Air Conditioning Access Door
192CR	Air Conditioning Access Door

### C. Cabin Temperature Module Printed Circuit Assembly Adjustment

SUBTASK 21-61-34-820-001

(1) To adjust the printed circuit assembly for the control cabin, do these steps:

- (a) Put the L PACK switch, installed on the P5-10 panel, in the AUTO position.
- (b) Hold the control cabin temperature selector, installed on the P5-17 panel, in the MANUAL WARM position for 40 seconds.

**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.

(c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

(d) Make sure that the position indicator on the left air mix valve is in the HOT position.

**NOTE:** Use an inspection mirror to see the mix valve position indicator.

(e) Look at the control cabin AIR MIX VALVE indicator, installed on the P5-17 panel.

**NOTE:** There are two marks at the HOT end of the indicator scale. The pointer must be aligned with the longer, leftmost HOT mark.

(f) If the pointer is not aligned with the HOT mark on the indicator, then do these steps:

- 1) Loosen the 1/4-turn fasteners that hold the P5-17 temperature control module to the P5 forward overhead panel.
- 2) Carefully lower the temperature control module until you can see the access holes on the right side of the module.

**NOTE:** You can use a flashlight and a small screwdriver to get access to the resistor through the upper hole.

3) Turn the variable resistor R3 until the control cabin indicator pointer is aligned with the HOT mark.

**NOTE:** If the pointer moves away from the HOT mark, then turn the variable resistor in the other direction.

4) Carefully lift the P5-17 temperature control module into its position in the P5 forward overhead panel.

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5) Tighten the 1/4-turn fasteners that hold the P5-17 temperature control module to the P5 forward overhead panel.

(g) Put the control cabin temperature selector in the AUTO NORMAL position.

SUBTASK 21-61-34-820-002

(2) To adjust the printed circuit assembly for the passenger cabin, do these steps:

(a) Put the R PACK switch, installed on the P5-10 panel, in the AUTO position.

(b) Hold the passenger cabin temperature selector, installed on the P5-17 panel, in the MANUAL WARM position for 40 seconds.

**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.

(c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

(d) Make sure that the position indicator on the right air mix valve is in the HOT position.

**NOTE:** Use an inspection mirror to see the mix valve position indicator.

(e) Look at the passenger cabin AIR MIX VALVE indicator, installed on the P5-17 panel.

**NOTE:** There are two marks at the HOT end of the indicator scale. The pointer must be aligned with the longer, leftmost HOT mark.

(f) If the pointer is not aligned with the HOT mark on the indicator, then do these steps:

1) Loosen the 1/4-turn fasteners that hold the P5-17 temperature control module to the P5 forward overhead panel.

2) Carefully lower the temperature control module until you can see the access holes on the right side of the module.

**NOTE:** You can use a flashlight and a small screwdriver to get access to the resistor through the lower hole.

3) Turn the variable resistor R2 until the passenger cabin indicator pointer is aligned with the HOT mark.

**NOTE:** If the pointer moves away from the HOT mark, then turn the variable resistor in the other direction.

4) Carefully lift the P5-17 temperature control module into its position in the P5 forward overhead panel.

5) Tighten the 1/4-turn fasteners that hold the P5-17 temperature control module to the P5 forward overhead panel.

(g) Put the passenger cabin temperature selector in the AUTO NORMAL position.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 21-61-34-410-001

(1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CL	Air Conditioning Access Door

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SUBTASK 21-61-34-410-004

(2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door

SUBTASK 21-61-34-860-003

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

SUBTASK 21-61-34-860-004

(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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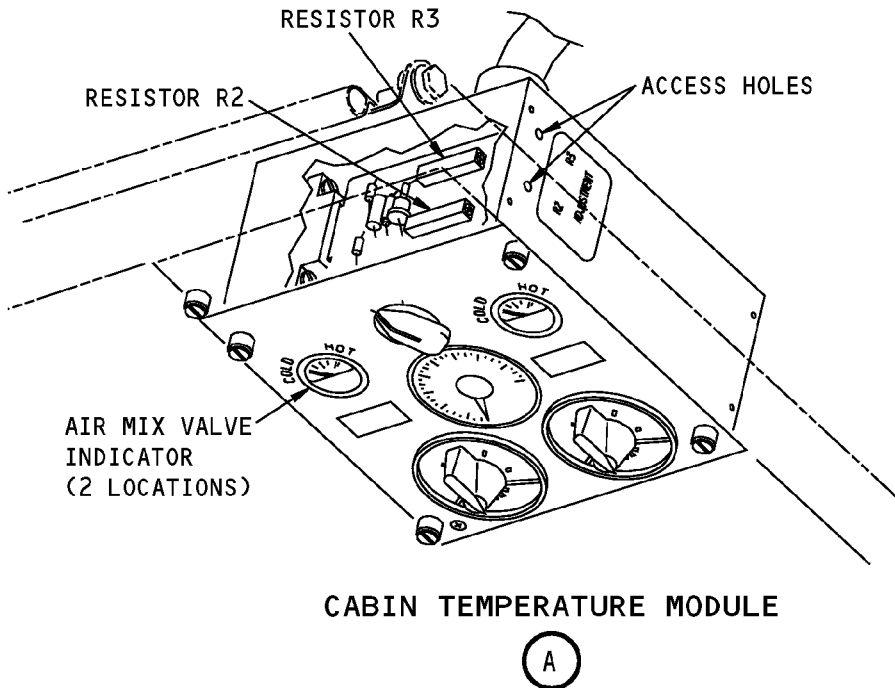
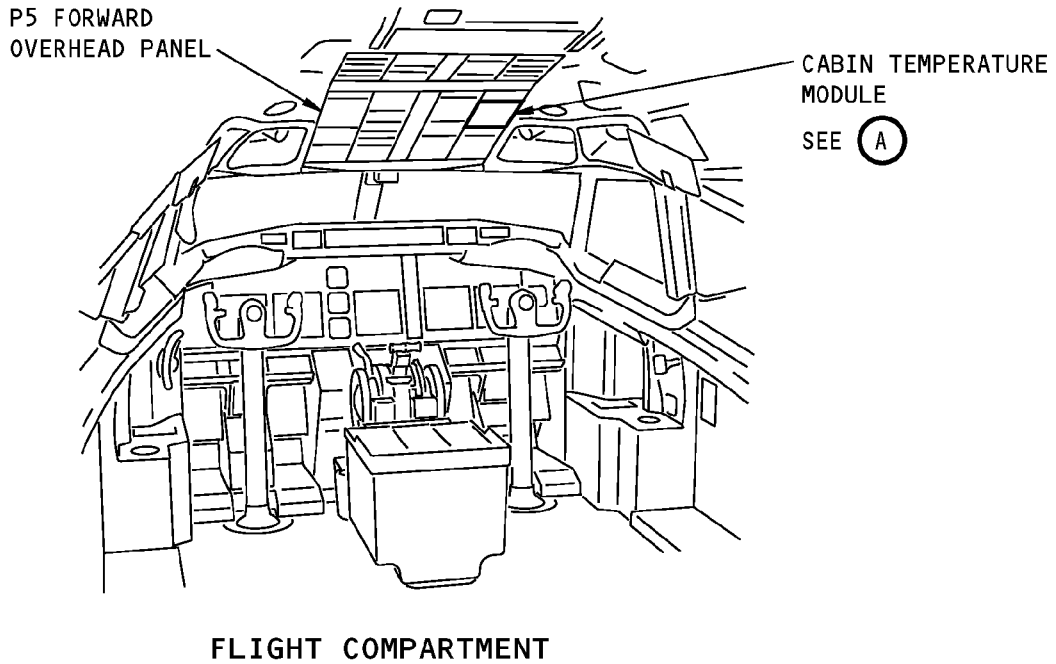
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**Cabin Temperature Module Printed Circuit Assembly Adjustment**  
**Figure 502/21-61-34-990-802**

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## CABIN TEMPERATURE MODULE PRINTED CIRCUIT ASSEMBLY - REMOVAL/INSTALLATION

### 1. General

A. This procedure has these tasks:

- (1) Cabin temperature module printed circuit assembly removal.
- (2) Cabin temperature module printed circuit assembly installation.

B. The printed circuit assembly is installed in the P5-17 Cabin Temperature Module.

### **TASK 21-61-35-000-801**

### 2. Cabin Temperature Module Printed Circuit Assembly Removal

(Figure 401)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 21-61-35-840-001

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT
A	3	C00267	AIR CONDITIONING TEMP CONTROL MANUAL
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT
D	7	C00124	AIR CONDITIONING MIX VALVE POS IND
D	8	C00076	AIR CONDITIONING TEMP IND

C. Printed Circuit Assembly Removal

SUBTASK 21-61-35-010-001

(1) Do these steps to get access to the electrical connector 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 move downward when the fasteners are loose.

(b) Release the safety latch and carefully lower the P5 forward overhead panel to the open position.

SUBTASK 21-61-35-020-012

(2) Disconnect the electrical connector [3] from the cabin temperature module [1].

SUBTASK 21-61-35-020-001

**CAUTION:** HOLD THE MODULE WHEN YOU LOOSEN THE SCREWS. THE MODULE CAN FALL WHEN THE SCREWS ARE LOOSE. THE MODULE CAN BE DAMAGED IF IT FALLS.

(3) Loosen the 1/4 turn screws that hold the cabin temperature module [1] to the P5 Forward Overhead Panel.

SUBTASK 21-61-35-020-002

(4) Carefully pull the cabin temperature module [1] out of the P5 Forward Overhead Panel.

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SUBTASK 21-61-35-020-003

(5) Remove the screws [5] that hold the cover plate [4] to the cabin temperature module [1].

SUBTASK 21-61-35-020-004

(6) Remove the cover plate [4] from the cabin temperature module [1].

SUBTASK 21-61-35-020-005

(7) Carefully pull the printed circuit assembly [2] out of the cabin temperature module [1].

————— **END OF TASK** —————

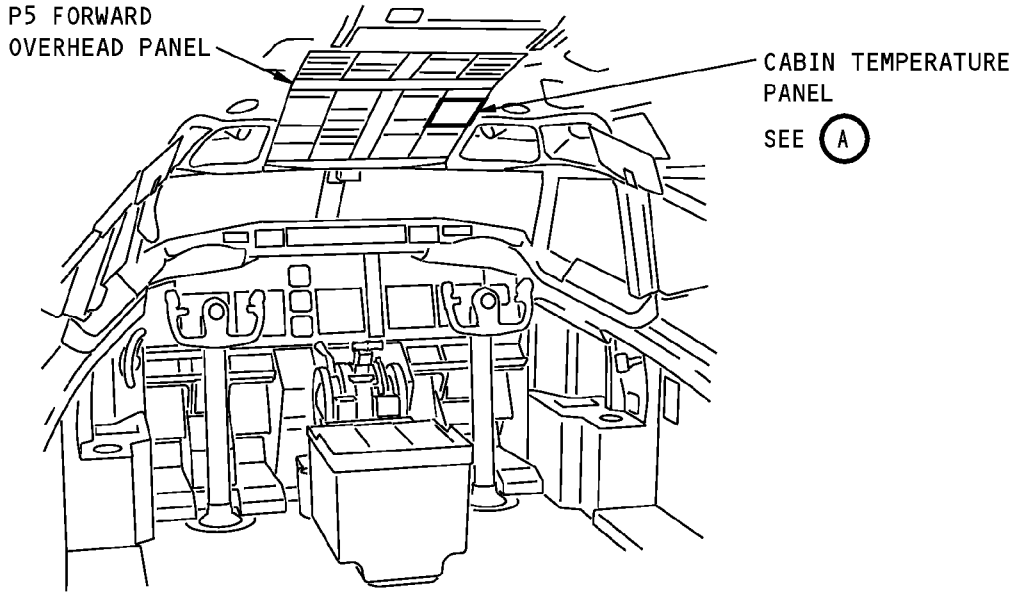
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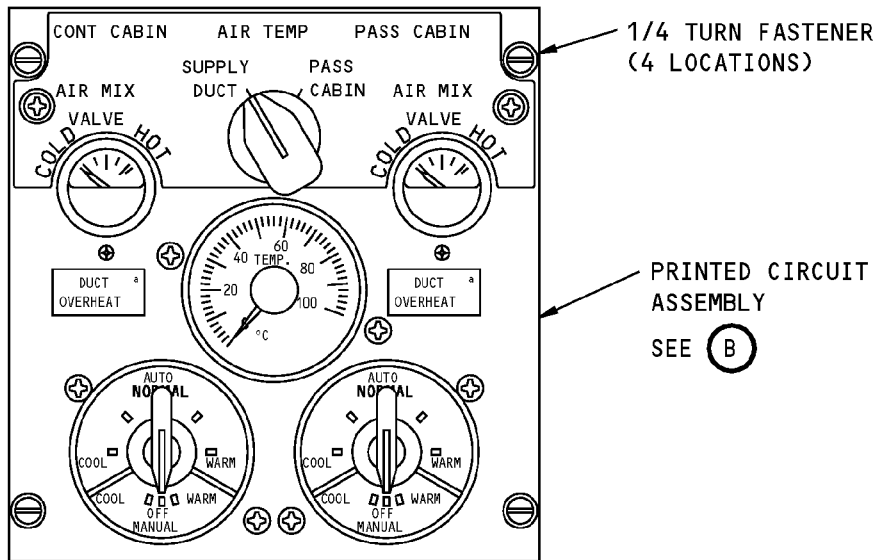
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**FLIGHT COMPARTMENT**



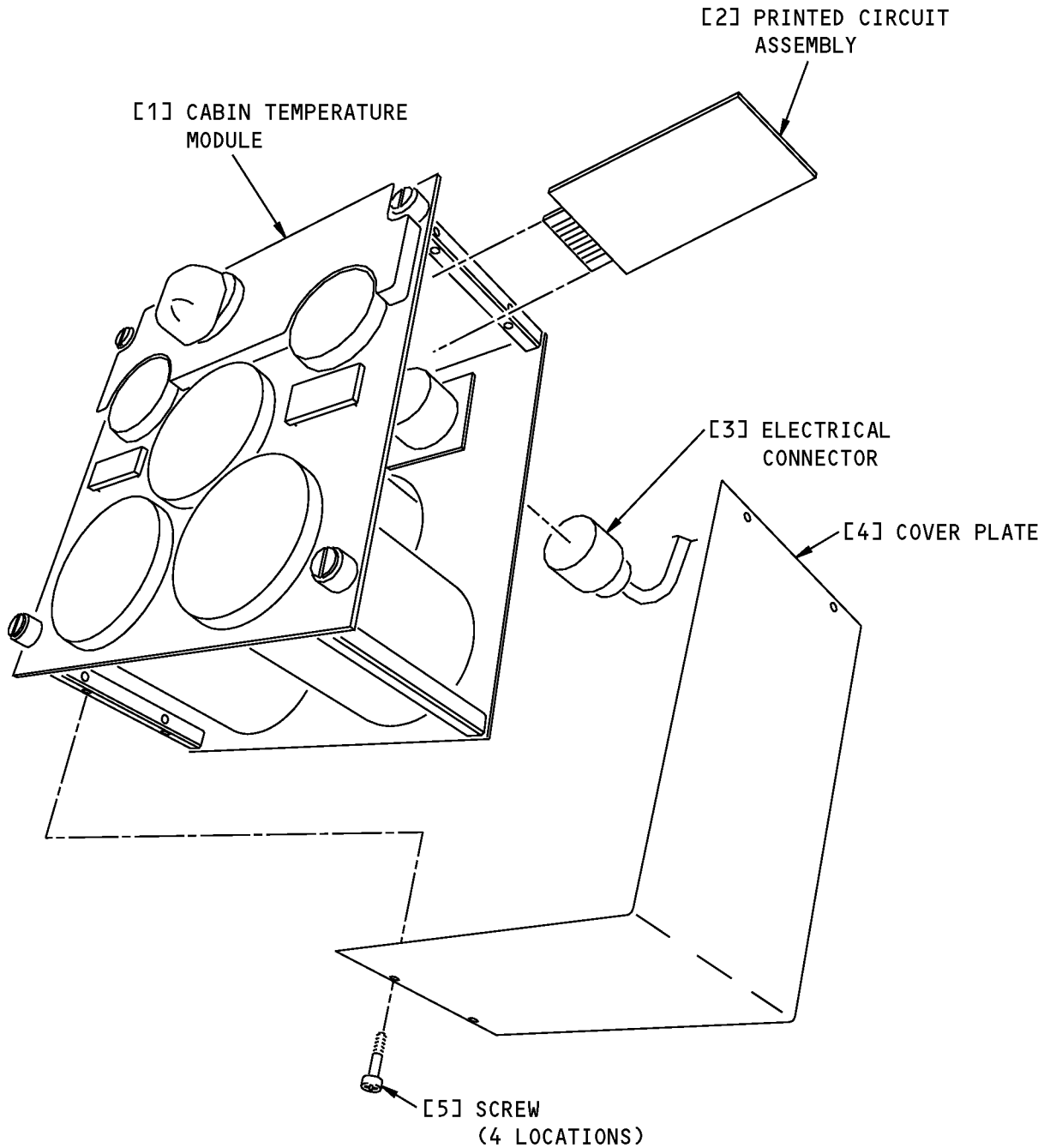
**CABIN TEMPERATURE PANEL**

(A)

**Cabin Temperature Module Printed Circuit Assembly Installation  
Figure 401 (Sheet 1 of 2)/21-61-35-990-801**

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**PRINTED CIRCUIT ASSEMBLY**

**(B)**

**Cabin Temperature Module Printed Circuit Assembly Installation  
Figure 401 (Sheet 2 of 2)/21-61-35-990-801**

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## TASK 21-61-35-400-801

### 3. Cabin Temperature Module Printed Circuit Assembly Installation

(Figure 401)

#### A. References

Reference	Title
21-61-34-820-801	Air Mix Valve Position Transmitter Adjustment (P/B 501)
21-61-34-820-802	Cabin Temperature Module Printed Circuit Assembly Adjustment (P/B 501)
24-22-00-860-812	Remove Electrical Power (P/B 201)

#### B. Location Zones

Zone	Area
212	Flight Compartment - Right

#### C. Printed Circuit Assembly Installation

SUBTASK 21-61-35-020-006

- (1) Carefully push the printed circuit assembly [2] into connector P2 on the cabin temperature module [1].

**NOTE:** The connector is keyed to make sure that the printed circuit assembly [2] is installed correctly.

SUBTASK 21-61-35-020-008

- (2) Put the cover plate [4] into its position on the cabin temperature module [1].

SUBTASK 21-61-35-020-009

- (3) Reinstall the screw [5] that hold the cover plate [4] to the cabin temperature module [1].

SUBTASK 21-61-35-020-010

- (4) Carefully lift the cabin temperature module [1] into the P5 Forward Overhead Panel.

SUBTASK 21-61-35-020-011

- (5) Tighten the 1/4 turn screws that hold the cabin temperature module [1] to the P5 Forward Overhead Panel.

SUBTASK 21-61-35-420-006

- (6) Reconnect the electrical connector [3] to the cabin temperature module [1].

SUBTASK 21-61-35-840-002

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

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	2	C00268	AIR CONDITIONING TEMP CONTROL AUTO LEFT
A	3	C00267	AIR CONDITIONING TEMP CONTROL MANUAL
B	2	C00258	AIR CONDITIONING TEMP CONTROL AUTO RIGHT
D	7	C00124	AIR CONDITIONING MIX VALVE POS IND
D	8	C00076	AIR CONDITIONING TEMP IND

#### D. Printed Circuit Assembly Installation Test

SUBTASK 21-61-35-820-001

- (1) Do this task: Air Mix Valve Position Transmitter Adjustment, TASK 21-61-34-820-801.

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SUBTASK 21-61-35-740-001

- (2) Do this task: Cabin Temperature Module Printed Circuit Assembly Adjustment, TASK 21-61-34-820-802.

E. Put the Airplane Back To Its Usual Condition

SUBTASK 21-61-35-410-001

- (1) Carefully lift the P5 forward overhead panel to the closed position.

SUBTASK 21-61-35-410-002

- (2) Tighten the 1/4-turn fasteners that hold the aft end of the P5 forward overhead panel in place.

SUBTASK 21-61-35-860-001

- (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 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 RIGHT
C	6	C00262	AIR CONDITIONING PACK CONT VALVES LEFT
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.
- (b) Set the AIR TEMP selector to the L PACK position.

<p>EFFECTIVITY</p> <p>HAP 001-013, 015-026, 028-054</p>
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- (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.

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.

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- (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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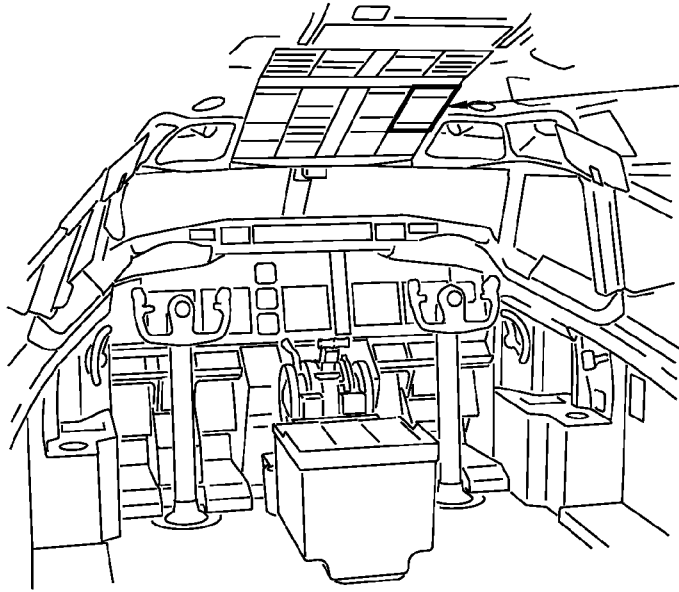
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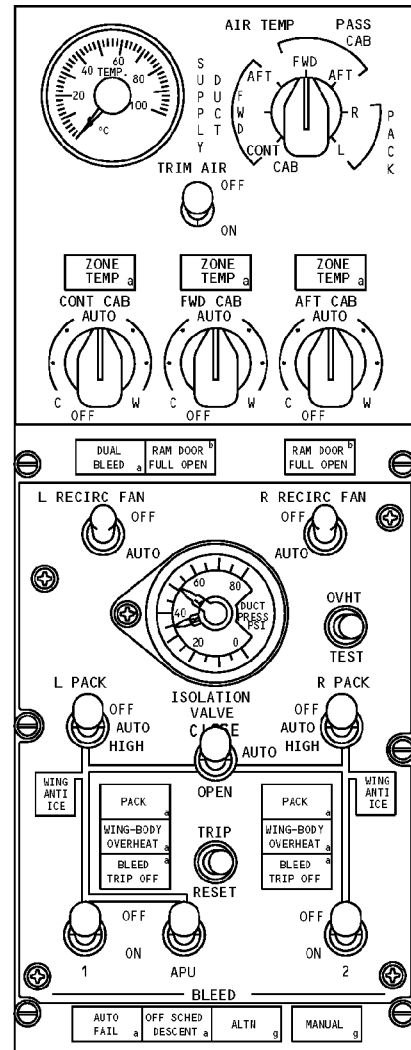
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AIRCRAFT MAINTENANCE MANUAL**



**FLIGHT COMPARTMENT**

AIR CONDITIONING  
MODULE

SEE (A)



**AIR CONDITIONING  
MODULE**

(A)

**Trim Air Pressure Regulation and Shutoff Control Test  
Figure 501/21-62-00-990-801**

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## AIRCRAFT MAINTENANCE MANUAL

### 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	Air Conditioning 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):
  - (a) Set the CONT CAB, FWD CAB, and AFT CAB selectors to the OFF position and attach a DO-NOT-OPERATE tag.

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(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:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning Access Door
192DR	ECS High Pressure 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 21-62-01-020-002

(2) Do these steps to remove the bonding jumper:

(a) Remove the screw [8], the washer [5], and the nut [4] that hold 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) Open 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.

(c) Remove the shutoff valve [1] from the ECS bay.

————— **END OF TASK** —————

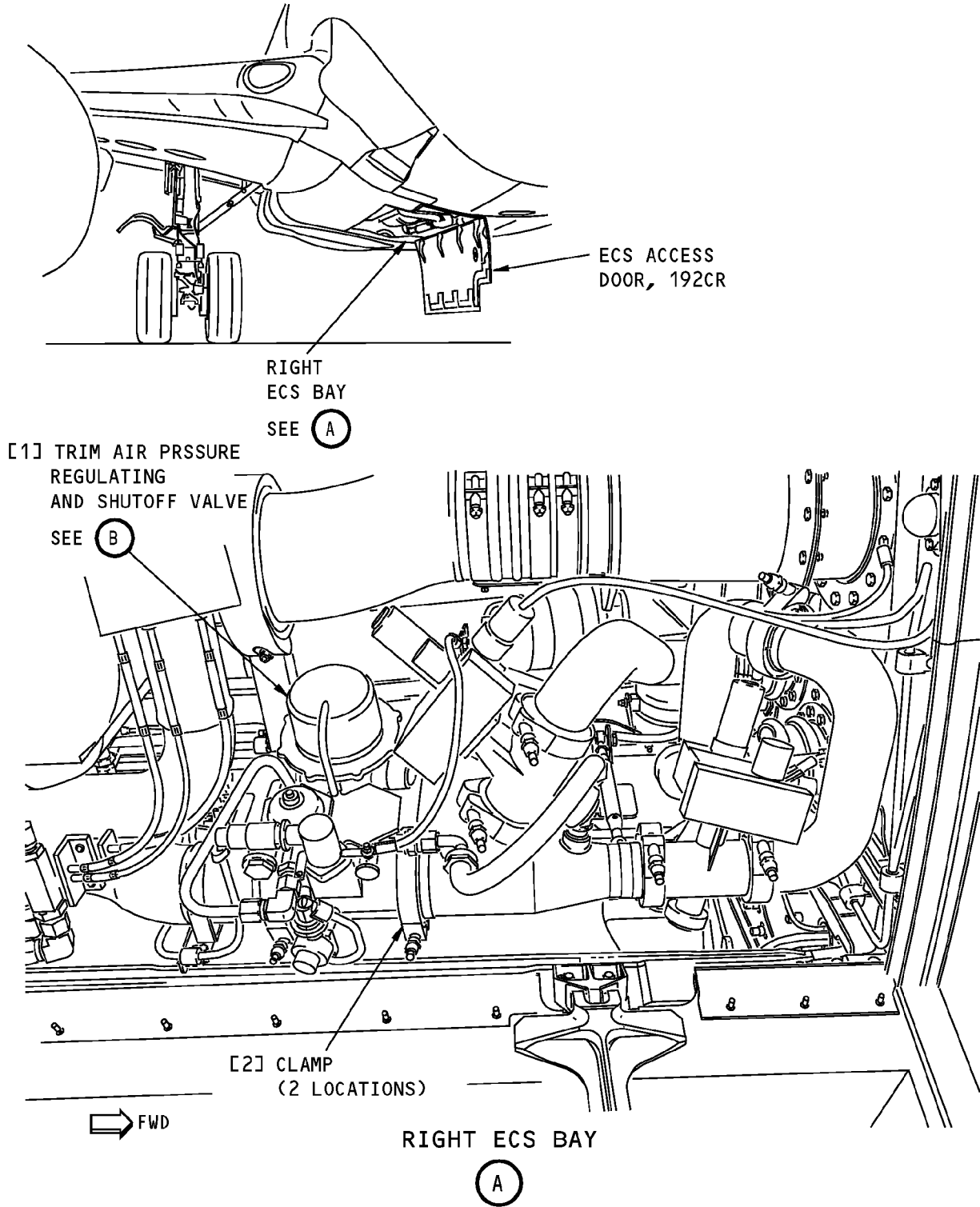
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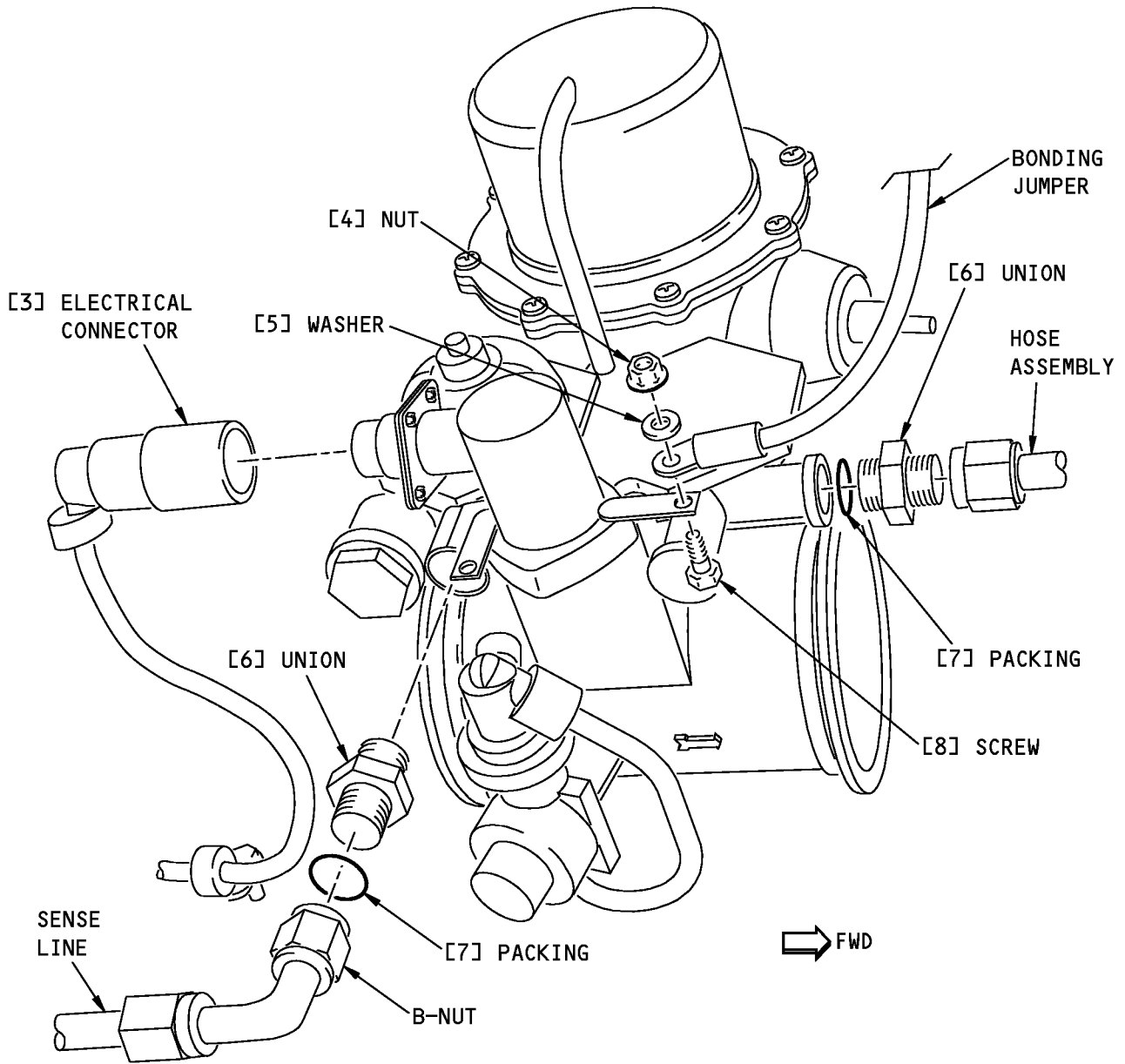
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**Trim Air Pressure Regulating and Shutoff Valve Installation**  
Figure 401 (Sheet 1 of 2)/21-62-01-990-801

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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 (Sheet 2 of 2)/21-62-01-990-801**

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### AIRCRAFT MAINTENANCE MANUAL

#### 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. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT-8N	MIL-PRF-907F

##### C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Valve	21-62-01-01-010	HAP 001-013, 015-026, 028-030
		21-62-01-03-010	HAP 031-054

##### 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
192CR	Air Conditioning Access Door
192DR	ECS High Pressure Access Door

##### F. 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:

- (a) Install a new packing [7] on the union [6].
- (b) Apply a thin layer of Never-Seez NSBT-8N 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.

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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-8N 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 21-62-01-020-007

- (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], the washer [5], and the nut [4] that hold the bonding jumper to the shutoff valve.

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).

## G. 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

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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.

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.

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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.

### H. 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.

### I. Put the Airplane Back to Its Usual Condition

SUBTASK 21-62-01-010-002

- (1) Close these panels:

<u>Number</u>	<u>Name/Location</u>
192CR	Air Conditioning 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.

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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